

**ICONSPADU 2021****International Conference on Sustainable Practices, Development and Urbanisation****NOURISH PUBLIC UNDERSTANDING ON CLIMATE CHANGE:  
LESSON LEARN FROM A SOCIAL COURSE**

Khairil Bariyyah Hassan (a)\*, Siti Rahayu Hassan (b), Norazah Mohammad Nawawi (c),  
Naeimah Mamat (d)  
\*Corresponding author

- (a) Centre for Foundation and General Studies, Universiti Selangor, Bestari Jaya, Selangor. Malaysia,  
khbariyyah@unisel.edu.my
- (b) Centre for Foundation and General Studies, Universiti Selangor, Bestari Jaya, Selangor. Malaysia,  
rahayu@unisel.edu.my
- (c) Centre for Foundation and General Studies, Universiti Selangor, Bestari Jaya, Selangor. Malaysia,  
norazah@unisel.edu.my
- (d) Faculty of Engineering & Life Sciences, Universiti Selangor, Bestari Jaya, Selangor. Malaysia,  
naeimah\_mmt@unisel.edu.my

**Abstract**

Climate change is one of the environmental issues happening globally and Malaysia is also affected by the phenomenon. Numerous studies have been done for the past few years to explore the community awareness of climate change issues and educating them towards it. This paper aimed to investigate the levels of community awareness and their level of knowledge of climate change. The study was conducted among the participants of the Webinar on Climate Change that has been organized by a social course, Green Awareness and Sustainability on Community (GASCO), Universiti Selangor (UNISEL). Findings indicate that there is a significant difference among age groups in terms of level of knowledge meanwhile no significant difference in level of awareness. Furthermore, the result shows that there is a strong positive linear correlation between the level of knowledge and the level of awareness with R-value 0.911. This study suggests that education and awareness raising programs should be conducted more frequently among the community. Awareness programs are important to promote social responsibility which in turn can increase the knowledge of the community to achieve a sustainable environment.

2421-826X © 2022 Published by European Publisher.

*Keywords:* Climate Change, Community Awareness, Sustainable Education, Sustainable Development Goals (SDG)

## **1. Introduction**

Climate change issue becoming important issue over the world and Malaysia also effected by the phenomenon. Agriculture, forestry, biodiversity, water resources, coastal and marine resources, public health, and energy are among the most affected sectors in Malaysia (Tang & Ho, 2018). Awareness towards this issue should be spread and increases especially among the youngest and university students. This generation will be the future leaders, and they need to understand the issue to make sure the environment sustainable and healthy. The role of higher learning institution is considered the main contributor to build the awareness among the students and local community. Besides that, the media social also plays the important role in propagate the current news on the climate change issue to the community. As reported by the Sun Daily in August 2021, the contributing factors such as natural resource management, population growth, urbanisation, deforestation, and development planning occur the natural disasters on a larger scale would be the impact of climate change. Human behaviour and knowledge should be highlighted in spreading awareness towards protecting climate change (Abd Hamid et al., 2021).

2019 was the second warmest year and the end of the warmest decade (2010- 2019) ever recorded as reported by NASA and the National Oceanic and Atmospheric Administration (NOAA) on 15<sup>th</sup> January 2021. As a result, carbon dioxide (CO<sub>2</sub>) levels and other greenhouse gases in the atmosphere rose to new records in 2019. Climate change is affecting every country on every continent. It is disrupting national economies, affecting lives, agriculture, water resources and world ecosystem (Raimi et al., 2021). Weather patterns are changing, sea levels are rising, and weather events are becoming more extreme. Although greenhouse gas emissions are projected to drop about 6 percent in 2020 due to travel bans and economic slowdowns resulting from the COVID-19 pandemic, this improvement is temporary. Moreover, climate change is not on pause. Once the global economy begins to recover from the pandemic, emissions are expected to return to higher levels.

The Paris Agreement, adopted in 2015, aims to strengthen the global response to the threat of climate change by keeping a global temperature rise this century well below 2 degrees Celsius above pre-industrial levels. The agreement also aims to strengthen the ability of countries to deal with the impacts of climate change through appropriate financial flows, a new technology framework, and an enhanced capacity-building framework.

