Grade 12 Students' Level of Knowledge on Selected Sustainable Development Goals (SDGs) in the Second District of Capiz

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Abstract

This study aimed to ascertain the level of knowledge Grade 12 students on selected Sustainable Development Goals (SDGs) of Education 2030 Agenda. This study employed the descriptive or survey research design and with Grade 12 students as participants and were randomly selected using lottery technique. The research instrument used in data gathering was the SDG Inventory Questionnaire. Results of the study showed that the level of knowledge of Grade 12 students on topics related to clean water and sanitation (SDG 6) is "High". Meanwhile, the level of knowledge of Grade 12 students on topics concerning sustainable cities and communities (SD 11), climate action (SDG 13), life below water (SDG 14) and life on land (SDG 15) is "Average". As an entire group, the level of knowledge of Grade 12 students on topics related to the five selected SDG's is "Average". Similarly, Grade 12 students from urban schools, rural schools, and those who are taking STEM, GAS ABM and TVL have average level of knowledge on topics related to the 5 SDG's. On the other hand, students who are taking HUMMS have a low level of knowledge on the five SDG's. There was a significant difference in the level of knowledge of Grade 12 students on topics related to the five SDG's when they are grouped according to type of school location. There was a significant difference in the level of knowledge of Grade 12 students on topics related to the five SDG's when they are grouped according to track/strand.

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Introduction

On 25 September 2015, the UN General Assembly adopted the 2030 Agenda for Sustainable Development (UN, 2015). This new global framework to redirect humanity towards a sustainable path was developed following the United Nations Conference on Sustainable Development (Rio+20) in Rio de Janeiro, Brazil in June 2012, in a three-year process involving UN Member States, national surveys engaging millions of people and thousands of actors from all over the world.

At the core of the 2030 Agenda are 17 Sustainable Development Goals (SDGs). The universal, transformational and inclusive SDGs describe major development challenges for humanity. The aim of the 17 SDGs is to secure a sustainable, peaceful, prosperous and equitable life on earth for everyone now and in the future. The goals cover global challenges that are crucial for the survival of humanity. They set environmental limits and set critical thresholds for the use of natural resources. The goals recognize that ending poverty must go hand-in-hand with strategies that build economic development. They address a range of social needs including education, health, social protection and job opportunities while tackling climate change and environmental protection.

The SDGs address key systemic barriers to sustainable development such as inequality, unsustainable consumption patterns, weak institutional capacity and environmental degradation. United Nations Educational, Scientific and Cultural Organization (UNESCO) has been promoting Education for Sustainable Development (ESD) since 1992. It led the UN Decade for Education for Sustainable Development from 2005 to 2014 and is now spearheading its follow-up, the Global Action Programme (GAP) on Education for Sustainable Development .The momentum for ESD has never been stronger. Global issues – such as climate change – urgently require a shift in our lifestyles and a transformation of the way we think and act. To achieve this change, we need new skills, values and attitudes that lead to more sustainable societies.

The new 2030 Agenda for Sustainable Development clearly reflects this vision of the importance of an appropriate educational response. Education is explicitly formulated as a stand-alone goal – Sustainable Development Goal. Numerous educations related targets and indicators are also contained within other Sustainable Development Goals (SDGs).

Education is both a goal in itself and a means for attaining all the other SDGs. It is not only an integral part of sustainable development, but also a key enabler for it. That is why education represents an essential strategy in the pursuit of the SDGs.

Building on the lessons learned from the Millennium Development Goals (MDGs) experience, the Philippine Government is committed to the bigger challenges of the Sustainable Development Goals (SDGs) which integrate the social, economic and environmental agenda. The review report highlights the initiatives of the government and other stakeholders to provide the policy and enabling environment for the

implementation of the SDGs, particularly on securing the buy-in from policymakers and stakeholders, incorporating the SDGs into the national framework, improving indicators and data, and developing institutional mechanisms.

Since the adoption of the 2030 Development Agenda in September 2015, the Philippine Government and its partners have conducted communications and advocacy efforts to build awareness and engage stakeholders in the new agenda.

