Green Technology Awareness Among Lembaga Pertubuhan Peladang (LPP) Staff

Kesedaran Teknologi Hijau Dalam Kalangan Staf Lembaga Pertubuhan Peladang (LPP)

Nurul Esly Binti Sabiran
Jabatan Perdagangan, Politeknik Merlimau
Merlimau, Melaka
nurulesly@pmm.edu.my

Hadijah Binti Kodiron
Jabatan Perdagangan, Politeknik Merlimau
Merlimau, Melaka
hadijah@pmm.edu.my

Abstract — The scope of this research is to survey the level of awareness on green technology among the staff at Lembaga Pertubuhan Peladang Negeri (LPP) Melaka and Johor. The purpose of this paper is in the aspect of understanding, practice and the importance of green technology. This research is a descriptive survey research. The quantitative data is collected by using the Questionnaire of The Awareness on Green Technology Among the Staff at Lembaga Pertubuhan Peladang Negeri (LPP). The questionnaires were distributed randomly and collected from 186 research samples. The reliability and validity of the questionnaires have been tested with the value of Cronbach Alpha of 0.89. The data that has been collected from the respondents is analyzed using SPSS software to obtain frequencies, percentage and mean score. A hypothesis testing using T-test at the significant level α = 0.05, is also analyses to indicate whether there is a significant difference between the level of knowledge and practice among LPP Melaka and LPP Johor staff. In conclusion, the level of awareness on green technology in the aspect of understanding, practice and importance is high among the LPP staff. There is no significant difference on the awareness of understanding and importance of green technology among both LPP Melaka and Johor staff. However, there is a significant difference on the practice of green technology among them. The high level of awareness will help to ease the initiatives that shall be conducted to realize green technology programs especially in in Malaysia.

Keywords— Green technology, LPP Staff

I. INTRODUCTION

Malaysia is a country that is very concerned about the environment. In the context of Islam itself, Islam asserts that men should not do any damage to the environment. Now, the phenomenon of global warming has sparked worldwide concern. Global warming has caused the extinction of flora and fauna, sea level rises due to polar glaciers, desert areas and some widening of natural disasters such as earthquakes, floods and drought. Therefore, various governmental and non-governmental organizations were first established such as World Wide Foundation (WWF) at the global level to support efforts to give priority to environmental issues. While in Malaysia, the Ministry of Energy, Green Technology and Water (KeTTHA) was established on 9 April 2009 to replace the Ministry of Energy, Water and Communications. KeTTHA establishment is in line with the government's agenda to address environmental problems and promote economic growth.

The environment is also one of the indexes taken into account in the Quality of Life Report released by the Economic Planning Unit (EPU). In the period from 2006 to 2009 sub-index of environmental deterioration is caused by the haze in Southeast Asia. The introduction and implementation of policies for protecting the environment, such as National Environment Policy, National Green Technology Policy and National Climate Change Policy is the government's commitment towards sustainable development.

Green technology refers to the development and application of products, equipment and systems for protecting the environment and nature, and minimize or mitigate the negative effects of human activities. In short, green technology refers to products, equipment or systems that meet the following criteria, namely maximizing environment quality, lower greenhouse gas emissions or to zero and provides a healthier environment and a better life for all. In addition, green technology saves energy, natural resources and promotes sources of renewable energy.

The key sectors of green technology comprise four main areas of energy, which are buildings, water and waste management, and transportation. These sectors have been emphasized as Malaysia is facing a challenge in ensuring sustainable development and sustainable. Among the challenges of environmental management, includes urban air quality, water quality, deforestation, domestic waste and hazardous waste. This role should be played by all players in the industry, operators and manufacturers. The economy can also be enhanced through the use of social technology and to improve the quality of life for all people.