As with many other developing and coastal nations, Malaysia will disproportionately bear the brunt of climate change's consequences, despite being minimally responsible for changing the climate.

### **1.1. Sustainable Education**

One of the approaches to make the future generation aware of sustainability, by initiate the Green Campus concept. Universiti Selangor are working towards Green Campus concept by improve the infrastructure, lake, hostel, environment and many more. According to Mohammad Imam Hasan Reza (2016), there are many domains such as curriculum, pedagogy, extracurricular and campus-based activities should be included in the education systems to develop a sustainable education in teaching and learning proses. Recently, there are much research on the sustainable education to identify the potential

approach in developing the sustainable module or subject in higher learning institution. Education for Sustainable Development (ESD) means the institution include the sustainable issues in teaching and learning for example climate change, poverty, biodiversity, disaster risk and many more (Reza et al., 2016).

Education stakeholders in many countries have to develop an education framework regarding climate change issue to spread the awareness of sustainability and encourage students to involve in sustainability projects with community (Mochizuki & Bryan, 2015). One of the main components of the Malaysian Education Blueprint 2015 - 2025 is sustainable development and the ESD has progressed well in Malaysian education institution where every higher education institution in Malaysia has taken the initiatives to develop more sustainable and green programmes, and campus (Mokshein, 2019). Education stakeholders in many country

Sustainability awareness can be develop through education programs contains sustainability knowledge and information in order to enhance the students' awareness and interest towards climate change and sustainability issues (Mojilis, 2019).

## **1.2. Student Awareness and Knowledge on The Impact of Climate Change**

In the study of Awareness on Sustainable Development Goals (SDG) among University Students in Malaysia, 28.6% of the sample respondents had ranked SDG 13 (Climate Action) as one of the top five most essential SDGs which Malaysia should accomplish (Ang, 2021). The findings showed that they do have awareness about climate change, green campus concept nevertheless the problem of global warming also known as climate change. This understanding should be resolved among the university students.

The study on level of awareness and knowledge with practice among university students were done by Afroz and Ilham (2020) in one of the higher learning institutions in Malaysia. Result of the study showed that awareness level of their students is high knowledge with positive attitude. This result describe that the environmental strategic approaches and intervention programs organised by the university gave the positive impact towards students' awareness and practicing actions aligned with SDGs (Afroz & Ilham., 2020).

This is supported by Lee et al. (2015), who show how public awareness and other important factors related to climate change demonstrate the importance of each country developing its own climate communication strategy. Korkmaz (2018), on the other hand, agreed that education has aided in raising awareness of climate change. Awareness among the university's student in Malaysia represented through the programs go green campus that have been done in many universities here to achieve the mission of reducing carbon dioxide emission with respects to the global climate change issue (Najad et al., 2018).

Another aspect that contributes to the public's understanding of climate change is the public's attitude toward climate change. Boyes and Stanistreet (2012) identified a so-called knowledge-behavior gap in which the direct relationship between knowledge and behaviour could not be determined. This is because having a positive attitude on climate change and taking action also influences behaviour. Barreda (2018) demonstrate level of awareness on climate change and sustainable development through a survey among students of Partido State University in Philippine, finding that they have much awareness on

climate change. This awareness was enhanced by the university through education programs, mass media, trainings, and seminar workshops.

## **2. Problem Statement**

Awareness of the importance of environmental care is still lacking among the community, especially on its effects involving climate change. Indirect climate change in the long run has a lot of adverse effects on all living organisms in the environment. Who should be blamed and held accountable? All individuals are responsible in playing a role in caring for the environment which should be cultivated from the very beginning in the early childhood education stage and reminders should always be given to the community. As the middle class and educated group, tertiary students should be an agent to the delivery of information. Therefore, the level of awareness of university students should be tested to see the extent of their understanding and awareness of environmental care.

