Social media utilization and climate change awareness among senior high school students in Magsaysay National High School, Occidental Mindoro, Philippines

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A B S T R A C T

The study aims to assess the social media utilization of the Senior High School (SHS) students of Magsaysay National High School (MNHS) and their climate change awareness. The study utilized descriptive survey design. The 309 senior high school students enrolled during the AY 2023-2024 were selected using simple random sampling. Moreover, the weighted mean, frequency and Pearson Correlation are used to analyze the gathered data. Results of the study revealed that majority of the respondents were female, who belongs to a medium size family with a household income below poverty threshold in the province. As per social media utilization, they owned at least two gadgets, they have three social media accounts, spent an average of 8.62 hours a day browsing the different social media, but only spent 0.10 hours a day learning climate change in the different social networking sites. Further, they have "moderate" level of awareness on climate change in terms of association of disasters, perceived cause, manifestation, and ways to mitigate it. Lastly, there is no significant relationship between social media utilization and climate change awareness of the SHS students in MNHS. However, the study recommends raising awareness and promote positive attitude about climate change in early childhood education and at home, intensify environmental education in the K to 12 curriculum, utilization of social media as a source of relevant information on climate change, and conduct of additional study on the other socio-economic variables that could affect the level of climate change awareness and their source of information.
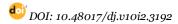
R E S U M O

O estudo tem como objetivo avaliar a utilização de mídia social dos alunos do Ensino Médio (SHS) da Magsaysay National High School (MNHS) e sua conscientização sobre as mudanças climáticas. O estudo utilizou um modelo de pesquisa descritiva. Os 309 entrevistados foram escolhidos aleatoriamente entre os alunos oficialmente matriculados na SHS para o ano letivo de 2023-2024. Além disso, a média ponderada, a frequência e a correlação de Pearson são usadas para analisar os dados coletados. Os resultados do estudo revelaram que a maioria dos entrevistados eram mulheres, que pertencem a uma família de médio porte com renda familiar abaixo do limiar da pobreza na província. Quanto à utilização de mídia social, eles possuíam pelo menos dois gadgets, tinham três contas de mídia social, gastavam em média 8,62 horas por dia navegando nas diferentes mídias sociais, mas gastavam apenas 0,10 horas por dia aprendendo sobre as mudanças climáticas nos diferentes sites de redes sociais. Além disso, eles têm um nível "moderado" de conscientização sobre as mudanças climáticas em termos de associação de desastres, causa percebida, manifestação e maneiras de mitigá-las. Por fim, não há relação significativa entre a utilização de mídias sociais e a conscientização sobre mudanças climáticas dos alunos do SHS no MNHS. No entanto, o estudo recomenda aumentar a conscientização e promover atitudes positivas sobre mudanças climáticas na educação infantil e em casa, intensificar a educação ambiental no currículo do K ao 12, a utilização de mídias sociais como fonte de informações relevantes sobre mudanças climáticas e a condução de estudos adicionais sobre outras variáveis socioeconômicas que podem afetar o nível de conscientização sobre mudanças climáticas e sua fonte de informação.

Introduction

Climate change has emerged as one of the most devastating environmental threats. Global climate change impacts on human and natural systems are predicted to be severe. As evidence of climate change and its impact continues to be amassed, it has become clear that many of the causes of climate change are anthropogenic in nature through lifestyles, consumption and choices that pollute and exploit resources in an unsustainable manner. It is also predicted that climate change will have detrimental effects upon agriculture and fisheries, and may even result in collapsing ecosystems (Nichols, et al. 2009).

Climate change has become one of the most serious environmental problems faced in the 21st century threatening public health and food security (Parry, Rosenzweig, Iglesias, & Fischer, 1999). Of particular importance is the design of educational initiatives to prepare young people in addressing environmental challenges (Guzman et al., 2021).