Melaka is a state of green technology. Various programs and projects that have been implemented include establishing Majlis Teknologi Hijau Negara & Perubahan Iklim (MTHPI), eco-labeling, Municipal Green, Green Technology Studies and Smart Cooperation. Eco-labeling is a joint venture of SIRIM Berhad as a program developer together with Malaysian Green Technology Corporation (GreenTech Malaysia), which has been given the responsibility to implement the Green Procurement Pilot Program and Eco Labelling. The program

began in August 2010. The Eco Labelling is a voluntary scheme, established to encourage the business sector to produce products that are environmental friendly as well as to help consumers to identify products that are environmental friendly. Green Township is one of the initiatives of the Ministry in incorporating all major sectors in order to make it as a pilot project Municipal Green will be the model for the development of other cities in Malaysia. Smart collaboration is one of the strategies in strengthening the National Green Technology agenda. This intelligent cooperation includes cooperation in the international, national, state and local level.

II. PROBLEM STATEMENT

The establishment of the National Green Technology Council (MTH) is a high-level platform to coordinate issues concerning green technology between the Ministry, the private sector and other stakeholders. Cabinet in its meeting on 20 November 2009 agreed to a proposal that the Cabinet Committee on Climate Change and the Environment under the Ministry of Natural Resources and Environment (NRE) merged with the National Green Technology Council under the Ministry of Energy, Green Technology and Water (KeTTHA). The main function of this ministry is, to formulate policies and identify strategic issues in the development of green technology policy and climate change and to coordinate, monitor and evaluate the effectiveness of the implementation of the National Green Technology Policy and programs for green technology and climate change at the national level. Among the programs carried out under the supervision of this ministry is the Eco Labelling, green technology research and intelligent cooperation at the national level, local governments up to the international level.

In the Tenth Malaysia Plan (RMK10), there are three levels of goals set in the National Green Technology Policy . Short-term goals in RMK 10th state research institutes and institutions of higher education must develop research, development and innovation activities on green technology towards commercialization through appropriate mechanisms. For medium term goals in the 11MP, it expects an increase in research and development and innovation in green technology by local universities and research institutions besides commercialized in collaboration with local industry and multinational corporations. Meanwhile, long-term goal in the 12th Plan period also expect consistent improvement in international cooperation between local universities and research institutions with Green Technology Industries.

The study of green technology that has been carried out by [6] at Universiti Putra Malaysia (UPM) said that early education at the primary level is seen as one method to cultivate values, positive attitudes and practices regarding environmental responsibility. The study found that users have a moderate level of green practices. This is due to the level of earning information that was only focused on printed media and electronic media. Users are not willing to pay more for green products. Therefore, more practices of green technology should be enhanced in line with the environmental campaigns that have been carried out by the government. Other campaigns that can be recommended is as 3R practices, which are reduce, reuse and recycle and the application of knowledge about environmentally friendly products.

According to [1], there are also other studies carried out, indicating that the level of public awareness of green technology has not yet reached a satisfactory level. It is proven with many factories that emit harmful black smoke, increasing number of fuel consumption of motor vehicles, more nature is destroyed, dirty rivers and the increasing of carbon release into the air.

The findings by Siti Rohani Johar in Green Technology Awareness in Universiti Tun Hussein Onn Malaysia (2013), shows that the level of knowledge of the management UTHM is high (mean = 3.62) , teaching is moderate (mean = 3.25) and for students is also moderate (mean = 3.27). To test the hypothesis using one-way ANOVA at the significant level $\alpha = 0.05$, it indicates that there was a significant difference between the level of knowledge and practice of the three groups of respondents. This study concluded that the level of awareness of the knowledge and practice are moderate.

Since environmental problems are increasing, the needs to create a generation who are aware of the responsibility in preserving the environment is very important. The Melaka state government has set up a Majlis Teknologi Hijau Malaysia Melaka on 16 May 2011 in order to realize the vision of Melaka Green Technology City by 2020, chaired by the Chief Minister of Malacca. To realize this goal, all state government departments, agencies and statutory bodies have been instructed to set up a committee of green technology in their organization level. This committee will be responsible for ensuring the development and application of green technology and green practices into every organization's working culture.