## **3. Research Questions**

The present study focuses on climate change awareness and knowledge among university students, with UNISEL students participating as the case study respondent. This study is guided by the following research questions:

- i. What is the impact of the GASCO Program in terms of influencing university students' knowledge of environmental issues and climate change?
- ii. What is the level of knowledge and awareness of environmental issues and climate change among university students in GASCO 2021?
- iii. Is there an association between the level of knowledge and awareness of environmental and climate change among university students?
- iv. Is there a difference in the level of knowledge and awareness of environmental issues and climate change among university students based on their age?
- v. Is there a gender gap in university students' knowledge and awareness of environmental issues and climate change?

## **4. Purpose of the Study**

Studies on green awareness and sustainability of the environment, especially the community knowledge and awareness of climate change, should be empowered to show the impact on people's lifestyle, in terms of education, socio-economy, and politics, especially among university students. For that reason, this research aims to investigate whether the GASCO Program has a favourable influence on increasing the level of awareness among university students on environmental issues and climate change. Besides that, these studies the level of knowledge and examine community awareness regarding climate change that gives impact to their lives involving student life.

## **5. Research Methods**

### **5.1. Research Design & Sampling**

The methodology of this study was a quantitative research approach, using an online survey instrument to measure the two main variables of the study, namely level of knowledge, and level of awareness (Zulfaka & Kassim, 2021). The climate elements emphasized in these variables were illegal logging, hill station, land clearing, water and air pollution, mining, and illegal waste disposal. The study involved the diploma and bachelor students from Green Awareness and Sustainability in Community (GASCO) subject who attended the online Webinar on Climate Change issue organised by GASCO at Universiti Selangor (UNISEL) in Bestari Jaya, Selangor Malaysia. The total participant joined the webinar is 217, but the target is UNISEL students who joined the GASCO program only. The selection of this study location was because this university is an institution that offers GASCO subjects starting in April 2020.

### **5.2. Data Collection Procedure**

Data collection method involved pre and post-tests. The pre-test was given before the webinar started and the post test was after the webinar ended. Multiple choice questions in this questionnaire used Likert scale and closed questions to figure out the climate change awareness, level of knowledge and the accessibility to climate change information sources. The questionnaire comprised three sections. Section A collects the necessary respondent's demographic information such as gender, age, education background and name of university. The webinar was also attended by other university students. This will help researchers to enable the preliminary analysis. Section B started off with respondents was asked if they heard of the concept and issue of climate change to examine the climate change knowledge (Abas et al., 2017). Meanwhile section C covered the questions on awareness of climate change issue among university students. An analysis of the issue of climate change awareness is conducted to reveal their awareness of the phenomenon.

### **5.3. Data Instrument**

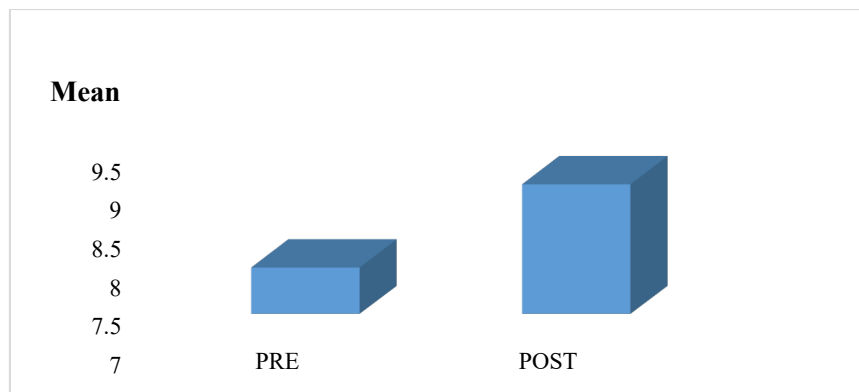
The data from the questionnaire were then analysed statistically using SPSS software (version IBM SPSS Statistics 26). To present each respondent's demographic information, descriptive statistics such as frequency, percentage, mean, and standard deviation were used. To determine statistically significant differences between groups, an independent t-test, one-way analysis of variance (ANOVA), and LSD's multiple comparisons post-test were used. Pearson Correlation was used to determine the relationship between the factor and the response. For all tests, only data with P-values less than 0.05 were considered statistically significant.

