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AN EXPLORATION ORANG ASLI INDIGENOUS KNOWLEDGE AND PRACTICES OF GREEN TECHNOLOGY IN SELECTED SETTLEMENTS IN PENINSULAR MALAYSIA

REGINA AK LAMBIN



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**AN EXPLORATION ORANG ASLI INDIGENOUS KNOWLEDGE
AND PRACTICES OF GREEN TECHNOLOGY IN SELECTED SETTLEMENTS
IN PENINSULAR MALAYSIA**

REGINA ANAK LAMBIN

**DISSERTATION SUBMITTED IN FULFILMENT OF THE REQUIREMENTS
FOR THE DEGREE OF MASTER OF EDUCATION (SOCIOLOGY EDUCATION)
(MASTER BY RESEARCH)**

**FACULTY OF HUMAN DEVELOPMENT
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Alhamdulillah, Jazakumullahu Khairan.





ABSTRACT

The purpose of this study was to explore the Orang Asli Indigenous Knowledge and Practice of Green Technology (IKPGT) at selected settlements in Peninsular Malaysia. A case study with 'multiple cases and multiple sites' was used as the research design. The five domains of IKPGT identified in this study, i.e., medicine, food, music, forestry, and handicraft were derived from the two models, namely, An Integrated Model of Indigenous Economy, Social World and Ecosystems and First Nations Holistic Lifelong Learning Model. Both these models were selected because they contained the relevant variables for this study. Interview protocols, observations and document analyses were used to obtain the qualitative data. Ten informants from Mah Meri, Semai, Temuan, Bateq dan Semaq Beri were involved in the interviews. The interviews were video and audio-taped, transcribed in verbatim, analyzed, and imported into Atlas.ti software for data processing. The findings showed that the Mah Meri and Semai tribes were still using IKPGT with regards to preparing traditional medicine to cure certain diseases by using selected herbs from the forest. In terms of food preparation, most Orang Asli were still preparing their indigenous foods by using their traditional equipment and bamboo to cook their meals, which represented green technology in its own right. The findings of this study also indicated that the Semai and Semaq Beri tribes played traditional music by using musical instruments made from bamboo and pufferfish's skin. In terms of forestry, the Semai tribes, in this study, were still using IKPGT, i.e., they used natural materials to make tools such as blowpipe and beliung. The Temuan, Mah Meri and Semai tribes widely used bamboo, Nipah and Bemban as the primary "green" material in their handicrafts. In conclusion, the main result shows that most of Orang Asli still maintain and practice 'green technology' based on their indigenous knowledge in their daily life. This study has also documented the Orang Asli IKPGT so that the knowledge and practice could be preserved and shared with the other communities in order to avoid extinction. As an implication, the development of a new framework on Orang Asli IKPGT based on the empirical data could be used as a guide to maintain the sustainability of Orang Asli lives and heritage.