This study aimed to ascertain the level of knowledge Grade 12 students in the Second District of Capiz on selected sustainable development Goals (SDGs). Specifically, this study sought to determine the level of knowledge of Grade 12 students on topics related to the five selected SDG's of the Education 2030 Agenda, specifically SDG 6 Clean Water and Sanitation, SDG 11 Sustainable Cities and Communities, SDG 13 Climate Action, SDG 14 Life Below Water and SDG 15 Life on Land; the level of knowledge of Grade 12 students on topics related to the five selected SDG's of the Education 2030 Agenda, when grouped according to type of school location and strand/track. This study also wanted to find out if there was a significant difference on the level of knowledge of Grade 12 students on topics related to the five selected SDG's of the Education 2030 Agenda, when grouped according to type of school location and strand/track

The idea of a global learning 'journey' is often at the heart of approaches to engagement with the SDGs in schools – especially those that build in models of behaviour or attitudinal change, and knowledge development. A key opportunity of engaging with the SDGs is that students and teachers are on a fairly equal footing when it comes to prior knowledge of the SDGs. The research will be of benefit to the following:

Policy Makers. Policy makers may use the result of this study as a starting point to consider in improving educational policies and to plan and oversee the coordinated implementation of SDG-related policies and programs. It should involve a deliberate allocation of time and resources to support teacher engagement with the SDGs

Curriculum Planners. The core values of the SDGs are often linked to schools' pre-existing values and other statements. Schools that aim to achieve a broad and balanced curriculum regularly make reference to human rights, wellbeing and/or responsible action. Curriculum planners may use the result of this study as a point to consider in updating and upgrading the curricula of the school and by integrating SDG's into their curriculum.

Instructors/Teachers. The SDG framework is often used to map what sort of global learning activity is already going on in the school – locating other projects, curriculum subjects, teachers, students and community or business links that are already addressing some of the SDG goals. The results of the study may increase the level of responsibility of the instructors/teachers to enhance the awareness of their

students regarding the Education 2030 Agenda for sustainable development goals.

Students. Collaborative efforts bring awareness, engagement, and advocacy from students and help to develop an appreciation for the natural world. It starts through an exploration of what the goals are, and why it might be important for others to know about them. This study may further   inspire students to improve their knowledge and awareness of the Education 2030 Agenda for sustainable development goals for them to make a difference through the development of a supplementary material.

Future   Researchers. Future researchers may also gain an information on how to use the findings of the study in a different perspectives which may add more ideas to the existing body of knowledge. Knowledge taken from the study may also be integrated or associated with other Sustainable Development Goals (SDG's) not covered in this investigation.

The SDG4 – Education 2030 Framework for Actions' goal is to, ensure inclusive and equitable quality education and promote lifelong learning opportunities for all. One of the SDG Goal in which the study was anchored is on Target 4.7 which states that," By 2030, ensure that all learners acquire knowledge and skills needed to promote sustainable development, including, among others, through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship and appreciation of cultural diversity and of culture's contribution to sustainable development."

ESD (Education for Sustainable Development) empowers learners to take informed decisions and responsible actions for environmental integrity, economic viability and a just society, for present and future generations, while respecting cultural diversity. It is about lifelong learning, and is an integral part of quality education. ESD is holistic and transformational education which addresses learning content and outcomes, pedagogy and the learning environment. It achieves its purpose by transforming society. (UNESCO, 2014).

This study likewise is grounded on the cognitive theory of learning which focuses on the conceptualization of students' learning processes and address the issues of how information is received, organized, stored, and retrieved by the mind. Learning is concerned with what the learners know and how they come to acquire it (Jonassen, 1991). Knowledge acquisition is described as a mental ability that entails internal coding and structuring by the learner; thus, cognitive theories (Schunk, 1991) are appropriate for explaining complex forms of learning (reasoning, problem-solving, information-processing). The cognitive approach focuses on changing the learner by encouraging him/her to use appropriate learning strategies.

