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Establishing Green Practice Constructs among Secondary School Students in Malaysia: Confirmatory Factor Analysis Approach (CFA)

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ABSTRACT

This study aims to verify green practice constructs using a confirmatory factor analysis (CFA). A total of 100 secondary school students were selected as a study sample using a simple random sampling technique. The green practice constructs consisted of five major subconstructs, paper resource management practices, electricity-saving practices, water-saving practices, recycling, and eco-friendly product consumption. The constructs included 37 items and used a five-point Likert scale. The data obtained were processed through an exploratory factor analysis (EFA) to ascertain the structure of the green practice determinants. Then, a confirmatory factor analysis (CFA) was used to find the measurement model for each construct using AMOS software. The results showed that the measurement model fit the data obtained which the value of the fit indices of CMIN/DF, TLI, CFI, IFI, NFI and RMSEA were used to produce the appropriate model. As a result, a total of 17 items were retained, consisting of recycling management practices (four items), electricity-saving practices (three items), eco-friendly product consumption (three items), paper resource management (four items), and water-saving practice (three items). Overall, the constructs were

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valid and credible for measuring green practice in the context of this study. The implication of this study will positively lead to the implementation of "going green" to pursue knowledge and practices that can lead to more environmentally friendly and ecologically responsible decisions and lifestyle, which can help protect the environment and sustain its natural resources for current and future generations in Malaysia.

Keywords: Exploratory factor analysis (EFA), confirmatory factor analysis (CFA), green practice, secondary school students

INTRODUCTION

Green practice is a practice which is carried out to reduce negative impacts on the environment. The implementation of green practices is crucial to ensure that natural resources are preserved and well maintained. Green practice is able to preserve the environment through its roles in saving the resources, reducing the waste, and reducing global warming. The importance of green practice should be emphasized in the community to ensure that the environment is not damaged as a result of human actions (Bernama, 2012). However, the awareness and attitudes of the community towards environmental issues nowadays are still poor (Ahmad et al., 2011; Mahat et al., 2016).

This lack of awareness has led to the lack of implementation of green practices in everyday life. According to Wee and Radzuan (2010), among the limitations for not implementing green practice include workload, time constraints, lack of information about green practices such as recycling, no societies or special programmes related to it, and the assumptions that such practices are inconvenient and are the responsibility of the government. In addition, green practice is also difficult to be implemented because of their high maintenance (Hwang & Tan, 2012). As a result, the environment has begun to experience deterioration as a consequence of human activities. Environmental concern and awareness are capable of changing human attitudes and behaviours towards environmental issues. A high level of concern in individuals will facilitate appropriate actions in order to avoid severe devastation (Zurina & Er, 2016).

The environmental degradation issue has caught the attention of many researchers recently. In Malaysia, studies related to environmental degradation in green practice is lacking and need to be given more attention. Previous studies have indicated that the younger generation is not engaging in green practice as their routine or daily practice. The knowledge and information sources regarding green practice which are effective based on the findings of this level of study should be demonstrated in practice (Mahat et al., 2017). Therefore, the implementation of green practice should be continuously implemented from an early stage in schools. Efforts

by schools to enhance the awareness of green practice among students is vital to ensure that the students understand and continuously practice them. In addition to the formal education provided by schools, collaboration between schools, teachers and parents is important to ensure the success of green practice.

Thus, such studies on green practice are important to raise public awareness, especially among young generation. Therefore, this study was conducted to verify and validated the constructs of green practice in school environment. Indirectly, this study will be able to determine the constructs of green practice used in the construction of instruments to assess students' awareness about maintaining environmental sustainability. This study is also significant as it will provide us a better understanding on what do students know about green practice and how their understanding is manifested in terms of behaviours regarding implementation of green practice.

GREEN PRACTICES THROUGH EDUCATION FOR SUSTAINABLE DEVELOPMENT

The deterioration of environmental quality is driven by anthropogenic or human action. Humans rely on the environment for their continued survival (Bakar & Idros, 2007). The interdependence between humans and the environment has resulted in the exploitation of natural resources to improve living standards through development. However, widespread exploration without awareness has resulted in the destruction of the environment. The issues of climate change and the release of greenhouse gases into the air are huge challenges that the global community must address. Global warming is characterised by two important mechanisms, the greenhouse effect and the depletion of the ozone layer (Abdullah, 2015). Although natural factors contribute to such mechanisms, human factors are seen as the more dominant cause of such occurrences. Human daily activities, such as the release of chlorofluorocarbons (CFC), vehicle smoke emissions, and open burning that releases carbon dioxide into the air, have resulted in the greenhouse effect, and consequently, have increased global temperatures (Ismail et al., 2011). This was clearly proven by the findings of Hansen et al. (2016), which recorded global surface temperatures in 2014 at +0.68 ° C (~ 1.2° F), which was warmer than temperatures from 1951–1980. This is due to rapidly growing development, which has destroyed many of the world's green areas.