EKSPLORASI PENGETAHUAN PERIBUMI ORANG ASLI DAN AMALAN TEKNOLOGI HIJAU DI PENEMPATAN TERPILIH DI SEMENANJUNG MALAYSIA

ABSTRAK

Tujuan kajian ini adalah untuk meneroka Pengetahuan Peribumi Orang Asli dan Amalan Teknologi Hijau (PPATH) di penempatan yang terpilih di Semenanjung. Kajian kes ‘*multiple cases and multiple sites*’ digunakan sebagai reka bentuk kajian. Lima domain PPTH dikenalpasti dalam kajian ini iaitu, ubat-ubatan, makanan, muzik, perhutanan dan kraftangan berdasarkan dua model iaitu *An Integrated Model of Indigenous Economy, Social World and Ecosystems* dan *First Nations Holistic Lifelong Learning Model*. Kedua-dua model ini digunakan kerana ia mengandungi pembolehubah yang berkaitan untuk kajian ini. Protokol temu bual, pemerhatian dan analisis dokumen digunakan untuk mendapatkan data kualitatif. Sepuluh orang peserta kajian daripada suku kaum Mah Meri, Semai, Temuan, Bateq dan Semaq Beri telah terlibat dalam temu bual ini. Temu bual dirakamkan dalam bentuk video dan audio, diterjemahkan secara verbatim, dianalisis, dan diimport ke perisian Atlas.ti untuk pemprosesan data. Dapatan kajian menunjukkan bahawa suku kaum Mah Meri dan Semai masih menggunakan PPATH dalam penyediaan ubat tradisional untuk menyembuhkan penyakit tertentu dengan menggunakan herba dari hutan. Dari segi penyediaan makanan, kebanyakan Orang Asli masih menggunakan peralatan tradisional dan buluh untuk memasak makanan mereka yang mewakili teknologi hijau dengan haknya sendiri. Dapatan kajian ini menunjukkan bahawa suku kaum Semai dan Semaq Beri memainkan muzik tradisional dengan menggunakan alat muzik yang dibuat dari buluh dan kulit ikan buntal. Dari segi perhutanan, suku kaum Semai, dalam kajian ini, masih menggunakan PPATH, iaitu menggunakan bahan semula jadi untuk membuat alat seperti sumpit dan beliung. Suku kaum Temuan, Mah Meri dan Semai banyak digunakan buluh, nipah dan bemban sebagai bahan 'hijau' utama dalam kraftangan mereka. Kesimpulannya, dapatan utama menunjukkan bahawa kebanyakan Orang Asli masih mengekalkan dan mengamalkan 'teknologi hijau' berdasarkan pengetahuan orang pribumi dalam kehidupan seharian mereka. Kajian ini juga telah mendokumentasikan Orang Asli PPATH supaya pengetahuan dan amalan ini dapat dipelihara dan dikongsi bersama dengan komuniti lain agar tidak pupus. Sebagai implikasinya, pembangunan kerangka baru Orang Asli PPATH berdasarkan data empirikal boleh digunakan sebagai panduan untuk mengekalkan kemapanan kehidupan dan warisan Orang Asli.



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LIST OF ABBREVIATION

UNAPCAEM United Nations Asian and Pacific Centre For Agricultural Engineering and Machinery

KETTHA Kementerian Tenaga Teknologi Hijau Dan Air

JAKOA Jabatan Kemajuan Orang Asli

WHO World Health Organization

UNESCO United Nations Educational, Scientific and Cultural Organization

IKPGT Indigenous Knowledge and Practice of Green Technology



CHAPTER 1

INTRODUCTION



In an era of globalization, Orang Asli, the minority community in Peninsular Malaysia do not totally isolate themselves from the mainstream culture and economy, yet they maintain their own tradition of interconnection with their natural and spiritual environments. They own and practice a variety of custom, culture, beliefs, health practices and their unique or distinctive values between them and their natural environment because this relationship has harmoniously influenced their way of life and their economic resources (Sam & Aminah, 2015). They have unique and distinctive skills in managing their natural environment as part of their indigenous culture. Orang Asli is well-known for their habit to preserve and maintain their natural resources and the ecosystems surrounding them for their survival (Hong, 1987). In terms of transmitting their indigenous knowledge and wisdom, Orang Asli used oral tradition to





transfer their know-how, especially on flora and fauna to their children. As their ancestors had preserved their nature, the descendants have also observed and learned their natural way on how to manage their resources and deal with the problematic conditions such as climate change as floods and drought (Lim et al., 2017). Such knowledge which has been handed down throughout generations is commonly called indigenous knowledge.

Furthermore, Orang Asli believes in the existence of spirits and the supernatural beings that control their daily lives. According to Lim, Norya, and Norshakila (2016), Orang Asli is forbidden to *takbur* (boast), to damage or pollute the environment while in the forest. Otherwise, they might encounter misfortunes in their daily routines. Orang Asli tribes are very careful and focused on the practice of taboos in their community (Yew et al., 2017). These taboos will prevent them from destroying and polluting the environment. According to Sam and Aminah (2015), based on animistic belief, Orang Asli sees a flood, drought, disease, and even death as the sign of supernatural curse on them. Most of Orang Asli are still practicing animism due to their ancestry influence (Siti & Jama'yah, 2013).

Even though a vast corpus of literature has been written on indigenous peoples, including the Orang Asli, the issue of indigenous knowledge of green technology is still scarce in contemporary writings. Thus, it is critical to explore the indigenous knowledge of green technology (IKPGT) and practices among Orang Asli tribes in Peninsular Malaysia. Next, a more detailed discussion on the background and challenges of IKPGT will be deliberated.