Lembaga Pertubuhan Peladang (LPP) is directly involved in the successful implementation of green technology as LPP is heavily involved in the agricultural sector. Thus, many programs are focused on agricultural activities. In Melaka, there are a number of actions that have been taken to achieve the vision of Green Technology State in 2020. Among them are the *Kempen Tanaman Dapur* and organic farming practices. Campaigns are carried out to create awareness on safe food that is planted by themselves. Participants will be given a basic course to grow vegetables at home. In collaboration with Jabatan Pertanian, participants will be provided with a set of free tools and they are facilitating to apply what they have learned. Participants who are involved came from the various groups, including school children and villagers. Besides saving kitchen expenses, it also helps reduce the use of packaging materials when shopping for groceries and help preserve the environment. The practice of organic agriculture is one of the methods in agriculture carried out without the use of chemicals. The resulting crop is free from chemicals like pesticides and hormones. The materials used came from residual organic waste generated by the kitchen. Using the guidelines given, the rest will serve as organic pesticides and organic fertilizers. This practice helps reduce

residual household waste and helps the state save on the cost of solid waste management.

Various campaigns and programs have been implemented to realize the understanding, practice and importance of green technology at various levels. Implementation also involved various scope and methods to help enhance awareness. However, it is in need of committed organizations and individuals to produce the desired results. The importance of green technology is absolutely irrefutable to create and maintain environmental sustainability. This is supported by various programs and initiatives that have been articulated by the government or private parties. However, does the public have a clear understanding of green technologies?

III. OBJECTIVES

The objectives of the study are to;

i. identify the level of understanding of green technology among the Lembaga Pertubuhan Peladang (LPP) staff.

ii. identify the level of practice of green technology among the Lembaga Pertubuhan Peladang (LPP) staff.

iii. identify the awareness on the importance of green technology among the Lembaga Pertubuhan Peladang (LPP) staff.

iv. identify whether there is a significant difference between the awareness of green technology among LPP Melaka and LPP Johor staff.

IV. RESEARCH QUESTIONS

i. What is the level of understanding of green technology among the staff of Lembaga Pertubuhan Peladang (LPP)?

ii. What is the level of practice of green technology among the staff of Lembaga Pertubuhan Peladang (LPP)?

iii. What is the level of awareness on the importance of green technology among the staff of Lembaga Pertubuhan Peladang (LPP)?

iv. Whether there is a significant difference between the awareness of green technology among LPP Melaka and LPP Johor staff.

Hypothesis

H_o - There is no significant difference between the awareness of green technology among LPP Melaka and LPP Johor staff.

H_1 – There is a significant difference between the awareness of green technology among LPP Melaka and LPP Johor staff.

V. METHODOLOGY

A. Research design

This study is a descriptive study using a survey questionnaire as a tool to gather information. According to [5], survey research is often carried out in educational research. In addition, a survey study can explain the characteristics of a population. It aims to learn, analyze on define the problems and phenomenon of current situation.[7]. According to [7], a survey is useful when researchers want to collect data relating to the phenomenon that is not observed directly. It is also often used to determine the attitudes, beliefs, values demographics, behaviors, thoughts, habits, desires ideas and other information pertaining to a group of people .

In this study, an instrument that will be used to collect data is to use the Questionnaire Green Technology Awareness Among Staff Lembaga Pertubuhan Peladang (LPP) Staff. According to Noraini Kaprawi in Noraini Idris (2010), questionnaire is an instrument that can reduce expenses, time and energy in collecting data.

This questionnaire is divided into two parts, Part I and Part II. Part I contains the questions about the respondents' background such as gender, age, race and academic qualification. Part II consists of 3 parts representing eight questions for each of the variables tested on the awareness of green technology from the point of understanding, practice and importance using Likert Scale as the option of respondents to choose the item related to the objectives.

C. Validity and Reliability

The questionnaire was tested for validity and reliability to ensure that the questions really can test the response variable. Validity refers to measure what should be measured (Chap Sam and Lim Chee Kim Mang, in Noraini Idris, 2010). Generally, if the probe has high validity it means that the findings are based on facts or evidence and are able to provide proper justification.

Reliability in quantitative research refers to two situations, namely consistency in size even though repeated several times and a measure of stability at all times. In this study, item questionnaire that will be built for the purpose of the study will be tested in a pilot study of a sample population. This pilot study data will be analyzed using the computer program SPSS (Statistical Package for the Social Science) for Microsoft Windows Release 18.0.