## 6. Findings

This section discusses and analyses the output of webinar conducted by Green Awareness and Sustainability in Community (GASCO) subject to the level of knowledge and awareness towards climate change issue among UNISEL students. The primary goal of this research is to determine whether the GASCO Program has a positive impact on increasing university students' knowledge of environmental issues and climate change. Only 30 UNISEL students completed the questionnaire via Google form prior to and after the webinar.

### 6.1. The Impact of the GASCO Program

Figure 1 depicts the mean level of knowledge before and after the GASCO webinar. The figure shows that after attending the webinar, the level of knowledge is higher than before attending the webinar. A paired samples t-test was used to determine whether there was a difference before and after attending the GASCO Webinar. The results in Table 1 show that there is a significant difference ( $p - value = 0.017 < \alpha = 0.050$ ) in students' knowledge levels before and after the webinar. Students' knowledge is greater after the webinar than before it, with a mean difference of -1.067 between the two. The paired sample correlations also show that the level of knowledge before and after the GASCO programme is significantly positive linearly correlated with *pearson correlation coefficient* = 0.68,  $p - value = 0.000 < \alpha = 0.050$ .



**Figure 1.** Mean Level of Knowledge for Pre-Post GASCO 2021

**Table 1.** Paired T-Test for Effectiveness of GASCO Webinar in the Mean Level of Knowledge

Paired Difference	N	Mean	Correlation	p-value	Decision	Mean Paired Difference	p-value	Decision
PRE	30	8.00	0.70	0.000	Significant positive correlation	-1.067	0.017	Significant paired difference
POST	30	9.07						

## 6.2. Association Between the Level of Knowledge and Awareness of Environmental and Climate Change Among University Students

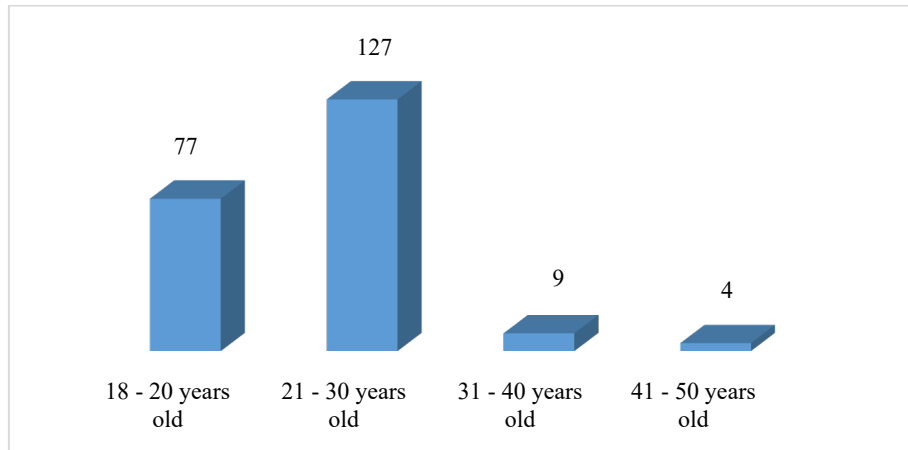
The study's goal is to use Pearson correlation coefficients to assess the relationship between Unisel students' knowledge and awareness of environmental changes and climate change. The Pearson correlation coefficient is denoted by the letter 'r' in statistical texts. The range of r values is -1.0 to +1.0. According to Table 2, among Unisel students, there is a very strong positive linear correlation ( $p - value = 0.008 < \alpha = 0.050$ ) between the score of Knowledge and the score of Awareness towards environmental changes and climate change.

**Table 2.** Pearson Correlation Test

		Level of Awareness
Level of Knowledge	Pearson Correlation	0.911
	p-value	0.008
	N	217