1.2. Background of the Study

Malaysia is a nation that prosperous with unique cultures, heritages, and various ethnic group, including Malays, Indians, Chinese, and the natives of Sabah and Sarawak. The population of Malaysia is estimated in 2018 to be around 32.04 million (World Population Review, 2018), which is equivalent to 0.42% of the total world population (World meter, 2018). There also exist aboriginal groups in Peninsular Malaysia, where they are collectively known as Orang Asli. The 'Orang Asli,' is a Malay term which or means 'original peoples' or 'first peoples' (Masron, Masami, & Ismail, 2013), also known as the original people of the Peninsular Malaysia (Ahmad et al., 2013).

There is a large number of published studies such as Faezah et al. (2016); Ong and Azliza (2015); Ong, Faezah, and Milow (2012); Ramlee et al. (2010); Dentan (1979), and Carey (1976) which stated that the Orang Asli can be divided into three ethnolinguistic groups, namely the Negrito (Semang), Senoi and Proto-Malay (Aboriginal Malay) with six different tribes in each main groups (as shown in Table 1). These six different tribes which can be further sub-divided into 18 sub-tribes with their physical characteristics, linguistic and affinities, cultural practices (Bellwood, 1997; Hood, 2006; Nicholas, 2006; Ang et al., 2011 with unique features, lifestyles, and languages (Ida Madieha, 2017).

According to JAKAO (2017), Senoi is the largest ethnic group constituting about 55% of the total population of Orang Asli in Peninsular Malaysia, followed by the Proto-Malays (42%), and the Negritos (3 %) (see Table 1.1). The sub-group of Senoi includes Mah Meri, Semoq Beri, Temiar, Che Wong, Jah Hut, and Semai. In about 8000



years ago, the Senoi tribes have arrived at Peninsular Malaysia during the second wave of migration back from South Asia, the mountain areas of Cambodia, Vietnam and Burma (Nicholas, 1996; Baer, 1999; Ang et al., 2011; Thevakumar et al., 2016). The present population of Senoi is around 60,000. The Senoi settled down in the areas of Perak, Pahang, Kelantan, Selangor, and Terengganu (Fui, 1997; Ramlee, 2013; Norwaliza & Ramlee, 2015).

Table 1.1

The Groups of Orang Asli in Peninsular Malaysia

Orang Asli Ethnolinguistic Group		
Senoi (55%)	Proto-Malay (42%)	Negrity (3%)
Che Wong	Semelai	Kensiu
Mah Meri	Jakun	Kintak
Jahut	Kanaq	Jahai
Semoq Beri	Kuala	Lanoh
Semai	Seletar	Mendriq
Temiar	Temuan	Bateq

Source: JAKOA, (2017)

The Proto-Malay or the Aboriginal Malay live mainly in Selangor, Negeri Sembilan, Pahang, Melaka, and Johor. There are six sub-groups under the Proto-Malay, namely; Jakun, Temuan, Semelai, Orang Kuala, Orang Kanaq, and Orang Seletar (JHEOA, 2002 & Ang et al., 2011). As for the Negritos, also referred to as Semang, consist of six sub-groups called Kensiu, Kintak, Jahai, Mendriq, Bateq, and Lanoh. According to Ida Madieha (2017), the Negritos were believed to have arrived in Peninsular Malaysia between 10,000 and 60,000 years ago. This statement was



supported by Edo and Kamal (2004) and Hamid, Samah and Man (2013) who emphasized that the Negrito tribe is the oldest inhabitant of Peninsular Malaysia. In 2013, the population of Negritos was about 600, and they live mainly in three states of Malaysia, including Kedah, Kelantan, and Perak.

Even though Orang Asli tribe has different traits, languages, and ways of life, they have similarities in terms of indigenous knowledge, practices, customs and beliefs. Today, the indigenous knowledge of Orang Asli has been reduced due the lack of knowledge transmission ^{and} the influence of modernization on Orang Asli lives. Therefore, this study attempts to document the Orang Asli IKPGT in order to preserve their heritage.



