SENIOR HIGH SCHOOL LEARNERS' KNOWLEDGE, PRACTICES, AND ATTITUDE

ON SELECTED SUSTAINABLE DEVELOPMENT GOALS

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by

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Abstract

Understanding Knowledge, Attitude, and Practices (KAP) is essential for any transition towards sustainability (Salas-Zapata et al., 2018). Thus, the researcher conducted a study to assess learners' level of knowledge, practices, and attitude on science related sustainable development goals. The researcher used the descriptive-correlational research design to describe the learners' level of knowledge, practices, and level of attitude on selected SDGs and to determine its significant relationship between and among these variables. The study was conducted in the school year 2020-2021 in the five public secondary schools offering STEM – Academic Track in the 3rd Congressional District of Iloilo. Seventy-eight STEM Grade 12 learners were the participants of the study. They were identified through stratified random sampling technique. The researcher made instruments were used in the study. The instruments underwent content validation by three experts in science education. The study was conducted with the approval of Schools Division Superintendent and respective school heads, the data were gathered using google form to gather responses from the learners. The results revealed that the entire group learners' level of knowledge was moderately knowledgeable; however, they have highly desirable practices and highly desirable attitudes on selected SDGs. Significant difference exists between knowledge and attitude

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on selected SDGs and between practices and attitude on SDGs. The results of the study supported by the various literatures recommend the following: improvement of the integration of selected SDGs in the science curriculum and other learning areas; creation of competencies or learning objectives which include concepts on selected SDGs or local and global issues and providing opportunities for authentic experiences through insightful curriculum materials; systematic implementation, monitoring and evaluation, and collaboration of the community, teachers and learners to the co-curricular programs and activities aligned to the selected SDGs. With the disaster that is continuously happening, sustainability literacy among learners needs to be developed to protect the environment, to promote wellness of people, and to cope with the different disasters. In addition, no one should be left behind in attaining the global goals.

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References

Afroz N., Ilham Z. (2020). Assessment of Knowledge, Attitude and Practice of University Students towards Sustainable Development Goals (SDGs). Retrieved from http://jurnal.pusbindiklatren.bappenas.go.id/lib/jisdep/article/view/12/4

Alcayna T., Bollettino V., Dy P., Vinck P. (2016). Resilience and Disaster Trends in the Philippines: Opportunities for National and Local Capacity Building. *Research Gate. Retrieved May, 2020 from*

https://www.researchgate.net/publication/308163810_Resilience_and_Disaster_T rends_in_the_Philippines_Opportunities_for_National_and_Local_Capacity_Buildi ng

- American Psychological Association. (2021). APA Dictionary of Psychology. Retrieved from https://dictionary.apa.org/practice on October 30, 2021
- Ates, H. & Gül, K. S. (2018). Investigating of pre-service science teachers' beliefs on education for sustainable development and sustainable behaviors, International Electronic Journal of Environmental Education, 8(2), 105-122

Batiibwe M. S., (2019). Using Cultural Historical Activity Theory to understand how emerging technologies can mediate teaching and learning in a mathematics classroom: a review of literature. Retrieved December 2021 from https://telrp.springeropen.com/articles/10.1186/s41039-019-0110-7

Beatty, I. D., & Feldman, A. (2012). Viewing teacher transformation through the lens of cultural-historical activity system. Education as Change, 16(2), 283–300.

Borg, S. (2003) Teacher cognition in language teaching: A review of research on what language teachers think, know, believe, and do. Language Teaching. Retrieved December 2020 from https://doi.org/10.1017/S0261444803001903

BBC News. (2019). How did Australia fires start and what is being done? A very simple guide. Retrieved https://www.bbc.com/news/world-australia-50980386 7 January 2020