## 6.3. Level of knowledge and awareness of environmental issues towards climate change among university students

Only post-webinar data (feedback or response after attending the GASCO Program) will be evaluated for the following criteria, with a total of 217 students responding to the survey. Another goal is to assess whether there is a difference in the level of knowledge and awareness about environmental concerns and climate change among university students according to their age. The age distribution of the UNISEL students who participated in the GASCO webinar is depicted in Figure 2. There are 77 participants between the ages of 18 and 20 years old, 127 individuals between the ages of 21 and 30 years old, 9 participants between the ages of 31 and 40 years old, and 4 people between the ages of 41 and 50 years old. Because there are more than two groups in the age component, the ANOVA test was utilised. The findings in Table 3 indicate that there is no statistically significant variation in their level of awareness dependent on their age. Meanwhile, the level of knowledge of environmental and climate change among UNISEL students varies significantly depending on their age group in respect to these concerns. Specifically, the post-hoc LSD multiple comparison test was used to make precise comparisons between age groups that are completely different in terms of their level of awareness about environmental issues and climate change. Table 4 summarises the findings. Students between the ages of 18 and 20 years old have a different level of knowledge than students between the ages of 31 and 40 years old and between the ages of 41 and 50 years old. Students between the ages of 18 and 20 years and those between the ages of 21 and 30 years have same knowledge.



**Figure 2.** Age Distribution

**Table 3.** ANOVA Test

Variable	Categories	Knowledge		Awareness	
		p-value	Decision	p-value	Decision
Age	18 - 20 years old	0.016	Significant	0.256	Not Significant
	21 - 30 years old				
	31 - 40 years old				
	41 - 50 years old				

**Table 4.** Finding Summarization

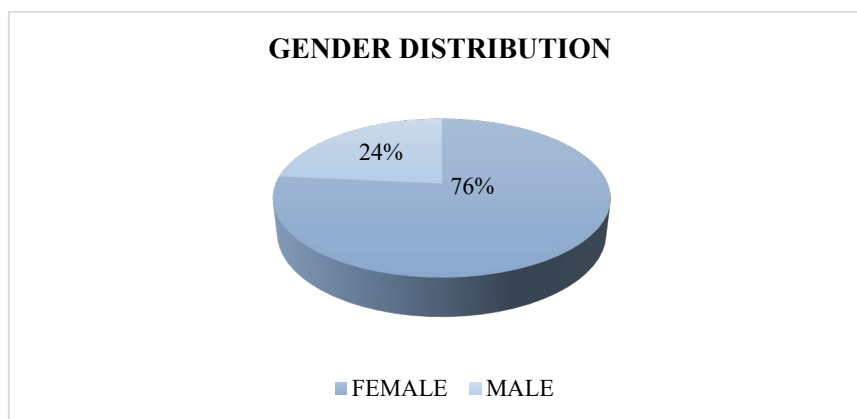
(I) AGE GROUP	(J) AGE GROUP	Mean Difference (I-J)	p-value
18 - 20 years old	21 - 30 years old	-0.20121	0.159
	31 - 40 years old	-.76960*	<b>0.028</b>
	41 - 50 years old	-1.25108*	<b>0.014</b>
21 - 30 years old	18 - 20 years old	0.20121	0.159
	31 - 40 years old	-0.56839	0.096
	41 - 50 years old	-1.04987*	<b>0.037</b>
31 - 40 years old	18 - 20 years old	.76960*	<b>0.028</b>
	21 - 30 years old	0.56839	0.096
	41 - 50 years old	-0.48148	0.417
41 - 50 years old	18 - 20 years old	1.25108*	<b>0.014</b>
	21 - 30 years old	1.04987*	<b>0.037</b>
	31 - 40 years old	0.48148	0.417

#### 6.4. Gender Gap in University Students' Knowledge Towards Awareness of Environmental Issues and Climate Change

Furthermore, we want to know whether gender influences UNISEL students' knowledge of environmental and climate change issues. Figure 3 depicts the gender distribution. Sixty-six percent of participants are female students, which equals 166 students, and twenty-four percent are male students, which equals 51 students. The independent t-test was used to test the mean difference for two independent variables with knowledge and awareness of environmental and climate change issues among UNISEL



students. According to the Table 5, there is no statistically significant difference in the level of knowledge and awareness of environmental and climate change issues among male and female UNISEL students.