1.3. Statement of the Problem

Schoenmaker (2017) asserts that human activities affected the Earth system, hence threatening the planet's future livability. Janet et al. (2017) stated that the environmental issues such as global warming, ozone depletion, diminishing fossil fuels, and pollution have affected human lives. Furthermore, the deforestation and fast degradation of farmland due to the inappropriate use of fertilizers and erosion have put a danger on the lives of the indigenous people.

In addition, the advent of modernization poses a serious threat to sustainable development due to its harmful effects on natural resources and the environment (Eyong, 2007). Environmental degradation and the lessening of resources affect





humans, flora and fauna in the long run. The critical implication is that over-exploitation, and other forms of biodiversity loss will threaten the livelihood of the indigenous people (Turner, Ignace, & Ignace, 2000; Poe, Norman, & Levin, 2014; Sangha et al., 2015; Frid et al., 2016). These environmental impacts have posed a brutal assault on Orang Asli ways of being and their source of livelihood - the forest (Boyer, 2011). Without sustainable forest and rich biodiversity, the lives of Orang Asli is endangered and could be extinct in the future. Similarly, their indigenous knowledge is also at the brink of extinction due to lack of transmission practice and preservation.

In the face of modernization, social transformation, colonization, displacement, and forced integration, indigenous communities persist in maintaining their unique worldview and system of knowledge associated with them (Augare et al., 2015). The efforts to integrate indigenous knowledge and western science often encounter problems due to different systems of knowledge production and underlying worldviews (Parsons et al., 2017). Indeed, in the modern days of technological advancement, Orang Asli indigenous knowledge is in mortal danger of extinction.

Indigenous knowledge is now known as being critical to the development of effective, equitable, and essential strategies to address socio-ecological crises (Parsons, Nalau, & Fisher, 2017). Orang Asli has since time immemorial, contributed their indigenous knowledge and wisdom on solving their daily problems by using environmentally friendly 'green technology' to conserve, and these practices provide invaluable expertise and aid in making the best use of natural sources restore natural resources. According to the United Nations (2010), the majority of the world's





remaining natural resources - minerals, freshwater, potential energy sources, and more are found within indigenous zones.

Hence, indigenous knowledge needs to be identified and protected, or it may disappear forever. According to Amir Zal (2013), each tribe of Orang Asli has inherited wide-range of indigenous knowledge from their ancestors, but most of it has never been documented. Eyong (2007) also highlighted the lack of concerted efforts to document Orang Asli indigenous knowledge on how they preserve and utilize their surrounding for the sustainability of their environment. Similarly, according to Farooquee and Nautiyal (1999), most of the large and diversified areas of traditional knowledge and practices are still undocumented.



appear to undermine or threaten to mainstream epistemology (Recht, 2009). Indigenous knowledge possessed by Orang Asli is not recognized as scientific knowledge by conventional standards. The knowledge is considered primitive and counterproductive by the mainstream community. However, literature has shown that Orang Asli indigenous knowledge is important to sustain their routine lives in remote areas. Their natural resources including medicinal herbs, trees, exotic plants, and animals are useful in sustaining “green” aspects of Orang Asli lives such as maintaining health, building huts, hunting, gathering food and harmonizing their spirituality.

Hence, it is critical to safeguard of Orang Asli's indigenous knowledge especially related to their “green technology” in terms of how they preserve and protect their environment. In other words, the Orang Asli indigenous knowledge relates to





sustainability by using their own “green technology” should be explored. However, the scarce literature related to Orang Asli Indigenous Knowledge of Green Technology (IKPGT) is a prime gap in this study.

Therefore, this study intends to explore the ways Orang Asli preserve and sustain their environment and conserve their natural resources by using their “green” indigenous knowledge and technology. By collecting relevant empirical data, this study also attempts to develop an Orang Asli IKPGT framework to serve as a basis and as a medium for documenting Orang Asli indigenous knowledge and heritage for their future sustainability.