Climate change is a defining challenge of the 21st century, presenting a complex matrix of environmental, social, and economic issues that necessitate urgent global attention. As the world confronts the repercussions of escalating natural disasters, changing weather patterns, and rising temperatures, the significance of education in promoting sustainable behaviors and shaping attitudes becomes more apparent. Students are emerging as potential catalysts for change among the pivotal demographics, possessing the capacity to drive transformative shifts toward a sustainable future (Esakkimuthu and Banupriya, 2023).). According to Bofferding (2015), climate change education is key to addressing global warming; in the last few years, we have seen a rise in educational programs. Though the goal of environmental education is to promote social change, many secondary science educators limit their climate change interventions to an explanation of climate science (Monroe, 2019).

In 2021, the Department of Education (DepEd) has launched a website that provides carefully selected resources for teaching climate change and the KaLIKHAsan program. The publication "Likha at Lakas ng Kabataan para sa Kalikasan" serves as a comprehensive guide on utilizing theater to educate and mobilize students in addressing climate change. Microsite is an internet-based platform that teachers can use to get materials for climate change education. It offers comprehensive information and assistance to instructors in need. It offers comprehensive information on Climate Change Education in the Philippines, specifically focusing on the initiatives undertaken by the Department of Education.

In accordance with Republic Act No. 9729, also known as the Climate Change Act of 2009, the Philippines had long responded to the demand for climate change education. The K-12 Act, also known as the Enhanced Basic Education Act of 2013, enhanced the incorporation of critical climate change concepts into the curriculum at all grade levels. The concepts of DRRM and CCA are incorporated into the curriculum of subjects such as Health, Science, Araling Panlipunan, and Edukasyon sa Pagpapakatao from kindergarten to junior high school.

A distinct subject in DRRM is offered as part of the STEM strand for senior high school. Furthermore, competencies related to climate change are present in Earth Science and Earth and Life Science. The curriculum modifications were supplemented by co-curricular activities, such as the establishment of the Youth for Environment in Schools Organization (D.O. 93, s. 2011) and the integration of Gulayan Sa Paaralan, Solid Waste Management, and Tree Planting under the National Greening Program (NGP) (D.O. 5, s. 2014).

In addition to sociodemographic variables, researchers have focused on how the media's framing of climate change influences or undermines people's sense of its efficacy (Schäfer, 2012). According to Dryzek (2005), the media plays a crucial role in increasing public awareness of "the environment, "and social media could be crucial in educating the public about the various problems and facets that they are unable to directly observe (Hautea et al., 2021). Thus, the Gerbner and Gross's 1976 cultivation theory posited that those who are immersed in media will perceive the world via the eyes of the media. The premise of the idea holds that media and television have a minor but important impact on the formation of societal attitudes and views. People's perceptions of the "real world" are shaped by their regular exposure to the media, which transforms their real-life reality in what they tend to refer to as "media reality."

However, less is known about the influence of social media platforms on climate change awareness, which have led to a major shift in the communicational paradigm. Thus, the implication of this study would be used for understanding the role of social media in the development of climate change awareness among the students. Specifically, it assessed the social media utilization of the Senior High School (SHS) students of Magsaysay National High School and their climate change awareness

Methodological Procedure

Descriptive research design, which aims to systematically obtain information to describe a phenomenon, situation, or population, was used in the study. It was conducted in Magsaysay National High School, Magsaysay, Occidental Mindoro in March to August 2024. The total population was 905 students, the 309 student-respondents were the sample size that was determined by the EpinfoTM software with 95% confidence level. They were the SHS students enrolled in AY 2023-2024 chosen using simple random sampling. There were 54.36% female and 45.63% male students as shown in Table 1.

Table 1.

Distribution of SHS students in MNHS

Grade Level & Track	Total Number of Students			Total Number of Respondents		
	Male	Female	Total	Male	Female	Total
Grade 11						
ABM	34	82	116	20	26	46
HUMMS	63	43	106	20	18	38
TVL	99	86	185	27	25	52
STEM	19	35	54	5	12	17
Grade 12						
ABM	9	19	28	2	10	12
HUMMS	85	140	225	30	59	89
TVL	87	52	139	30	10	40
STEM	24	28	52	7	8	15
Total			**905**			**309**

A self-constructed questionnaire was used in gathering data. The questionnaire consisted of three parts, namely, Part I-SHS students' profile, Part II- social media utilization and the constraints encountered with the access to climate change information on social media; and Part II- their climate change awareness. It was pre-tested with the Junior High Students at Magsaysay National High School enrolled in SY 2023-2024. The Google form was used to develop an online questionnaire with a consent form appended to it.