Biodiversity Management Bureau. (2019). Department of Environment and Natural

Resources-Biodiversity Management Bureau CY 2019 Annual Report. Retrieve

November 2021 from

https://bmb.gov.ph/downloads/BPKMD/accomreport/2019/annual_accomplismen

t_report_2019.pdf

Biodiversity Management Bureau. (2019). Biodiversity Management Bureau CY 2019

Annual Report. Retrieved November 2021 from

https://bmb.gov.ph/downloads/BPKMD/accomreport/2019/annual_accomplismen

t_report_2019.pdf

Climate Change Commission (2016). National Climate Change Action. Retrieved December 2021 from https://climate.emb.gov.ph/wpcontent/uploads/2016/06/NCCAP.pdf

Climate Change Service (2021) Climate Change in the Philippine Context. Retrieved

November, 2021 from

https://climatechange.denr.gov.ph/#:~:text=The%20DENR%20is%20tasked%2

Oto, Budgeting%20for%20the%20said%20cluster.&text=The%20Climate%20Cha

nge%20Service%20of,on%20and%20address%20these%20needs.

Climate Change Service. (2017). DENR CCS Annual Accomplishment Report. Retrieved

February 6, 2022 from https://climatechange.denr.gov.ph/index.php/e-

lib/resources/denr-ccs-annual-report

Chandran R., Gunawardena C., & Castro N. (2017). The National Environmental Education Action Plan 2018-2040 (VERSION 1). Retrieved November 2021 from http://eeid.emb.gov.ph/wp-

content/uploads/2020/07/National_Environmental_Education_Action_Plan__NEEA

P_.pdf

Collins. (2020). Knowledge. Retrieved May 2020 from

https://www.collinsdictionary.com/dictionary/english/knowledge#:~:text=Knowle dge%20is%20information%20and%20understanding,or%20which%20all%20pe ople%20have.

Collins. (2020). Attitude. Retrieved May 2020 from

https://www.collinsdictionary.com/dictionary/english/attitude

Cuaresma, J. (2019), How Green Can You Go? Initiatives of Dark Green Universities in the Philippines. *ResearchGate*. Retrieved December, 2021 from https://www.researchgate.net/publication/333572995_How_Green_Can_You_Go _Initiatives_of_Dark_Green_Universities_in_the_Philippines

De Vera E., & Noriega R., (2019) Search for sustainable, eco-friendly schools launched Retrieved December, 2021 from https://mb.com.ph/2019/04/06/search-forsustainable-eco-friendly-schools-launched/

Dixon N., (2000). Key Concepts in Information and Knowledge Management. Retrieved May, 2020 from

https://www.tlu.ee/~sirvir/Information%20and%20Knowledge%20Management/ Key_Concepts_of_IKM/defining_knowledge.html

Douglas R. (2021, October, 25). Scientists fear global 'cascade' of climate impacts by 2030. Retrieved November 2021 from Scientists fear global 'cascade' of climate impacts by 2030 (scidev.net)

Department of Education. (2016). K to 12 Curriculum Guide SCIENCE (Grade 3 to Grade 10) Retrieved October, 2021 from https://www.deped.gov.ph/wp-

content/uploads/2019/01/Science-CG_with-tagged-sci-equipment_revised.pdf

Department of Education. (2021). About WinS. Retrieved Nov. 8, 2021 from About WinSJ WASH In Schools (deped.gov.ph)

Department of Education. (2003). DO 72, S. 2003 – Establishment of The Organization Youth for Environment in Schools (YES) Organization. Retrieved December 2021

124

from https://www.deped.gov.ph/2003/09/01/do-72-s-2003-establishment-of-theyouth-for-environment-in-schools-yes-organization/

Department of Education, (2012) K to 12 Curriculum Guide SCIENCE. Available at:

<http://www.gov.ph/downloads/2012/01jan/SCIENCE-K-12-Curriculum-

Guides.pdf..Date accessed: 16 mar.2017.