To meet the needs of validity and reliability, a pilot study was conducted on the questionnaire that has been developed. This pilot study was designed to assess the reliability of the questions submitted by correcting any errors contained in these items. For this purpose a total of 20 staff of Lembaga Pertubuhan Peladang (LPP) was selected to answer the questions in the Questionnaire of Awareness of Green

technology Among Lembaga Pertubuhan Peladang (LPP) Staff.

Guilford and Fruchter (1956) in Noraini Idris (2010) suggested that an internal reliability index is the most complete test if a value of about 0.7. According to Pallant (2001) in Noraini Idris (2010), the value of the index alpha of 0.7 or above is good for instrument scale with ten or more items , while the alpha value of 0.5 is considered good for the instrument scale with less than ten items.

In this study the reliability of the questionnaire were analyzed in terms of the level of awareness in terms of the understanding, practice and importance. For the understanding of green technology, Alpha value is 0.611, while for the practices and importance of green technology Alpha value respectively 0.830 and 0.803.

D. Data Collection Method

Data were collected through primary data. It is raw data obtained through the questionnaires that were distributed by the researcher. Questionnaires are formed based on the objectives of the study for the purpose of collecting data. Questionnaires were distributed and administered by the researcher. The aim is to prevent dropout and loss of the questionnaire. For this purpose, a questionnaire will be numbered to ensure that all questionnaires were collected.

E. Population and Sample

The population consisted of all staff of Lembaga Pertubuhan Peladang (LPP) Melaka and Johor, a total of 186 staff. The staff have been randomly selected as samples using simple random sampling. By using this method, each member of the population has an equal chance of being selected as a sample. This is also a great way to get a sample from a large population size. Simple random sampling is an advantage in a large sample, the sample will be representative of the population.[7].

VI.   RESULT AND DISCUSSION

Data interpretation has resulted in the mean value of a group of respondents according to research objectives. In order to the objectives of the research mean value is interpreted based on Table I.

TABLE I : ADAPTATION FROM [3]

Mean score	Interpretation (Level)
1.00 – 2.33	Low
2.34 – 3.66	Average
3.67 – 5.00	High

A.   Analysis of Understanding Variable

The division consists of eight questions related to the understanding of the staff at LPP Melaka towards green technology. The data were analyzed using mean values. Table II shows that the mean score for the first research question about the level of understanding is 4.10. This gives the interpretation that the respondents have placed the level of awareness of green technology in terms of understanding to be ranked high. In addition, the findings also show that the majority of LPP Melaka staff have a high level of understanding on the implementation of green technology. This is because the LPP staff were directly involved in the campaign of green technology through greening programs, organic farming and urban agriculture. This is resulted from the role of the state in increasing the understanding through the day without plastic bags campaign and has made a determination that in year 2020 Melaka will be declared as a Green Technology State status. This finding also support the previous finding of knowledge, attitude and practices among Malaysian toward enviromental issues in Penang and Kuala Lumpur by [2].

TABLE II : MEAN ANALYSIS FOR UNDERSTANDING VARIABLE

No.	Item	Mean score	Inter-pretation
1.	Green technology is a technology based on nature.	4.51	High
2.	Recycling is one of the elements in green technology.	4.39	High
3.	Green technology is implemented to reduce the impact of environmental pollution.	4.54	High
4.	Green technology is a technology that is environmental friendly.	4.59	High
5.	The use of green technology can boost the economic development of a country.	4.24	High
6.	The success of green technology depends on the government.	2.62	Average
7.	The government has always encouraged the development of green technology.	4.08	High
8.	Green building is one of the green technology sectors.	3.83	High
Percentage, Mean Score and Overall Interpretation		4.10	High