1.4. Purpose and Objectives of the Study



The purpose of this study was to explore the IKPGT practiced by Orang Asli and how they were inherited from their ancestors. Specifically, the objectives of the study was as follows:

- i. To explore the epistemology of Orang Asli IKPGT on medicine, food, music, forestry, and handicraft.
- ii. To examine the IKPGT practices used by Orang Asli on medicine, food, music, forestry, and handicraft.
- iii. To identify how Orang Asli maintain and sustain IKPGT and practices.
- iv. To develop a new framework based on Orang Asli IKPGT on medicine, food, music, forestry, and handicraft.





1.5. Research Questions

The following research questions were formulated to guide the study:

- i. What is the epistemology of Orang Asli IKPGT on medicine, food, music, forestry, and handicraft?
- ii. What are the IKPGT practices used by Orang Asli on medicine, food, music, forestry, and handicraft?
- iii. How Orang Asli maintain and sustain IKPGT and practices?
- iv. How can a new framework based on Orang Asli IKPGT on medicine, food, music, forestry, and handicraft develop?



1.6. Conceptual Framework

The conceptual framework for this study was based on two models, namely, An Integrated Model of Indigenous Economy, Social World and Ecosystems (Sangha et al., 2015) and the First Nations Holistic Lifelong Learning Model (Canadian Council on Learning, 2007). Specifically, An Integrated Model of Indigenous Economy, Social World and Ecosystems is a model that was representing indigenous relationships with ecosystems that suggests how various elements of indigenous life, i.e., social, economic and cultural aspects connected to the ecosystem.

Each component in this model has perforated boundaries to represent to and fro relationship with the ecosystems. According to Sangha et al., (2011), there is a two-





way relationship between country and people, involving ‘duty of care’ where this ‘duty of care’ involves a responsibility to look after the country that is linked with cultural norms while gaining benefits from the country. These responsibilities are critical to maintain an ecosystem attached to customs, totems, rituals, *etc.* Therefore, the economic world component of this model, such as medicine, food, and craft, are relevant or in line with the objective of this study that seeks to maintain the sustainability of the ecosystem based on the close relationship of indigenous people with nature.

The next model is also relevant to this study is the Canada’s First Nations Holistic Lifelong Learning Model. This model provides a concrete representation of how First Nations in Canada obtain their esteem and significance of learning and education, mainly as they link to their communities. Moreover, First Nations Holistic Lifelong Model comprised cultures, histories, and geographies Inuit and Métis peoples, and of the distinctive expertise in. This model has been selected in this study because of the sources and domains of knowledge such as traditions and ceremonies and the natural world in this model related to IKPGT domains; music, and forestry.

Also, this model was relevant and applicable to this study because having similarity in term of traditional beliefs with the indigenous people in Peninsular Malaysia. For example, the Inuit community in Canada practiced a form of shamanism based on animist beliefs, according to which all objects and living things or beings have a spirit (Athropolis, 2019); similarly, the indigenous people in Peninsular Malaysia also are traditionally animists, they believe in the existence of spirits in numerous



objects (Gall, 1998). Thus, this model was used to guide in developing the IKPGT domains for sustainable development in this study.

Based on the underlying model presented in Figure 1.1, the study is concerned with five domains which were adapted only three domains from An Integrated Model of Indigenous Economy, Social World, and Ecosystems; namely, food, medicine, and handicraft. While, another two domains adapted from a First Nations Holistic Lifelong Learning Model, such as traditions and ceremonies and the natural world. Figure 1.1 shows the framework of each domain that divided into specific criteria, which related and linked to the Orang Asli IKPGT on how such knowledge can add value to the overall conversation and sustainable development of natural habitats and ecosystems.