Another theory which bears impact on this study is Constructivism, a theory that equates learning with creating meaning from experience. Knowledge is not abstract but is linked to the context under study and to the experiences that the

participants bring to the context. Learners are encouraged to construct their own understandings and then to validate through social negotiation.

Schools in many countries emphasize environmental education and ethics as they prepare students to be environmental stewards. The concept of "sustainable development" has been important in influencing this direction worldwide since the 1992 United Nations Conference on Environment and Development (the Earth Summit) in Rio Janeiro. Sustainable development and environmental protection related; the "holistic" concept of sustainable development places environmental protection within a larger social context that includes economic growth and human well-being.

According to UNESCO (2012), the sustainable development goals were intended to go beyond the millennium development goals which expired in 2015. They were focused to provide a comprehensive vision for the evolution of all countries in the years ahead. SDGs were universal, addressing significant challenges to developed countries in transforming their own societies and economies in a more sustainable direction, as well as contributing strongly to the global effort to speed the achievement of sustainable development in the developing countries.

The conceptual framework of the study is represented by Figure 1 below where the demographic profile like type of school and strand/track are regarded as the independent variables while students' knowledge on topics related to the five sustainable development goals is assigned as the dependent variable.

Independent Variable   Dependent Variable

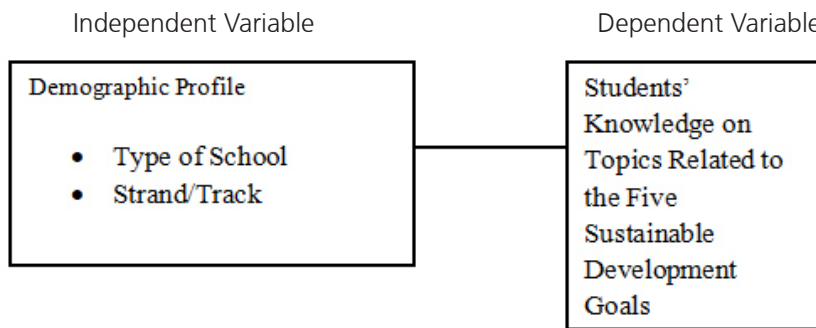| Demographic Profile • Type of School • Strand/Track	—	Students' Knowledge on Topics Related to the Five Sustainable Development Goals

Figure 1. Demographic profile of students in relation to their knowledge on topics related to the five sustainable development goals.

Methodology

This study employed the descriptive or survey research design to determine the level of knowledge of Grade 12 students on topics related to the selected SDG's of the Education 2030 Agenda namely: SDG 6 (Clean Water and Sanitation), SDG 11 (Sustainable Cities and Communities), SDG 13 (Climate Action), SDG 14 (Life Below Water) and SDG 15 (Life on Land). The participants of the study were the 395 Grade 12 students belonging to the different strands of the eight (8) schools offering

a Senior High School in the Second District of Capiz during the 1st Semester of A. Y. 2018-2019.The student-participants were randomly selected using lottery technique utilizing the intact class from the eight schools which were categorized as urban or rural high school. Table 1 shows the total number of respondents per national high school in the Second District of Capiz.

Table 1 Distribution of Student Respondents by School.

Name Of School	Type of School	Number of Respondents
1.Dao National High School	Urban	50
2. Arturo Hugo National High School	Rural	50
3.Mambusao National High School	Urban	50
4. Mambusao East National High School	Rural	50
5. Vicente Andaya Sr. National High School	Urban	50
6.Mianay National High School	Rural	50
7.Msan National High School	Urban	50
8. Basiao National High School	Rural	45
TOTAL	8	395