Therefore, in addition to provide awareness through educational elements, a sound effort is needed in society to minimise negative impacts on the environment. This effort is aimed at ensuring that the environment can be maintained for the next generation. To achieve this goal, efforts to create awareness at an early age is crucial to develope a sense of environmental concern. The roles of students as successors and future leaders has the potential to further environmental sustainability (Duhn, 2012). Exploitation of the environment to

generate future economic growth should be balanced with protecting the environment and preventing the occurrence of various disasters that may affect the harmony of society. Exposure on green practice to students will enable them to be more aware of the importance of the environment and to have a sensitivity to it (Ogelman, 2012). The determination of the validity of the green practice constructs in this study can be used as a basis for developing a positive attitude towards the environment and implementing this attitude in daily life.

Effective ways of creating awareness and positive behaviours should be instilled through education. This is because educational elements is a dominant factor in realising sustainable development, and in raising awareness about environmental issues and changing the behaviour of the community towards the environment (Mahat et al., 2016). For example, the United States has continued to move forward by undertaking green urban projects. The Global Green project has involved collaboration between local governments and public agencies that are willing to maintain environmental sustainability. The objective of the programme is to assist the entity in creating innovative policies, programmes, and procedures that establish sustainable practices during the planning, design, construction, and operation of the developed environment (McCabe, 2015). In the context of Malaysia, green practice are most common among government agencies such as the Royal Malaysia Police (PDRM). Its green practices include energy saving, water saving, managing and disposing of solid waste in the right way, and prioritising green products and services among its members to ensure that the environment is well preserved (Department of Information, 2016).

In this study, the Theory of Planned Behaviour was applied in order to understand the relationship between attitude, subjective norms, perceived behaviour control, intention and behaviour towards green practice (Figure 1). Perceived behavioural control was included in the Theory of Planned Behaviour (TPB) to tested whether the inclusion of perceived behavioural control would significantly enhance the prediction of intentions and target behaviour (Madden et al., 1992).

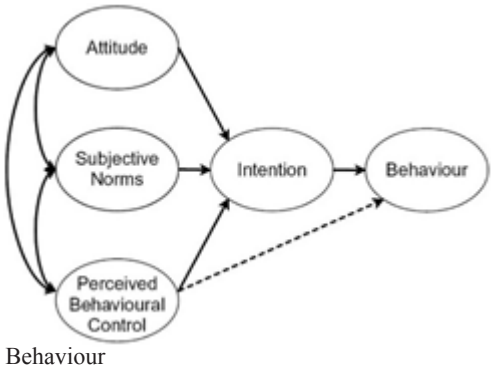

Figure 1. Theory of Planned Behaviour

The results by Madden et al. (1992) indicated that increased precision in the prediction of intentions and targeted behaviours could be achieved by assessing the perceived control over the behaviour. In the study by Valle et al. (2005), TPB was used to predict involvement in recycling. The results confirmed that TPB was a good starting point for the modelling of recycling behaviour. TPB was also used to examine the consumer purchase intention for organic care products and organic food products in the studies by Kim and Chung (2011) and Thorgersen (2005). This situation clearly shows that changes in human behaviour can lead to positive changes in the environment. According to Schultz et al. (2005), Steg and Vlek (2009), and Tan and Lau (2009), changes in human behaviour in everyday life have the potential to reduce environmental problems. Although Figure 1 shows the diagram of the causal relationship between the variables, this study only focuses on the testing of the items used in each variable / construct or dimension tested. Therefore, this study is aimed at verifying the key elements based on previous studies using the statistical analysis techniques for a confirmatory factor analysis (CFA).

The issue of environmental degradation is a shared responsibility which needs to be addressed by all countries. Actions that have been implemented by the developed countries have influenced countries such as Malaysia to participate in addressing environmental problems. The idea of sustainable schools, e.g., the Environmental Award Sustainable Schools (SLAAS), also contributes to the development of environmental education in society. SLAAS is a joint venture with the Ministry of Natural Resources and Environment and the Ministry of Education Malaysia (KPM) which is aimed at implementing sustainability through education. It is a fundamental step towards protecting the environment by focusing on environmental, social, and economic aspects (Mahat, 2014). A study by Sharaai and Chin (2012) regarding the attitudes and practices of primary school children with respect to the concept of sustainability showed that student knowledge was at a moderate level, although good practices and attitudes were at a high level. The education system in this country should emphasise sustainable concepts at earlier levels, especially the first level, to enable students to be exposed to environmental elements at an early age. This effort is significant in enhancing the meaning and value of sustainability so that it can be translated into students' attitudes and practices.