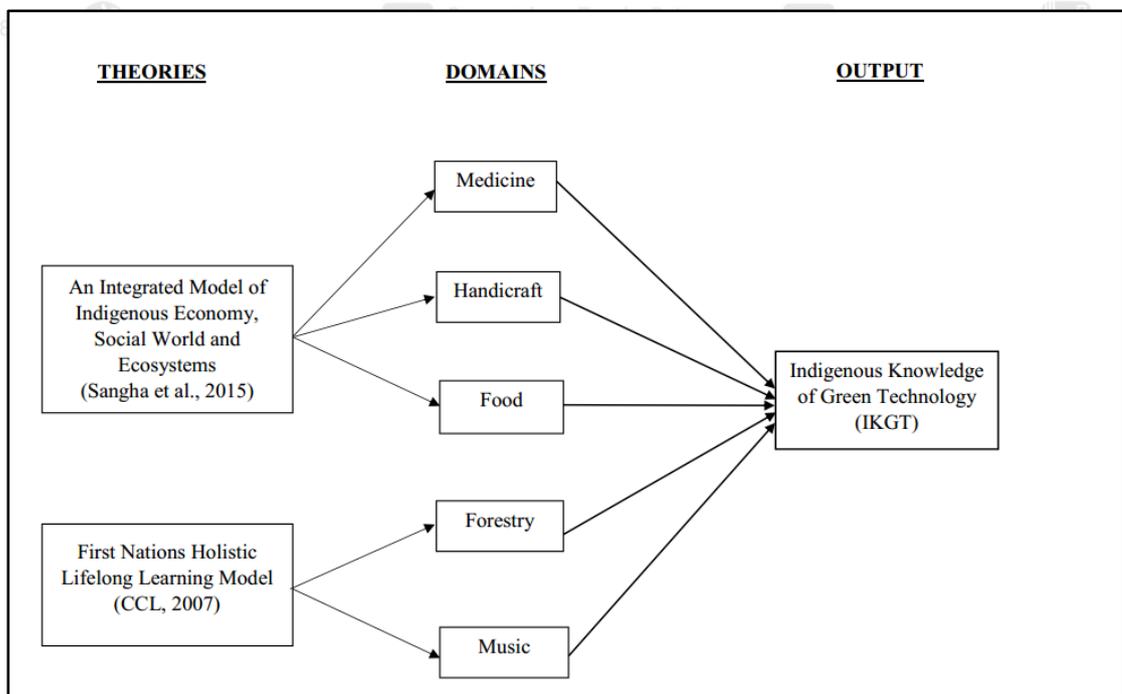


Figure. 1.1. A Conceptual Framework of Orang Asli IKPGT



Finally, based on the empirical data collection of this study, a new Orang Asli IKPGT framework will be proposed. In other words, the ultimate outcome of this study is a new Orang Asli IKPGT framework. In sum, the main contribution of this study is the development of a new Orang Asli IKPGT framework that could be used to map and document Orang Asli IKPGT so that the sustainability of Orang Asli indigenous knowledge and practices will not be lost.

1.7. Significance of the Study

The result of this study could benefit young Orang Asli in terms of knowing their IKPGT in critical aspects such as traditional medicine, handicraft, food, music, and forestry. Their IKPGT could be used to preserve or conserve the environmental sustainability. Next,, the documentation the research findings of Orang Asli IKPGT may be used as a source of reference for further studies about Orang Asli tribes particularly regarding their expertise in indigenous knowledge of 'green technology' practices. Besides, this documentation is essential to expand and strengthen the Orang Asli indigenous knowledge and practice of green technology since this valuable and precious knowledge is in mortal danger and it often is forgotten or neglected due to modernization.

Finding from this research study will be valuable for sharing Orang Asli IKPGT. This indigenous knowledge could be used by modern society as a guide to reducing carbon footprint and others damaging evolved, but also for scientists and policymakers to propose a plan to improve conditions in Orang Asli settlement and rural localities.





Plus, it is useful for end-users to enhance awareness and knowledge of the mainstream public about Orang Asli indigenous practices. Furthermore, the research output in term of the Orang Asli IKPGT framework could be used to launch sustainability programs in terms of preserving cultural diversity.

1.8. Limitations of the Study

In this study, there were some prominent limitations that the researcher thinks should be mentioned because these are the weaknesses of the study that may affect the results and conclusion. The assumption of this study was that the informants are knowledgeable about IKPGT that has been practiced by them, which they have learned from their ancestors. Informants were expected to know IKPGT practices in their daily life. However, the researcher found that some informants have been more spontaneous in their responses because they may lack knowledge about the explicit concept of green technology even though they may be implementing it implicitly.