B. *Analysis of Practice Variable*

TABLE III : ANALYSIS OF PRACTICE VARIABLE MEAN

No.	Item	Mean score	Inter-pretation
1.	I carry a recycling bag when I go shopping at the supermarket	3.80	Average
2.	I will switch off the lights when I leave the office.	4.34	High
3.	I always bring my own food containers for food packaging	3.55	Average
4.	I recycle unused papers in the office.	3.88	High
5.	I separate the materials which can be recycled by types of materials (plastic, paper and glass).	3.84	High
6.	I prefer to choose and buy green products (eco label).	3.71	Average
7.	I prefer to choose and buy refills (refill).	3.97	High
8.	Setting air conditioning temperature at 24ºC is a practice that supports green technology.	3.76	Average
Percentage, Mean Score and Overall Interpretation		**3.90**	**High**

In this section there are eight items that have been developed which are linked to aspects of green technology practices among the staff at LPP Melaka. The data were analyzed using mean and mean score. The result is shown in Table III.

For the second research question, the overall mean score obtained was 3.90. This situation occurs because they are often exposed to the importance and benefits of green technology practices in the workplace. In addition, the role of state government in encouraging the implementation of green technology campaign in each respective government departments plays a significant role. According to [8], findings show that the level of practices among the management officers, academic staff and student are high.

C. *Analysis of Importance Variable*

For the variable of importance, eight items have been developed, which are related to the third objective of the importance of green technology among LPP Melaka staff. The data were analyzed using mean and mean score. The result is shown in Table IV.

Overall, respondents indicated that the level of importance of green technology is at the high level with the overall mean score of 4.40. The high score is resulted from the program carried out by the state government and the department itself to ensure green technology campaign will be implemented continuously. In addition, according to the [4] & [9], green technology in entrepreneurship and in the curriculum of technical and vocational education is highly recommended to ensure effectiveness and succeed of both fields.

In addition, according to the [2], the awareness of green technology is important in today's era. As presented by the Chairman of the NCC, Prof. Emeritus Datuk Dr. Zakri Abdul Hamid at the National Council of Professors (MPN), the level of awareness and knowledge among Malaysians on the importance of green technology in the present and the future is still at a low level. This problem refers to the level of limited education provided to the people of Malaysia. Among the methods that can be done is to educate through communication, training and research to ensure so that the awareness will be widespread.

TABLE IV : ANALYSIS OF IMPORTANCE VARIABLE MEAN

No.	Item	Mean score	Inter-pretation
1.	Green technology is vital to conserve nature.	4.49	High
2.	Green technology should be applied starting from the school level.	4.45	High
3.	The industry plays a very important role in the success of green technology.	4.41	High
4.	Green technology is able to generate added value for the progress and prosperity of the country.	4.32	High
5.	Green technology can trigger the production of products and more innovative.	4.30	High
6.	Green technology encourages the use of green technology renewable sources (renewable energy).	4.17	High
7.	Green technology exists to fix the problem of climate change in order not to be a threat to future generations.	4.45	High
8.	Green technology can contribute to energy conservation.	4.38	High
Percentage, Mean Score and Overall Interpretation		**4.40**	**High**

D. Analysis Of Difference Between The Awareness Of Green Technology Among LPP Melaka And Johor Staff.

i. Understanding

TABLE V : ANALYSIS OF T-TEST ON THE DIFFERENCE
OF THE LEVEL OF UNDERSTANDING

LPP (State)	N	Mean	Standard deviation	t -Value	Significant level
Melaka	76	4.1003	0.4243	0.5014	0.000
Johor	110	4.4545	0.5048		

According to the Table V, at the significant level α = 0.05, p value = 0.330. As the conclusion, H_o is accepted and it indicates that there is no significant difference on the understanding of green technology among LPP Melaka and LPP Johor staff.

ii. Practice

TABLE VI : ANALYSIS OF T-TEST ON THE DIFFERENCE
OF THE LEVEL OF PRACTICE

LPP (State)	N	Mean	Standard deviation	t -Value	Significant level
Melaka	76	3.8722	0.5656	0.4281	0.000
Johor	110	4.3104	0.8334		

Table VI summarize whether there is a significant difference on the level of practice on grren technology among the staff at LPP Melaka and Johor, at the significant value of α = 0.05. Due to the p value = 0.006, H_o is rejected. This shows that there is significant difference on the level of practice of green technology among LPP Melaka and Johor staff.