In addition, Malaysia has also taken the initiative to contribute to the reduction of global environmental problems by introducing a Green Technology Policy. According to the Ministry of Energy, Green Technology and Water (KeTTHA, 2011a), green technology is an environmental science application aimed at conserving resources and nature, and preventing them from being directly threatened by human activities, as well as curbing their risk of destruction. Green technology features lower carbon emissions and is

more environmentally friendly compared to the existing technologies in order to minimise the degradation of environmental quality. It also has low or zero emissions of greenhouse gases (GHG) and is safe to use. Green technology has the potential to provide a healthier and better environment for all living beings, as well as to conserve energy and natural resources and promote renewable resources. There are four pillars of the National Green Technology Policy in Malaysia:

1. Energy—seeking energy independency and promoting energy efficiency
2. Environment—conserving and minimising the impact on the environment
3. Economy—enhancing the country's economic development through the use of technology; and
4. Social—improving the quality of life for all.

An emphasis on green technology is the best solution to address the issue of greenhouse effects. It is also in line with the main agenda of all governments around the world today, which prioritises environmental issues, especially the global climate change phenomenon (KeTTHA, 2011b). Green technology applications are among the steps taken to slow down the process of global climate change. According to Bokhari et al. (2014), green technology applications are in line with the concept of sustainable development, which emphasises that the implementation of development must meet current needs without compromising the needs of future generations.

One of the elements contained in green technology is green practice. The activities included in green practice are recycling, water saving, electricity saving, eco-friendly product consumption, and reducing paper resources. These green subpractices are derived from a literature review and are also based on the guidelines which have been implemented by many agencies. According to the Ministry of Energy, Technology and Water, green practice refer to practices aimed at reducing the negative effects on the environment caused by human activity. Green practice are easily implemented by consumers and do not have a high cost of implementation (Association of Water and Energy Research Malaysia [AWER], 2012). Green practices are very significant in ensuring that sustainable development goals are achieved. In addition, green practices can lead to the use of green technology, which is strongly encouraged to minimise energy consumption levels (Sabri & Teoh, 2006).

In addition, green practice can also simultaneously enhance the economic development of a country (Mariani, 2008). Awareness of the importance of green practices needs to be applied in communities to ensure that they are more sensitive to environmental change. The implementation of programmes related to green practice is needed as a mechanism to help countries achieving sustainability and to provide

students with an understanding of the importance of preserving the environment at an early age through educational approaches (Mahat et al., 2016). The involvement of students in school co-curricular activities is one of the ways to educate students about green practice. Such activities will also allow the teachers and administrators to participate in promoting environment-related activities regarding green practice. Efforts to educate the community are necessary for the creation of environmental awareness (Johar, 2013).

Hence, green practice needs to be instilled in the early stage of school to create environmentally friendly citizens. An emphasis on and holistic approach to maintaining the environment in the formal learning systems of educational institutions are necessary in order to create a younger generation that understands the importance of preserving the environment.

METHOD

Study Design

The purpose of this study is to verify the constructs of green practices using CFA analysis. One hundred sample are required to carry out an exploratory factor analysis, as described by Pearson and Mundform (2010). Therefore, 100 Form 4 students in the Muallim district, Perak were selected using simple random sampling techniques.

Study Instrument

The main purpose of this study was to verify the key elements of the determinants of green practices among students through education regarding sustainable development. The research instrument was divided into two parts. Part A consisted of demographic information, and part B consisted of questions related to green practice. The respondents were asked to answer each question using a five-point Likert scale (1—Strongly Disagree, 2—Disagree, 3—Somewhat Disagree, 4—Agree and 5—Strongly Agree). The instrument contains 37 items that are classified into five major subconstructs: ten items to measure recycling practices, five items to measure water-saving practices, six items to measure electricity-saving practices, seven items to measure eco-friendly product consumption practices, and six items to measure paper resource consumption practices. Apart from examining its validity and reliability, this initial study is also aimed at determining the items that can be used in the actual studies (Table 1).

Table 1

Source of references for green practice constructs

Section	Sub-Construct	No. Items	Source
E3A	Recycling practice	10	(Wee & Radzuan, 2010)
E3B	Water saving practice	5	(Frederick, 2016)
E3C	Electricity saving practice	6	(KTAK, 2008), (Hussain, 2013)

Table 1 *(Continued)*

Section	Sub-Construct	No.Items	Source
E3D	Eco-friendly product consumption	7	(KeTTHA, 2011a), (Zurina & Er, 2016)
E3E	Paper resource consumption	6	(Melaka, 2014)
Total		37	

Method of Data Analysis

The items used in this study were related to students' green practices and the analysis performed was a reliability analysis. This analysis was done for each variable to determine the level of reliability of the data obtained. Next, the demographic information for the respondents involved in this study was analysed descriptively to determine the frequency and percentage of each demographic factor. Then, an EFA was conducted on the study items to ascertaining how the items used were classified according to the structure of certain factors (Hair Jr et al., 2010). The next step was to verify the hypothesis model through a structural modelling equation using a CFA analysis.