**Figure 3.** Gender Distribution

**Table 5.** Independent Sample t-Test

Variable	Categories	N	Mean Level of Knowledge	Mean Difference	p-value	Decision	Mean Level of Awareness	Mean Difference	p-value	Decision
Gender	Male	51	2.5294	-0.077	0.632	Not significant	12.1732	0.628	0.378	Not significant
	Female	166	2.6064				11.5452			

## 7. Conclusion

Climate change is becoming a major concern around the world, and Malaysia is no exception. This issue's awareness should be spread and increased, particularly among the young and university students. This generation will be the future leaders, and they must understand the issue to ensure the environment's long-term viability and health. The role of higher learning institutions is regarded as the primary contributor to raising awareness among students and the local community. Furthermore, social media plays an important role in disseminating current news on the climate change issue to the community. Natural disasters occur on a larger scale because of contributing factors such as natural resource management and development planning. Human behaviour and knowledge should be highlighted to raise awareness about climate change protection.

Studies on green awareness and environmental sustainability, particularly community knowledge and awareness of climate change, should be empowered to demonstrate the impact on people's lifestyles in terms of education, socioeconomics, and politics, particularly among university students. As a result, the purpose of this study is to determine whether the GASCO Program, which was organised by Universiti Selangor, has a positive impact on increasing the level of awareness among university students about environmental issues and climate change. Furthermore, these studies investigate the level of knowledge and community awareness regarding climate change, which has an impact on their lives as students.

As a concluding remark, green programmes such as the GASCO Webinar have a significant impact on increasing university students' awareness of environmental issues and climate change. The students' knowledge is better after the webinar than before it. Students' participation is related to their knowledge level both before and after the programme. Furthermore, there is a very strong positive linear correlation between the Knowledge score and the Awareness score toward environmental changes and climate change. Students' awareness corresponds to their knowledge. This means that if students have a high level of knowledge, they will be more aware of environmental changes and climate change, and vice versa.

Meanwhile, in terms of environmental and climate change concerns, the level of knowledge among UNISEL students varies significantly depending on their age group. Students between the ages of 18 and 20 have a different level of knowledge than students between the ages of 31 and 40, and students between the ages of 41 and 50. Students between the ages of 18 and 20 have the same knowledge as those between the ages of 21 and 30. Participants aged 18-20 years are foundation and diploma students, while those aged 21-30 years are degree students. Most participants between the ages of 31 and 40, and 41 and 50, are master's and PhD students, respectively. Furthermore, gender has no effect on UNISEL students' understanding of environmental and climate change issues.

Future research should evaluate the influence of climate change on the non-student and student groups. Future research should also aim to evaluate more precise data on climate change knowledge, awareness, perceptions, and attitudes to facilitate more detailed analyses.

## Acknowledgments

The authors express gratitude to students of the Green Awareness & Sustainability in Community (GASCO) subject who joined the Webinar of Climate Change Issue conducted in 2020, GASCO lecturers, secretariats of the webinar, and the management of Centre for Foundation & General Studies, University Selangor for assistance in data collection for this study.

## References

- Abas, N., Daud, Z. M., Mohamed, N., & Halim, S. A. (2017). Climate change impact on coastal communities in Malaysia. *Journal of Advanced Research Design*, 33(1), 1-7. [http://eprints.utm.my/id/eprint/80417/1/NorzaidaAbas2017\\_ClimateChangeImpactonCoastalCommunities.pdf](http://eprints.utm.my/id/eprint/80417/1/NorzaidaAbas2017_ClimateChangeImpactonCoastalCommunities.pdf)
- Abd Hamid, I., Yahaya, W. A. W., & Rahim, H. (2021). Assessment of Awareness and Behaviour Among Secondary School Students on Climate Change. *Malaysian Journal of Social Sciences and Humanities (MJSSH)*, 6(6), 259-264. <https://doi.org/10.47405/mjssh.v6i6.829>
- Afroz, N., & Ilham, Z. (2020). Assessment of knowledge, attitude and practice of University Students towards Sustainable Development Goals (SDGs). *The Journal of Indonesia Sustainable Development Planning*, 1(1), 31-44. <https://doi.org/10.46456/jisdep.v1i1.12>
- Ang, S. M. (2021). Awareness on sustainable development goals among university students in Malaysia. *Asian Journal of Research in Education and Social Sciences*, 3(1), 105-116.
- Barreda, A. B. (2018). Assessing the level of awareness on climate change and sustainable development among students of Partido State University, Camarines Sur, Philippines. *Journal of sustainability education*, 17, 1-17. <http://www.susted.com/wordpress/wp-content/uploads/2018/02/Barreda-JSE-Feb-2018-Arts-Issue-PDF.pdf>