Besides that, this study was limited in the geographical aspect as it was only carried out in four selected settlements in these states in Peninsular Malaysia: (i) Perak, (ii) Selangor, (iii) Pahang, and (iv) Terengganu. Also, the study was limited to five sub-groups of Orang Asli tribes: (i) Mah Meri, (ii) Semaq Beri, (iii) Batek, (iv) Semai, and (v) Temuan. It did not represent the whole tribes of Orang Asli in Peninsular Malaysia. Another limitation of this study is language barriers. The researcher conducted the interview sessions in Bahasa Malaysia only. Although all informants were quite confident in responding in Bahasa Malaysia, the results were limited to a certain extent.





The informants tend to give random answers or forgot certain facts during the interview, which might affect the results of the study at their settlement. Therefore, this study cannot be generalized to overall Orang Asli tribes in Malaysia. More specific information can obtain by researching the different population of Orang Asli across the states that are different from being taken.

1.9. Operational Definition

An operational definition is a definition used by the researcher to clarify the variables to be studied. Some of the concepts used in this study were given operational definitions to facilitate the understanding of the variables being studied. The important variables in this study require the operational definition for readers to understand each of the terminologies has selected in the study. To fully understand how the variables would be classified in their respective contexts.

1.9.1. Orang Asli

The term "Orang Asli" translates as "Original People" or the first people of Peninsular Malaysia. Interpretation of Orang Asli from Laws of Malaysia, particularly in the Constitution of Malaysia under article 160 (2) means an aborigine of the Malay Peninsula (Constitution of Malaysia, 2010). Act 134, Aboriginal Peoples Act 1954 under the Aboriginal People Ordinance No. 3 which was reviewed in 1974, Orang Asli is defined as any of which the father is a member of the Orang Asli tribes, who speak





the Orang Asli languages and follows the way of life of the Orang Asli and traditions of the Orang Asli beliefs and includes the descent through the man (JAKOA, 2017a). In this study, Orang Asli referred to as the people who know the indigenous green practices or 'green technology' from the sub-tribes of Senoi, Negrito, and Proto-Malay in Peninsular Malaysia.

1.9.2. Indigenous Knowledge of Green Technology

Orang Asli indigenous knowledge can be used to describe the knowledge within a given community or society rather than the scientific knowledge that is generally referred as 'modern' knowledge' (Ajibade, 2003) and commonly understood as 'native knowledge' of Orang Asli. Orang Asli indigenous knowledge is environment-friendly, socially accepted, economical, environmentally sound, and suited to the specific local and environmental conditions in other word using green technology. The term IKPGT in this context of study are contrasts with the knowledge of modern science and different from current or scientific green technology at this modern age.

Orang Asli Indigenous Knowledge of 'Green Technology' (IKPGT) is a naturalistic and environmental friendly which is used to conserve and reduce the human impact on the environment as well as to create a way of sustainable development. IKPGT in Orang Asli perspective in this study refers to the equipment, products or traditional system used by them in preserving and conversing Mother Nature resources without damaging and depleting biodiversity and use of harmful substances for the





future generation. However, it shows high moral aspects relating to their relationship with nature in ensuring a sustainable of the natural environment (Ramle et al., 2014).

1.9.3. Epistemology of Orang Asli IKPGT

Epistemology is *how we know* (Tennis, 2008). An area of viewpoint concerned with the nature and justification of human knowledge called epistemology (Hofer & Pintrich, 1997). It is related to with 'knowledge,' especially knowledge related to the empirical world which understood as a quest for answering two very general questions; what knowledge is? Also, how is knowledge possible? (Reddy, 2011). Epistemology of Orang Asli IKPGT in this context of the study is the indigenous knowledge practiced by Orang Asli in preserving the mother nature of resources in their community.

1.9.4. Orang Asli Indigenous Medicine

Indigenous medicine (also known as traditional or folk medicine) consist of medical aspects of traditional knowledge that expanded over generations within various societies before the era of modern medicine. The World Health Organization (WHO) classifies indigenous medicine as "the total of the knowledge, skills, and practices based on the theories, beliefs, and experiences indigenous to different cultures, whether explicable or not, used in the maintenance of health as well as in the prevention, diagnosis, improvement or treatment of physical and mental illness".