The link of the questionnaire was sent through LinkedIn, Facebook, and e-mails. Weighted means were used to describe and quantify the variables the variables in the study. While Pearson Moment Correlation was utilized in the test of relationship of the variables. It was processed by using an online GIGA Calculator. All personal information of participants and data collected from the study were kept private, and the study adhered to the principles of anonymity and confidentiality. The participants' involvement in the study was voluntary, and they were informed that they could withdraw at any point. Informed consent was sought before the conduct of the study.

Results and Discussions

Profile of the Senior High Students of MNHS

The SHS students of Magsaysay National High School belong to the medium size household with an average of 6.13 members, which is higher than the national average household size. According to the 2022 Philippine Statistics Authority National Demographic and Health Survey (NDHS), the average households have an average of 4.2 members for urban and rural areas, and for each of the Philippines's 17 administrative regions. Women head 1 in 4 Filipino households. Twenty-eight percent of the household population in the Philippines is

under age 15. A household is any individual or group of individuals who share a common space for food preparation and consumption as well as regular sleeping quarters in the same dwelling unit.

Moreover, the average household income of Php 174,999.24 annually falls below the average annual income of Filipino families in 2023, which was estimated at PhP 353,23 0.00. The Philippines was placed 15th out of 63 nations in World Bank research from 2022 regarding income disparity. The income distribution in the country was 17% for the top 1% of earnings and 14% for the lowest 50%. Furthermore, the country has one of East Asia's highest rates of income disparity.

According to Balita (2024), roughly 99 percent of Filipino internet users in the third quarter of 2023 accessed the internet using mobile devices, including feature phones and smartphones. Conversely, 62% of respondents claimed to browse the internet on a laptop or desktop, either one they owned or one that was given to them by their company. Further, in the Philippines there are 84.45 million social media users in January 2023, equating to 72.5 percent of the total population. A total of 168.3 million cellular mobile connections were active in the Philippines in early 2023, with this figure equivalent to 144.5 percent of the total population. More broadly, 99.2 percent of the country's total internet user base (regardless of age) used at least one social media platform, 53.5 percent of the social media users were female, while 46.5 percent were male (Kemp, 2023). Filipino internet users spend the most time on social media, averaging 4 hours and 12 minutes each day as compared to the mere 2 hours and 16 minutes that people spend on average globally (Aguilar, 2019).This holds true with the result of the study in which the students own an average of two gadgets, spent 8.62 hours in social media but only 6 minutes learning about climate change.

Table 2.
Profile of the Senior High Students of MNHS

Profile Indicators	Mean	Range
Socio economic		
Household size	6.13 members	4-10 members
Household income	PhP 14,583.27	PhP 8,000.00-PhP 42,000.00
Digital profile		
Number of gadgets	2.33	1-4
Number of social media accounts	3.00	1-5
Hours spent in social media	8.62 hours/day	3-12 hours/day
Hours spent in social media in learning about climate change	0.10 hours/day	0-.30 hours/day

Extent of Social Media utilization of the Senior High Students of MNHS

Social media in particular and digital media in general have grown to be significant information sources. According to a global survey (Newman et al., 2021), social media accounts for 66% of adult internet users' news consumption across all topics. The most popular

platforms across twelve markets are Facebook (32%), YouTube (20%), WhatsApp (17%), and Twitter (11%).

Social media sites are become crucial means of communicating about climate change. Many citizens learn about this problem through social networks (Painter et al., 2017). Furthermore, social media has the power to significantly influence public knowledge (Mavrodieva et al., 2019), psychologically connect people to climate change (Anderson, 2017), and encourage action to address it (Vraga et al., 2015). It could be noted that social media offers a potential means of involving youth in debates and decision-making on the climate change.