- Department of Education. (2021, June). The Need for Climate Change Education. Retrieved November 8, 2021 from https://www.deped.gov.ph/climate-changeeducation/cce-in-the-philippines/
- Department of Education. (2020). Disaster Risk Reduction and Management Service. DRRMS Strategic Plan & Achievements. Retrieved November 8, 2021 from https://www.deped.gov.ph/wp-content/uploads/2020/11/09_TLM_DRRMS-StratPlan_20190709.pdf
- Department of Energy. (2019) Accomplishment Report. retrieved November 2021 from https://www.doe.gov.ph/sites/default/files/pdf/transparency/2019-esar.pdf
- Department of Health. (2020). Annual Report Department of Health Philippines. Retrieved November 2021 from

https://doh.gov.ph/sites/default/files/publications/2019-DOH-Annual-Report.pdf

D'Amore R. (2019, August, 24). Amazon rainforest fires: What caused them and why activists are blaming Brazil's president. Retrieved February 12, 2020 from https://globalnews.ca/news/5794191/amazon-rainforest-fire-explained/.

- Facts & Figures: Philippines' Mindanao Island Earthquakes retrieved February 20,2020 from https://www.savethechildren.org/us/what-we-do/emergencyresponse/philippines-earthquake-mindanao-island-2019-facts.
- Environmental Management Bureau. (2019). Annual Report for CY 2019 Environmental Management Bureau (EMB). Retrieved November, 2021 from https://emb.gov.ph/wp-content/uploads/2020/11/FINAL-EMB-ANNUAL-REPORT-FOR-CY-2019.pdf
- Fanco I. et.al., (2018,). Higher Education for Sustainable Development: Actioning the Global Goals in Policy, Curriculum and Practice. Sustainability Science. Retrieved 12, February 2020 from https://doi.org/10.1007/s11625-018-0628-4
- Fecara R., 2015, Biology Educators Classroom Practices and Awareness of Education for Sustainable Development. Published graduate studies thesis. West Visayas State University, La Paz, Iloilo City.
- Foot K. (2014). Cultural-Historical Activity Theory: Exploring a Theory to Inform Practice and Research. Retrieved November 8, 2021 from https://faculty.washington.edu/kfoot/Publications/Foot-CHAT-explored-dist-tf.p.
- Garcesa, R. & Limjuco R. (2014, April) Environmental Literacy and Integration of Environment Issues Among Science Teachers in Region XI: Basis for Training Design. *UIC Research Journal, Online ISSN 2244-6532 Vol. 20 No. 1.* Retrieved November 2021 from

https://www.researchgate.net/publication/294106206_Environmental_Literacy_a

126

nd_Integration_of_Environment_Issues_among_Science_Teachers_in_Region_XI _Basis_for_Training_Design

Gatan, R. Yangco, R. & Monterola S.L. (2021) Relationships among Environmental Literacy, Locus of Control, and Future Orientation of STEM Students in the Philippines. *Interdisciplinary Journal of Environmental and Science Education* 2021, 17(4), e2250 ISSN 2633-6537 (Online). Retrieved November 2021 from https://www.ijese.com/download/relationships-among-environmental-literacylocus-of-control-and-future-orientation-of-stem-students-10984.pdf

- Gay L. R., Mills G., Airasian P. (2012). EDUCATIONAL RESEARCH Competencies for Analysis and Applications. Retrieved November, 2021 from https://yulielearning.com/pluginfile.php/4831/mod_resource/content/1/Gay-E%20Book%20Educational%20Research-2012.pdf
- GEEP Organization. (2021). Philippines. Global Environmental Education Partnership. Retrieved December 2021 from

https://thegeep.org/learn/countries/philippines#:~:text=9512%2C%20or%20the %20National%20Environmental,balance%20towards%20sustained%20national %20development

Gheith, E. (2019, December) Environmental Literacy among Prospective Classroom Teachers in Jordan. *ResearchGate*. Retrieved November 2021 from https://www.researchgate.net/publication/338673097_Environmental_Literacy_a mong_Prospective_Classroom_Teachers_in_Jordan