Practices known as indigenous medicines include traditional European medicine, traditional Chinese medicine, traditional Korean medicine, traditional African medicine, Islamic medicine, Orang Asli indigenous medicine, etc. In this study, the practice of IKPGT the use of traditional or indigenous medicine utilizes plants to make natural remedies by using their old age 'green technology' to cure a patient.

1.9.5. Orang Asli Indigenous Foods

Particular food ingredient or preparation methods being used and transferred from one generation to the next one are known as indigenous food (Ötleş et al., 2016). To be specific, indigenous food product defined as *“a product frequently consumed or associated with specific celebrations and/or seasons, normally transmitted from one generation to another, made accurately in a specific way according to the gastronomic heritage, with little or no processing/ manipulation, distinguished and known because of its sensory properties and associated with a certain local area, region or country”* (Guerrero et al., 2009). In this study, Orang Asli indigenous foods are not processed or packed, and it manufactured in sustainable methods which do not contain chemicals and other dangerous substances. It is based on traditional wisdom, knowledge, practices, and technologies of the tribes (Bhaskar et al., 2015) as well as a symbol of heritage, trademark, and culture (Sharif et al., 2016).





1.9.6. Orang Asli Indigenous Handicrafts

Oxford Dictionary defined handicraft as an activity involving the making of decorative domestic or other objects by hand. An artisanal or craft products, old-style creative arts or works of artistic or traditional craftsmanship known as handicraft which is made by artisans, entirely by hand or with the help of handmade tools or even by using machinery (Karim & Karim, 2017). The term ‘indigenous handicraft’ in this context of study refer to utilization of local manufacturing base and the usage of materials or plants using traditional methods and processes (Kaewpradit, Keeratiburana & Janta-po, 2013) instead of modern technology. Orang Asli used ‘green technology,’ also known as environmentally friendly tools to manufacture handicrafts, and these practices provide precious knowledge and help in making the best use of natural resources.



1.9.7. Orang Asli Indigenous Traditions and Ceremonies

Traditions can be defined as the transmission of customs or belief from generation to generation, or the fact of being passed on in this way while ceremonies is a formal religious or public ceremony especially one celebrating a particular occasion, achievement, or anniversary (Oxford Dictionary, 2018). In this study, traditions and ceremonies refer to the IKPGT in music practices by Orang Asli, which is helping them to sustain Mother Nature from being diluted. The music instruments that they used was eco-friendly were making by using natural resources.



1.9.8. Orang Asli Indigenous Forestry

Indigenous forestry defined as maintainable forestry incorporating respectful interaction between forest and indigenous people of today for the benefit of generations unborn (Parsons & Prest, 2003; Wyatt, 2008). In this context of the study, indigenous forestry refers to the traditional tools used by Orang Asli in collecting forest product.

1.10. Summary

The main focus of this study to explore how Orang Asli use their green practices and IKPGT to practice environmental sustainability and conserve natural resources now and in the future to make the environment 'greener.' Specifically, this research has the following objectives; (i) To explore the epistemology of Orang Asli IKPGT on medicine, food, music, forestry, and handicraft. (ii) To examine the IKPGT practices used by Orang Asli on medicine, food, music, forestry, and handicraft. (iii) To identify how Orang Asli maintain and sustain IKPGT and practices. (iv) To develop a new framework based on Orang Asli IKPGT on medicine, food, music, forestry, and handicraft.

The conceptual framework of this study was concerned with five domains which include the three domains were derived from An Integrated Model of Indigenous Economy, Social Word, and Ecosystems; namely, food, medicine, and handicraft. While, the two domains were adapted from a First Nations Holistic Lifelong Learning Model, such as music and forestry. While, the study employed a descriptive case study



qualitative approach which using in-depth interview, field observation, and document analysis as a research instrument. This research was carried out on selected Orang Asli settlements in Selangor, Perak, Terengganu, and Pahang involving ten informants aged 30 and older.

This study contributed to the body of knowledge and to expand and strengthen the Orang Asli IKPGT, and is also useful for all level; institutions, regional, national, and local scales aspiring to launch sustainability programs locally or internationally as well as expanding economic and market forces while preserving cultural diversity. The next chapter will explain the literature reviews and the use of the conceptual framework that became a reference in the process of documenting Orang Asli IKPGT.