In the study of Jiménez-García, Pérez-Peña, & López-Sánchez (2023), the group of students with the highest level of awareness and activity regarding climate change are university women, while the media have a heavier influence on youths than education, which should therefore reinforce its role through strategies like environmental educommunication.

Table 3.

Extent of Social Media utilization of the Senior High Students of MNHS

Types of social media	For personal		For learning about climate change	
	Mean	Interpretation	Mean	Interpretation
Social Networks: Facebook, Twitter/x, LinkedIn	4.58	Always	2.28	Sometimes
Media Sharing Networks: Instagram, Snapchat, YouTube, TikTok	4.47	Always	2.47	Sometimes
Discussion Forums: Reddit, Quora, Digg	1.12	Never	1.00	Never
Bookmarking & Content Curation Networks: Pinterest, Flipboard	2.22	Sometimes	1.00	Never
Consumer Review Networks: Yelp, Zomato, TripAdvisor	1.23	Never	1.00	Never
Blogging & Publishing Networks: WordPress, Tumblr, Medium	2.28	Sometimes	1.00	Never
Social Shopping Networks: Lazada, Shopee	4.38	Often	1.00	Never
Grand Mean	2.90	Seldom	1.39	Never

Legend: 0.50-1.50=Never (0% of the time); 1.51-2.50=Sometimes (20% of the time); 2.51-3.50=Seldom (50% of the time); 3.51-4.50=Often (70% of the time); 4.51-5.50=always (100% of the time)

The way students connect, interact, and socialize has changed because of the widespread and almost inescapable use of social media, which has become an essential

component of their cultural and social landscape. Result shows that SHS students "always" used social networks ($\bar{x}$=4.58) and media sharing networks ($\bar{x}$=4.47) for personal usage but "never" engage in discussion forums ($\bar{x}$=1.12), and consumer review networks ($\bar{x}$=1.23). This could be noted that social media usage is fueled by interaction, which has the power to change passive users into content-sharing producers (Zolkepli & Kamarulzaman, 2015) specially for young social media users.

Although, online activists frequently utilize the internet and the capabilities of social media platforms to engage in a variety of activities, including increasing awareness, dispelling false information, organizing events and protests, verifying statements, and intervening in debates by leveraging the capabilities of audio-visual social media posts (Hautea, Parks, Takahashi, & Zeng, 2021), the students in MNHS "sometimes" used social networks ($\bar{x}$=2.28) and media sharing networks ($\bar{x}$=2.47) for learning about climate change.

Constraints encountered with access to climate change information on social media

Internet-facilitated environments have the potential to enhance the educational process in climate change taking into consideration in-depth learning, creativity, and versatility, high-speed internet access, and the design used in social media. Visuals used to convey the message of climate change are crucial because they can effectively increase public awareness.

Lack of specific social media campaign for climate change related topics ($\bar{x}$=4.52) is the "always" encountered constraints with the access to climate change information on social media, followed by poor network services ($\bar{x}$=3.52), and lack of interest ($\bar{x}$=4.23).

Table 4.

Constraints encountered with access to climate change information on social media

Constraints	Mean	Interpretation
Access to internet	3.23	Seldom
Poor network services	3.52	Often
Lack of specific social media campaign for climate change related topics	4.52	Always
Time factor	1.64	Sometimes
Lack of interest	4.23	Often
Financial limits	1.72	Sometimes
Not part of the subject in SHS	1.78	Sometimes
Grand Mean	**2.94**	**Seldom**

Legend: 0.50-1.50=Never (0% of the time); 1.51-2.50=Sometimes (20% of the time); 2.51-3.50=Seldom (50% of the time); 3.51-4.50=Often (70% of the time); 4.51-5.50=always (100% of the time)

Level of awareness on Climate Change

A crucial component of the international response to climate change is education. Education about climate change enables youth to recognize and respond to the effects of global warming. In addition, it promotes behavioral and attitude modifications and aids in their adaptation to trends associated with climate change. Science curricula now include climate change (Carman et al., 2021) and can foster in young people an interest in the environment, motivation, and a sense of accountability (Asilsoy et al., 2017). In the Philippines, the Department of Education (DepEd) has integrated climate change education into the curriculum for several disciplines, imparting knowledge to pupils on the issue of climate change. To support government efforts to combat climate change, the DepEd has strengthened environmental education in both public and private schools in activities such as class debates, exercises, employ teaching aids, visual aids, teaching guides, and publications to support the training of environmental issues, and creation of the Youth for Environment in School Organizations (YES-O) that will lead in implementing environmental activities in their respective schools.