Hayes A., James M., Beer K. (2021, October 04). Stratified Random Sampling. Retrieved from November 2021 from

https://www.investopedia.com/terms/stratified_random_sampling.asp

Laurie R. et.al., 2016, Contributions of Education for Sustainable Development (ESD) to Quality Education: A Synthesis of Research, *www.sagepublications.com Vol 10(2): 226–242,* retrieved 7 July 2019 from https://journals.sagepub.com/doi/full /10.1177/0973408216661442

Ling, L. S., Pang, V., & Lajium, D. (2019, March). The Planning of Integrated Stem Education Based on Standards and Contextual Issues of Sustainable Development Goals (SDG). *ResearchGate.* Retrieved November 2021 from https://www.researchgate.net/publication/334113831_THE_PLANNING_OF_INTE GRATED_STEM_EDUCATION_BASED_ON_STANDARDS_AND_CONTEXTUAL_ISSU ES_OF_SUSTAINABLE_DEVELOPMENT_GOALS_SDG

Lualhati, G. (2019, July). Environmental awareness and participation of Filipino Preservice Teachers. *JPBI Vol. 5 No. 2.* Retrieved November 2021 from https://ejournal.umm.ac.id/index.php/jpbi/article/view/8524

Malipot M., (2021) DepEd lauds 2 public high schools for their award-winning sustainable dev't initiatives. Retrieved December 2021 from https://mb.com.ph/2021/07/05/deped-lauds-2-public-high-schools-for-theiraward-winning-sustainable-devt-initiatives/

128

Merriam-webster. (2020). Attitude. Retrieved May 2020 from https://www.merriamwebster.com/dictionary/attitude

Nardi, B. A. (Ed.). (1996). Context and consciousness: Activity theory and humancomputer interaction. mit Press.

Nunez, M., and Clore, M., (2017), Environmental Literacy of K–10 Student Completers, International Journal of Environmental & Science Education, Vol.12, NO.5, 1195-1215. Retrieved 14 July 2019 from www.ijese.net/ makale _indir/1885.

Okubo a, K., Yu a, J., Osanai a S., & Serrona b, K. (2021). Present Issues and Efforts to Integrate Sustainable Development Goals in A Local Senior High School in Japan: A Case Study. *Journal of Urban Management Volume 10, Issue 1, March 2021, Pages 57-68.* Retrieved from

https://www.sciencedirect.com/science/article/pii/S2226585621000042

Oxfam GB. (2019). The Sustainable Development Goals A guide for teachers. Retrieved March 10, 2020 from

https://oxfamilibrary.openrepository.com/bitstream/handle/10546/620842/edusustainable-development-guide-15072019-en.pdf?sequence=4&isAllowed=y

Pauw J. B., Gericke N., Olsson D., & Berglund T. (2015, September, 17). The Effectiveness of Education for Sustainable Development. Sustainability 2015, 7, 15693-15717; doi:10.3390/su71115693

Perez R. (2019, December). Promoting a Greener Curriculum through Environmental Youth Organizational Program: A Policy Evaluation. Retrieved from ERIC database (ED602043)

Perez, R., & Bua, Jr. V. (2019, August). Greening the Curriculum for Sustainable Development. Retrieved from ERIC database ED600473.pdf

Perello-Marín M. R. et al., (2018) Enhancing Education for Sustainable Development in Environmental University Programmes: A Co-Creation Approach. MDPI. Universitat Politecnica de Valencia, Camino de Vera, s/n 46022 Valencia, Spain.

Reynolds M. (2020, January 3). How China's coronavirus outbreak started, explained. Retrieved February 12,2020 from https://www.wired.co.uk/article/chinacoronavirus.