iii. Awareness on the importance

TABLE VII : ANALYSIS OF T-TEST ON THE DIFFERENCE
OF THE LEVEL OF AWARENESS ON THE IMPORTANCE

LPP (State)	N	Mean	Standard deviation	t -Value	Significant level
Melaka	76	4.3701	0.4989	0.2269	0.024
Johor	110	4.5420	0.5142		

Using t-test to analyze wheter there is a significant difference between the awareness of green technology among LPP Melaka Johor staff, the p value = 0.893. As a conclusion, H_o is accepted and it indicates that there is no significant difference on the understanding of green technology among LPP Melaka and LPP Johor staff.

VII. CONCLUSION AND RECOMMENDATION

As the conclusion, the level of awareness on green technology among LPP Melaka and Johor staff is at the satisfactory level. There is no significant difference oon the practice of green technology among LPP Melaka and Johor staff in terms of understanding and the importance. However, survey shows a significant difference among LPP Melaka and Johor staff in terms of practice. The difference may be due to the intensive campiagn on green technology that is conducted by Melaka state administration.

According to the President, Green Depot Technology, Sustainability and Green Technology Consultant Melaka, Ismail bin Hj. Abdullah (2014), he suggested some practices that could be implemented in order to support the implementation of green technologies. These include raising the air conditioning temperature to 24^0C, disconnect the electrical outlet when not using electrical appliances, turning off lights when leaving the room, close the air-conditioning or fan when it's raining or cold, washing clothes and dishes only when fully loaded, bask clothes without using dryers and using lights, fans and air conditioners in rooms that are used only. In addition, recycling is one of the practices towards green technology. The method of recycling can be implemented using the 3R concept of Reuse, Reduce and Recycle. Among the practices of reuse is the using of goods and equipment with care, buy from a garage sale or car booth sale and delivery of goods should not still intact for the use of others. Other practices are such as avoiding unnecessary packaging, using reusable bag and choose items that can be refilled. For recycle practice, Malaysian should throw cans, bottles and paper in the recycling bins provided, engaging with the local community recycling activities and deliver goods recycling at recycling collection site.

REFERENCES

[1] Anny Lim Kiat Lian (2011). "Teknologi Hijau:Semua Pihak Perlu Berperanan". Universiti Kebangsaan Malaysia, Bangi

[2] Jamilah Hj Ahmad, Hasrina Mustafa, Hamidah Abd Hamid dan Juliana Abdul Wahab, (2011). "Pengetahuan, Sikap dan Amalan Masyarakat Malaysia Terhadap Isu Alam Sekitar". Pusat Pengajian Komunikasi, Universiti Sains Malaysia. Tesis PhD

[3] J.Pallant. *SPSS Survival Manual*, 3rd Edition, Crows West, New South Wales, 2007

[4] Khursiah Binti Ahmad Zainudin (2013). "Kajian Terhadap Kesan Penerimaan Pembudayaan Teknologi Hijau Dalam Keusahawanan dikalangan Belia di sekitar Lembah Klang". Universiti Utara Malaysia. Tesis Master

[5] Mohd Majid Konting, (2005)." *Kaedah Penyelidikan Pendidikan"*. Kuala Lumpur: Dewan Bahasa dan Pustaka.

[6] Mohamad Fazli Sabri & Teoh Yong Yong (2006). "Tahap Keperihatinan Alam Sekitar Dan Amalan Penggunaan Hijau Pengguna di Petaling Jaya Selangor". Universiti Putra Malaysia.

[7] Noraini Idris (2010). "Penyelidikan dalam Pendidikan". Kuala Lumpur: Mc Graw-Hill (M) Sdn. Bhd.

[8] Siti Rohani Johar (2013). "Kesedaran Teknologi Hijau Di kalangan Warga Universiti Tun Hussien Onn". Tesis Ijazah.

[9] Siti Nor Syazwani Saibani, Mohd Safarin Nordin dan Muhammad SukriSaud, (2012). "Integrasi Teknologi Hijau Dalam Kurikulum Pendidikan Teknik Dan Vokasional". Universiti Teknologi Malaysia.Tesis Ijazah