Since climate change knowledge is seen as a component of formal education about the environment that fosters the growth of informed awareness and a sense of responsibility among the youth. According to Rahman et al. (2014), this kind of awareness is therefore required to direct students' behavior toward coordinated behaviors that improve their actions.

With the advent of social media as a channel of communication for organizations, scientists, and climate activists to reach a global audience to disseminate important information about the state of the climate. It plays a crucial role in increasing awareness on climate change issues. It has the power to shape opinions, attitudes as well as actions. Individuals broadcast daily comments on a variety of subjects, including politics, news, technology, sports, health, and many other topics daily day. These statements have the power to sway those who contain relevant data for the identification or forecasting of real-world phenomenon, whether connected to a worldwide occasion or a neighborhood gathering.

Climate change awareness is an aspect of environmental consciousness. The definition of environmental awareness is the capacity to understand alterations to the immediate surroundings, the reasons behind a disaster's consequences, and the sense of obligation to protect it (Apichhatibutarapong,2018).

The level of awareness to climate change were categorized to association of disasters with climate change, perceived causes of climate change, manifestations of climate change and ways to minimize the effect of climate change. Results show that the students have "high" awareness on association of disasters with climate change ($\bar{x}$=3.69) and perceived causes of climate change ($\bar{x}$=3.63).

This holds true with the study of Rahman et al. (2018) that younger generations are aware of the physical effects of climate change that they perceive. However, are ignorant of

how perceived psychological problems resulting from climate change may influence an individual's overall conduct.

The SHS students believe that in order to minimize the effect of climate change, public/private education should include it in the curriculum ($\bar{x}$=4.51), reduce energy consumption ($\bar{x}$=4.13) and implementation of laws and other legal framework ($\bar{x}$=4.12). In a study conducted in the Philippines in December 2022, 95% of the respondents stated that the most widely known climate change interventions were planting trees, conserving power for the home, and safeguarding forests. Walking, cycling, and using public transit came in second and third, respectively, with 93% of respondents saying they were aware of these options (Balita, 2023).

Table 5.

Level of awareness on climate change

Indicators	Mean	Interpretation
Association of disasters with climate change		
Earthquake	3.28	Moderate
Typhoons	4.51	Very high
Tsunami	3.12	Moderate
Land slides	3.18	Moderate
Epidemic	3.12	Moderate
Coastal/River flood	4.12	High
Drought	4.51	Very high
Sub mean	3.69	*High*
Perceived causes of climate change		
Burning fossil fuels	3.12	Moderate
Transportation (Car, bus, boat, airplanes etc.)	3.58	High
Land clearing/conversion	3.10	Moderate
Poor agricultural practices	3.25	Moderate
Electric generations using fossil fuels	3.78	High
Improper waste disposal	4.32	High
Population explosion	3.78	High
Sub mean	3.63	*High*
Manifestations of Climate Change		
Increase in temperature and decrease in rainfall	4.45	High
Rising food prices	2.38	Moderate
Food insecurity due to low yield	2.15	Moderate
Increased pollution and contaminants ratio	3.15	Moderate
Coastal erosion and rise of sea level	4.00	High
Frequency of natural hazards	4.51	Very high
Decrease of flora and fauna	3.28	Moderate
Increase of diseases	3.12	Moderate
Sub mean	3.38	*Moderate*
Ways to minimize the effect of climate change		
Disaster Management Plans	2.15	Low
Increased Public Awareness using Tri-Media	3.15	Moderate
Public/private education (curriculum)	4.51	Very high
Increase research and development funding for renewable energy	2.26	Low
Reducing energy consumption	4.13	High
Implementation of laws and other legal framework	4.12	High
Sub mean	3.38	*Moderate*
Grand Mean	**3.50**	**Moderate**