 Rogayan Jr. D. & Nebrida E. (2019). Environmental Awareness and Practices of Science Students: Input for Ecological Management Plan. President Ramon Magsaysay
State University, Zambales, Philippines. *International Electronic Journal of Environmental Education Vol.9, Issue 2, 2019, 106-119.* Retrieved from ERIC database (EJ1219420)

Roldan, M.D.G. (2018). Towards Attaining the Sustainable Development Goals: The Philippines and the 2030 Agenda. Retrieved August 2021 from https://www.dlsu.edu.ph/wp-content/uploads/pdf/conferences/researchcongress-proceedings/2018/sep-01.pdf

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Save the Children Organization. (2019). Facts & Figures: Philippines' Mindanao Island

Earthquakes. Retrieved November 2019 from

https://www.savethechildren.org/us/what-we-do/emergency-

response/philippines-earthquake-mindanao-island-2019-facts

Salas-Zapata, W. A., Ríos-Osorio, L. A., & Cardona-Arias, J. A. (2018). Knowledge, Attitudes and Practices of Sustainability: Systematic Review 1990-2016. *Journal* of Teacher Education for Sustainability. Retrieved from ERIC database. (EJ121817).

SDG Fund Organization. (2019). Sustainable Development Goals. retrieved October 4, 2019 from

https://www.sdgfund.org/goal-12-responsible-consumption-production.

The Guardian. (2020). Taal volcano eruption: Philippines alert level raised as thousands flee ash clouds. Retrieved February 12 2020 at https://www.theguardian.com/world/2020/jan/13/philippines-lava-gushes-fromtaal-volcano-as-alert-level-raised.

UNDP Organization. (2020). What are the Sustainable Development Goals? Retrieved May 2020 from https://www1.undp.org/content/oslo-governance-centre/en/home/sustainabledevelopment-goals.html

UNESCO. (2017). United Nations Educational, Scientific and Cultural Organization. 7, place de Fontenoy, 75352 Paris 07 SP, France. Retrieved March 10, 2020 from http://en.unesco.org/sdgs.

UNESCO (2018). Integrating Education for Sustainable Development (ESD) in Teacher Education in South-East Asia. Retrieved March 10, 2020 from https://bangkok.unesco.org/sites/default/files/2018-10/265760E.pdf

UNESCO (2020). Sustainable Development. Retrieved March 11, 2020 from https://en.unesco.org/themes/education-sustainable-development/what-isesd/sd

United Nations. (2021). Transforming our world: the 2030 Agenda for Sustainable Development. Retrieved November 2021 from https://sdgs.un.org/2030agenda

United Nations. (2021). Take Action for the Sustainable Development Goals. Retrieved November 2021 from https://www.un.org/sustainabledevelopment/sustainabledevelopment-goals/

United Nations. (2019). The Sustainable Development Goals Report 2019. Retrieved March 10, 2020 from https://unstats.un.org/sdgs/report/2019/The-Sustainable-Development-Goals-Report-2019.pdf

UNDRR (2019). Disaster Risk Reduction in the Philippines: Status Report 2019. Retrieved November 2021 from

https://www.unisdr.org/files/68265_682308philippinesdrmstatusreport.pdf UN News (2020). Cyclone Amphan's trail of destruction in Bangladesh and India. Retrievec July, 2021 from https://news.un.org/en/story/2020/05/1064712

- Valente E. M. C. (2000). Environmental Ethics, Attitudes, and Practices Towards Environmental Conservation, among Secondary School Students. Published graduate studies thesis. West Visayas State University, La Paz, Iloilo City.
- Wilber J. (2019) How to Apply Kohlberg's Theory of Moral Development in the Classroom as a Teacher. Retrieved November 8, 2021 from https://owlcation.com/academia/Howto-Apply-Kohlbergs-Theory-of-Moral-Development-in-the-Classroom-as-a-Teacher
- Wu, E. Cheng J.Q. & Zhang, J. B. (2019, December). Study on the Environmental Education Demand and Environmental Literacy Assessment of Citizens in Sustainable Urban Construction in Beijing. Sustainability 2020, 12(1), Retrieved November 2021 from https://www.mdpi.com/2071-1050/12/1/241
- Zhenmin L. (2019). The Sustainable Development Goals Report 2019. Retrieved March 10, 2020, from https://unstats.un.org/sdgs/report/2019/The-Sustainable-Development-Goals-Report-2019.pdf