The research instrument used in data gathering was the SDG (Sustainable Development Goals) Inventory Questionnaire to find out the level of knowledge of Grade 12 students on topics related to the selected SDG's of the Education 2030 Agenda, namely: SDG 6 Clean Water and Sanitation, SDG 11 Sustainable Cities and Communities, SDG 13 Climate Action, SDG 14 Life Below Water and SDG 15 Life on Land. A one hundred (100) item test was prepared by the researcher to determine the level of students' knowledge on the five selected SDGs. The draft of the self-assessment for students was submitted to 3 validators. The validator's suggestion and recommendations were incorporated in the modification of the instrument. The questionnaires undergone reliability using Cronbach's alpha. The instrument, a questionnaire was subjected to reliability test using Cronbach alpha. The reliability for each SDG were as follows. For SDG 6 Clean Water and Sanitation the reliability was 0.794, with SDG 11 Sustainable Cities and Communities it was 0.854, for SDG 13 Climate Action, 0.767, for SDG 14 Life on Land the reliability was 0.787 and SDG 15 Life Below Water it was .665 after the pilot testing with 50 students in one of the National High Schools in the Second District of Capiz which were not included as part of the respondents. Upon determining the reliability of the questionnaire, fielding of questionnaires then followed, as well as tabulation and analysis of the data.

After the instruments have undergone face validation, the researchers sent a letter requesting permission to the Department of Education Division Office to determine the total population of Grade 12 students including the name of the schools offering a Senior High School in the Second District of Capiz.

A separate letter to involve the 50 Grade 12 students in one of the National High Schools that were not included as the respondents of the study was also sent to involve them in the pilot testing. The instruments undergone pilot testing and was revised on the basis of reliability. Revision of the test/checklist questionnaires followed.

The stratified proportional random sampling was used in the selection of the student-respondents using an intact class from the eight schools who were categorized as urban or rural high school. To ascertain the correctness of the sampling procedure, the researcher adopted Slovin's Formula using 5% designed margin of error (as cited by Pagoso and Montana, 1985). The test questionnaire contained 50 questions, with 10 items per SDG.

Grade 12 students were asked to answer the questions related to the five selected SDG's of the Education 2030 Agenda to determine their level of knowledge. The rating scale and descriptions are as follows:

Average Frequency of the Correct Answer of the Respondents per SDG Qualitative Rating (Level of Knowledge)   Description (% of the respondents who have Correct Answer for the Items under each SDG).

Average Frequency of the Correct Answer of the Respondents per SDG	Qualitative Rating (Level of Knowledge)	Description (% of the respondents who have Correct Answer for the Items under each SDG)
316 – 395	Very high level	81 and above
237 – 315	High level	61 - 80
158 -236	Average level	41 – 60
79 -157	Low level	21 – 40
0 -78	Very low level	0 - 20

The level of knowledge was determined by getting the frequency of the correct answers for each of the five (5) SDG.

To describe the levels of knowledge of the Grade 12 students, the researcher used the following scale and corresponding descriptions.

Average Frequency of the Correct Answer of the Respondents per SDG	Qualitative Rating (Level of Knowledge)	Descriptions
316 - 395	Very high level	Very high level means that the grade 12 students are highly knowledgeable in the five selected SDGs of the Education 20130 Agenda namely SDG 6 Clean Water and Sanitation, SDG 11 Sustainable Cities and Communities, SDG 13 Climate Action, SDG 14 Life on Land and SDG 15 Life Below Water.
237 – 315	High level	High level means that the grade 12 students are very knowledgeable in the five selected SDG's of the Education 20130 Agenda namely SDG 6 Clean Water and Sanitation, SDG 11 Sustainable Cities and Communities, SDG 13 Climate Action, SDG 14 Life on Land and SDG 15 Life Below Water.
158 -236	Average level	Average level means that the grade 12 students have average knowledge in the five selected SDG's of the Education 20130 Agenda namely SDG 6 Clean Water and Sanitation, SDG 11 Sustainable Cities and Communities, SDG 13 Climate Action, SDG 14 Life on Land and SDG 15 Life Below Water.
79 -157	Low level	Low level means that the grade 12 students are fairly knowledgeable in the five selected SDG's of the Education 20130 Agenda namely SDG 6 Clean Water and Sanitation, SDG 11 Sustainable Cities and Communities, SDG 13 Climate Action, SDG 14 Life on Land and SDG 15 Life Below Water.
0 -78	Very low level	Very low level means that the grade 12 students have poor knowledge in the five selected SDG's of the Education 20130 Agenda namely SDG 6 Clean Water and Sanitation, SDG 11 Sustainable Cities and Communities, SDG 13 Climate Action, SDG 14 Life on Land and SDG 15 Life Below Water.