Legend: 0.50-1.50=very low; 1.51-2.50=low; 2.51-3.50=moderate; 3.51-4.50=high; 4.51-5.50=very high

Social Media Utilization & Climate Change Awareness

The social media utilization and climate change awareness has low negative correlation and has no significant relationship. The findings indicate that media consumption does have a modest impact on awareness of climate issues and on associated behavioral intentions; however, the results are not susceptible to a straightforward formulaic explanation. Research shows that exposure to climate information on social-media platforms can increase awareness and that individuals can do something to mitigate the problem. However, there is a noticeable lack of accurate climate-change information reaching people through these channels and media outlets do not always have a mobilizing, awareness-boosting impact (Hoppe, & Wolling, 2011). Social media extensively influences users' attitudes, knowledge and perceptions. Social media embraces a group of online activities like blogging, chatting, gaming and instant messaging and even more of this (Boyd & Ellison, 2008).

Table 6.

Relationship between social media utilization and climate change awareness

Pearson's r	-0.18028483
Z score	-0.94713942
P-value	0.17178385

Conclusions

The findings indicated that most of the respondents were female and were members of a medium-sized family with a household income that fell below the poverty line in the province. In terms of social media usage, they are the owners of at least two devices, have three social media accounts, and spend long hours per day scanning various social media platforms. However, they only spend very short hours per day learning about climate change on various social networking sites. In addition, they possess a "moderate" level of awareness regarding climate change, including the association of disasters, the perceived cause, the manifestation, and the methods to mitigate it. Finally, the SHS students in MNHS do not exhibit a significant correlation between their awareness of climate change and their use of social media. But it could be deduced that social media could serve as a powerful media tool in spreading awareness regarding climate change issues among users.

DECLARATION OF CONFLICT OF INTEREST

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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REFERENCES

Arlt, D., Hoppe, I., & Wolling, J. (2011). Climate change and media usage: Effects on problem awareness and behavioural intentions. International Communication Gazette, 73(1-2), 45-63. https://doi.org/10.1177/1748048510386741

Aguilar, K. (2019). Filipinos spend the most time on internet, social media worldwide study. https://technology.inquirer.net/83180/filipinos-spend-themost-time-on-internet-social-media-worldwide-study

Anderson, A. (2017). Effects of social media Use on climate change opinion, knowledge, and behavior. Oxford Research Encyclopedia of Climate Science, Retrieved 2 March, 2020, from https://oxfordre.com/climatescience/view/10. 1093/acrefore/9780190228620.001.0001/acrefore-9780190228620-e-369.

Apichatibutarapong, S. (2018). Factor affecting on public awareness concerning university environment.Proceedings, 2(22), 1369.https://doi.org/10.3390/proceedings2221369

Asilsoy, B., Laleci, S., Yildirim, S.,Uzunoglu, K., & Özden, Ö. (2017).Environmental awareness and knowledge among architecture students in north cyprus. International Journal of Educational Sciences, 19(2–3),136–143.https://doi.org/10.1080/09751122.2017.1393957

Balita, C. (2024). Devices used to access the internet Philippines Q3 2023. https://www.statista.com/statistics/803808/digital-device-usage-among-adults-by-device-philippines/

Bofferding, L. and Kloser, M. (2015). Middle and High School Students' Conceptions of Climate Change Mitigation and Adaptation Strategies. Environ. Educ. Res. 2015, 21, 275 –294

Boyd, D., & Ellison, N. (2008). Social Network Sites: Definition History, and Scholarship. Journal of Computer Mediated Communication, 13, 210 230.

Calista, Y. & Yenni, S. (2023). The Impact of Social Media on Climate Change Perceptions: A Case Study of Indonesian Gen-Z. E3S Web of Conferences. 426. 10.1051/e3sconf/202342601052.