- Boyes, E., & Stanisstreet, M. (2012). Environmental Education for Behaviour Change: Which actions should be targeted? *International Journal of Science Education*, 34(10). <https://doi.org/10.1080/09500693.2011.584079>
- Korkmaz, M. (2018). Public awareness and perceptions of climate change: Differences in concern about climate change in Turkey's west Mediterranean region. *Applied Ecology and Environmental Research*, 16(4), 4039–4050. [https://doi.org/10.15666/aecer/1604\\_40394050](https://doi.org/10.15666/aecer/1604_40394050)
- Lee, T. M., MarACSIwitz, E. M., Howe, P. D., Ko, C. Y., & Leiserowitz, A. A. (2015). Predictors of public climate change awareness and risk perception around the world. *Nature Climate Change*, 5(11). <https://doi.org/10.1038/nclimate2728>
- Mochizuki, Y., & Bryan, A. (2015). Climate change education in the context of education for sustainable development: Rationale and principles. *Journal of Education for Sustainable Development*, 9(1), 4-26.
- Mojilis, F. (2019). Sustainability awareness of students from a green university in Sabah, Malaysia. *Journal of Tourism, Hospitality and Environment Management*, 4(13), 24-33. <http://www.jthem.com/PDF/JTHEM-2019-13-03-04.pdf>
- Mokshein, S. E. (2019, June). Education for Sustainable Development (ESD) in Malaysia: Policy, program and evaluation. In *Proceedings of the 3rd International Conference on Current Issues in Education (ICCIE 2018)*. Atlantis Press.
- Murray Hunter (2021, August 25) Climate Change Issues Revisited. *The Sun Daily*. <https://www.thesundaily.my/opinion/climate-change-issues-revisited-NM8248852>
- Najad, P. G., Ahmad, A., & Zen, I. S. (2018). Approach to environmental sustainability and green campus at Universiti Teknologi Malaysia: A Review. *Environment and Ecology Research*, 6, 203-209. <https://doi.org/10.13189/eer.2018.060307>
- Raimi, M. O., Vivien, O. T., & Oluwatoyin, O. A. (2021). Creating the Healthiest Nation: Climate Change and Environmental Health Impacts in Nigeria: A Narrative Review. *Scholink Sustainability in Environment*, 6(1). <https://doi.org/10.22158/se.v6n1p61>
- Reza, M. I. H. (2016). Sustainability in higher education: Perspectives of Malaysian higher education system. *Sage Open*, 6(3), 2158244016665890. <https://doi.org/10.1177/2158244016665890>
- Tang, D., & Ho, K. (2018). Climate change in Malaysia: Trends, contributors, impacts, mitigation and adaptations Article in Science of The Total Environment. *Science of the Total Environment*, 650. [https://www.researchgate.net/profile/Siti-Eshah-Mokshein/publication/334622389\\_Education\\_for\\_Sustainable\\_Development\\_ESD\\_in\\_Malaysia\\_Policy\\_Program\\_and\\_Evaluation/links/5f45bc48a6fdcccc43058b36/Education-for-Sustainable-Development-ESD-in-Malaysia-Policy-Program-and-Evaluation.pdf](https://www.researchgate.net/profile/Siti-Eshah-Mokshein/publication/334622389_Education_for_Sustainable_Development_ESD_in_Malaysia_Policy_Program_and_Evaluation/links/5f45bc48a6fdcccc43058b36/Education-for-Sustainable-Development-ESD-in-Malaysia-Policy-Program-and-Evaluation.pdf)
- Zulfaka, A., & Kassim, S. (2021). Climate Change Awareness and Risk Perception Among Financial Institutions Employees In Kuala Lumpur. *Management*, 6(23), 22-34. <http://www.jthem.com/PDF/JTHEM-2021-23-06-03.pdf>