The collected data was presented, analyzed and interpreted using the following statistical tool:

Frequency counts, ranking, and percentages. These were used to determine the number of observations and corresponding percentages.

Mean. Mean was used to determine the level of knowledge of Grade 12 students on topics related to the selected SDG's of the Education 2030 Agenda.

Standard deviation. Standard deviation was used in determining the homogeneity or heterogeneity of variance in terms of the level of knowledge of Grade 12 students on topics related to the selected SDG's of the Education 2030 Agenda .

All statistical computations were processed through the Statistical Package for Social Sciences (SPSS) Software.

Results and Discussion

Level of Knowledge of Grade 12 Students on Topics Related to the Five Selected SDG's

Table 2 Level of Knowledge of Grade 12 Students on Topics Related to the Five Selected SDG's.

Sustainable Development Goal	Mean	Description	Std. Deviation
SDG 6 (Clean Water and Sanitation)	6.17	High	1.94
SDG 11 (Sustainable Cities and Communities)	5.18	Average	2.61
SDG 13 (Climate Action)	4.19	Average	1.93
SDG 14 (Life Below Water)	4.12	Average	2.13
SDG 15 (Life on Land)	4.17	Average	2.41

Scale	Description
0.00 - 2.00	Very Low
2.01 - 4.00	Low
4.01 - 6.00	Average
6.01- 8.00	High
8.01- 10.00	Very High

Table 2 presents the level of knowledge of Grade 12 students on topics related to the five selected SDG's of the Education 2030 Agenda, specifically SDG 6 Clean Water and Sanitation, SDG 11 Sustainable Cities and Communities, SDG 13 Climate Action, SDG 14 Life Below Water and SDG 15 Life on Land.

As shown in the table, the level of knowledge of Grade 12 students on topics related to clean water and sanitation (SDG 6) is "High" (M = 6.17, SD = 1.94). This implies that the Grade 12 students are aware of the importance of having access to safe drinking water and the link between unsafe drinking water and disease.

Meanwhile, the level of knowledge of Grade 12 students on topics concerning sustainable cities and communities (SD 11), climate action (SDG 13), life below water (SDG 14) and life on land (SDG 15) is "Average" (4.12 ≤ M ≤ 5.18, 1.93 ≤ SD ≤ 2.61). This means that even though the students may have adequate information on topics involving sustainable cities and communities, climate action, life below water and life on land, still there are other information on these topics that they missed or are not aware of.

**Level of Knowledge on Topics Related to the Five Selected
SDG's when the Students are Grouped According to
Type of School and Strand/Track**

Table 3 Level of Knowledge on Topics Related to the Five Selected SDG's when the
Students are Grouped According to Type of School and Strand/Track

Variable	Mean	Description	SD
Entire Group	23.83	Average	8.23
Type of School			
Big School	22.97	Average	8.19
Small School	24.64	Average	8.20
Track			
STEM	24.00	Average	7.83
GAS	24.93	Average	7.64
ABM	26.06	Average	8.07
TVL	22.95	Average	9.77
HUMMS	19.33	Low	7.15

Scale	Description
0.00 - 10.00	Very Low
10.01 - 20.00	Low
20.01 - 30.00	Average
30.01 - 40.00	High
40.01 - 50.00	Very High

As an entire group, the overall level of knowledge of Grade 12 students on topics related to the five selected SDG's of the Education 2030 Agenda is "Average" (M = 23.83, SD = 8.23). Similarly, Grade 12 students from big schools, small schools, and those who are taking STEM, GAS ABM and TVL have average level of knowledge on topics related to the 5 SDG's ($22.95 \leq M \leq 26.06$, $7.64 \leq SD \leq 9.77$). On the other hand, students who are taking HUMMS have a low level of knowledge on the 5 SDG's (M = 19.33, SD = 7.15). This implies that as an entire group the Grade 12 students are clearly aware regarding the information they possess about concepts on the five sustainable development goals (SDG) and the importance of these goals in their lives. However, their knowledge about the five SDG's are still lacking in some areas as they are not aware about other topics and issues covered by the five SDGs especially those students taking up HUMMS. This is shown in Table 3.