Carman, J., Zint, M., Burkett, E., & Ibáñez, I. (2021). The role of interest in climate change instruction. Science Education,105(2), 309–352

Dryzek, J. (2005). The politics of the earth: Environmental discourses. Oxford; New York: Oxford University Press.

Esakkimuthu, K., and S. Banupriya. (2023). "Awareness about Climate Change Among Students: A Sustainable Future." ComFin Research,vol. 11

Guzmán, C.A.F.; Aguirre, A.; Astle, B.; Barros, E.; Bayles, B.; Moses, C.; El-Abbadi, N.; Evert, J.; Hackett, F.; Howard, C.; et al. A Framework to guide plaetary health education. Lancet Planet Health 2021, 5, 253–255

Hautea, J., Parks, P., Takahashi,B. and Zeng, J (2021). Showing they care (or don't): Affective publics and ambivalent climate activism on TikTok. Social Media + Society

Jiménez-García, M., Pérez-Peña, M.-C., & López-Sánchez, J.-A. (2023). Influence of education and the media on the awareness of climate change (Influencia de la educación y la comunicación en la concienciación sobre el cambio climático). Culture and Education, 35(4), 1001-1036. https://doi.org/10.1080/11356405.2023.2229178

Kemp, S. (2023). Digital 2023: The Philippines. https://datareportal.com/reports/digital-2023-philippines

Monroe, M.C.; Plate, R.R.; Oxarart, A.; Bowers, A.; Willandia, A.; Chaves, W.A. Identifying effective climate change education strategies: A systematic review of the research. Environ. Educ. Res. 2019, 25, 791–812.

Nichols A, Maynard V, Goodman B, Richardson J. Health, climate change and sustainability: A systematic review and thematic analysis of the literature. Environ Health Insights. 2009;3:63–88.

Newman, N., Fletcher, R., Schulz, A., Andi, S., Robertson, C. T., & Nielsen, R. K. (2021). Digital News report. Reuters Institute for the Study of Journalism. Retrieved 22 March, 2022, from https://reutersinstitute.politics.ox.ac.uk/sites/default/files/2021-06/Digital_News_Report_2021_FINAL.pdf

Painter, J., Kristiansen, S., & Schäfer, M. S. (2018). How 'digital-born' media cover climate change in comparison to legacy media: A case study of the COP 21 summit in Paris. Global Environmental Change, 48, 1–10. doi:10.1016/j.gloenvcha.2017.11.003

Parry, M., Rosenzweig, C., Iglesias, A., & Fischer, G. (1999). Climate change and world food security: a new assessment. Global Environmental Change, 9, 51-67.

Rahman, M., Hossain, M., Zaman, M.. & Mannan, M. (2018). Awareness on climate change: Perceived physical and psychological impact among the young generation. least developing country's perspective.Interdisciplinary Environmental Review, 1(19), 91–101. https://www.inderscienceonline.com/ doi/abs/10.1504/IER.2018.089783

Schäfer, M. (2012). Online communication on climate change and climate politics: A literature review. Wiley Interdisciplinary Reviews: Climate Change, 3 (6)

Tsoy, T. Tirasawasdichai, and K. Ivanovich Kurpayanidi. (2021). "Role of social media in shaping public risk perception during COVID-19 pandemic: A theoretical review," Int. J. Manag. Sci. Bus. Adm., vol. 7, no. 2, pp. 35–41, 2021,doi: 10.18775/ijmsba.1849-5664-5419.2014.72.1005.

Vraga, E. , Anderson, A. , Kotcher, J. , & Maibach, E. (2015). Issue-specific engagement: How Facebook contributes to opinion leadership and efficacy on energy and climate issues. Journal of Information Technology & Politics, 12(2), 200–218. doi: 10.1080/19331681.2015.1034910

Zolkepli, I. A., & Kamarulzaman, Y. (2015). Social media adoption: The role of media needs and innovation characteristics. Computers in Human Behavior, 43, 189–209. doi:10.1016/j.chb.2014.10.050