**Difference on the Level of Knowledge of Grade 12
Students on Topics Related to the Five
Selected SDG's**

Table 4A shows that there was a significant difference in the level of knowledge of Grade 12 students on topics related to the five SDG's when they are grouped according to type of school in favor of students coming from the small schools, t (393) = 2.030, p < .05. This indicates that students from the rural national high schools are more knowledgeable about the topics related to the five SDGs.

This may be attributed to the fact that in rural schools, the class size is smaller and more manageable, hence it is easier for the teacher to monitor the progress of the students and discuss with them issues on climate, environmental degradation and many others. Hence, the hypothesis stating that there is no significant difference in the level of knowledge of Grade 12 students on topics related to the five SDGs when they are grouped according to type of school is hereby rejected.

Table 4A. t – test results on the difference in level of knowledge of Grade 12 students on topics related to the five SDG's when they are grouped according to type of school

Category	Mean	SD	t-value	df	Sig. (2-tailed)
Type of School					
Big School	22.97	8.19	2.030*	393	.043
Small School	24.64	8.20			

*p < .05 -   significant at 5% level

Similarly, Table 4B also shows that there was a significant difference in the level of knowledge of Grade 12 students on topics related to the five SDG's when they are grouped according to track/strand, $F_{(4, 390)} = 6.424$, $p < .05$. This means that the level of knowledge on topics related to the five SDGs vary when they are grouped in terms of track/strand. Hence, the hypothesis stating that there is no significant difference in the level of knowledge of Grade 12 students on topics related to the five SDGs when they are grouped according to track/strand is hereby rejected.

Table 4B   One-Way ANOVA results on the difference in level of knowledge of Grade 12 students on topics related to the five SDG's when they are grouped according to track/strand

Source of Variance	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	1649.450	4	412.363	6.424*	.000
Within Groups	25035.497	390	64.194		
Total	26684.947	394			

Conclusions and Recommendations

The high level of knowledge of Grade 12 students on topics related to clean water and sanitation could be attributed to the fact that as Grade 12 students they are already mature enough to be aware of the importance of clean water and sanitation in their lives especially in the preventing the spread of diseases.

Meanwhile, the average level of knowledge of Grade 12 students on topics concerning sustainable cities and communities (SD 11), climate action (SDG 13), life below water (SDG 14) and life on land (SDG 15) indicates that the students have

some information regarding disaster risk reduction and preparedness, mitigation and adaptation to climate change, marine and land pollution and other environmental issues but there is still a need to further educate them on these issues.

The significant difference in the level of knowledge of Grade 12 students on topics related to the five SDG's when they are grouped according to type of school and track/strand points to the fact that knowledge about clean water, sanitation, disaster risk reduction, climate change and other science and environmental-related issues vary form one student to the next.

It is recommended that the students are encouraged to read pamphlets, brochures, books and other reading materials relating to the five SDGs and other environmental issues so as to improve their level of knowledge in these areas. Students should develop appreciation and value the environment they live in, learn how to protect their environment and be responsible citizens.

Teachers should inculcate in the students the love of environment and the protection of environment. They should incorporate the five SDGs in their lessons so as to make the students more knowledgeable on how to be appreciative and take care of their environment to achieve a better and more sustainable future. In addition, results may also be shared with the higher education leaders so that they could formulate school programs that would address or help alleviate the global challenges that children face in this present time.

The result should be made available to curriculum planners specifically in the field of Science education as baseline data in curriculum designing and curriculum enrichment for learning activities that can promote active participants.

It is recommended that future researchers may replicate this study in a wider scope and consider other variables

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