Reliability Analysis

A reliability test is important for measuring the capabilities of items in the instruments used. Reliability refers to the accuracy and stability of the points or marks, i.e., the internal consistency of an instrument's measurement scale (Kimberlin & Winterstein, 2008). According to Sekaran and Bougie (1992), increasing in alpha values are proportional to the value of reliability. Moreover, Tavakol and Dennick (2011) stated that the alpha values were low because of a weak relationship between the items, and thus, item removal should occur.

Factor Analysis

The purpose of the factor analysis is to identify the relationship between the variables. Variables with a strong relationship will produce a new pattern. According to Yusrizal (2008) and Bartholomew et al. (2011), a factor analysis is a way to obtain a new construct group that is much smaller than the previous one. Factor analysis can be divided into two analyses—EFA and CFA.

Exploratory Factor Analysis (EFA)

Exploratory factor analysis (EFA) can be described as a method that aims to simplifying the interrelated variables. It is a variable reduction technique that identifies the number of latent constructs and the factors that underlie the structure of a set of variables (Suhr, 2005). According to Child (2006), EFA is used to explore the structure of factors that may underlie the set of variables studied prior to further analysis. Through EFA, the number of constructs and the structure of the underlying variables studied can be identified.

The structure of the factors formed is based on the feedback findings from the study sample. The dimensions, indicators, and concrete details to produce constructs from the tested variables are determined through factor analysis. In addition, through this factor analysis, a smaller set of new variables to be compared to the previous variables is identified (Yusrizal, 2008). According to Hu and Li (2015), the purpose of EFA is to determine some of the factors that represent the measurement variables. Therefore, a factor analysis is not intended to make predictions regarding variables, but rather is a method of finding the relationship between the whole set of variables, as well as ascertaining the strength of the relationship. EFA occurs before the CFA process for the instrument used in order to minimise variance differences and to identify the number of items required by each variable factor.

Confirmatory Factor Analysis (CFA)

CFA allows researchers to test the hypothesis concerning whether there is or is not a relationship between the variables examined and the burden factor. CFA attempts to validate a hypothesis and uses an analysis diagram to represent the variables and factors (Yong & Pearce, 2013). Researchers use theoretical knowledge, empirical research, or both to ascertain a priority relationship pattern, and then, the hypothesis is tested using the statistical method (Bryne, 2010; Hair et al., 2010). The model to be constructed contains latent variables and variables observed in a model called a measurement model. This measurement model is a model that defines the relationship between the 'observed variable' and 'latent variable'. These latent variables are also known as factors or constructs, and the observed variables are also known as indicators. Indicators are the items (questions) used in the questionnaire developed to detect these latent variables or constructs (Byrne, 2010; Hair et al., 2010). The weights produced after the analysis are called the weight measurement or load factor.

STUDY FINDINGS AND DISCUSSION

The results of this study are described and discussed based on some important information that had been obtained from the respondents. The findings are divided into three parts, which consist of the reliability of the instrument, the assessment of the suitability based on the Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy value through the analysis of the EFA, and the verification of the green practice construct through a CFA. An analysis of the 100 respondents' background revealed 38 male respondents and 62 female respondents.

Reliability Analysis

The Cronbach's alpha was used to assess the internal consistency reliability for each of the constructs. The reliability analysis was done to purify the questionnaire items, and it was used as evidence to show that the sample items in the study instrument represent or measure all the contents of the

field studied. In this study, the reliability value of the research instrument obtained was greater than 0.8 (Table 2). According to Sekaran and Bougie (1992), a reliability value of less than 0.60 is considered low and unacceptable, while a Cronbach's alpha value within the 0.60 to 0.80 range is acceptable. A value greater than 0.80 is considered good. However, according to Abu and Tasir (2001), instruments with a coefficient value of more than 0.60 can be regarded as instruments of high reliability.

Factor Analysis

Two major tests were conducted, namely an EFA and a CFA, to test the validity and consistency of the questionnaire. Both of these tests were conducted to verify whether the items in the questionnaire really represent the students' green practice variables.

Exploratory Factor Analysis (EFA)

A KMO Measure of Sampling Adequacy and a Bartlett Test of Sphericity were conducted to assess the assumptions for the correlated variables in the initial solution. The KMO Measure of Sampling Adequacy is 0.855, which is far greater than 0.5 for the necessary factoring value (Table 3) (Spicer, 2005). As this is a meritorious value according to Hair et al. (2010), it shows that there is a strong correlation among the items. The Bartlett's sphericity test was significant, with a chi-square value of 3361.795 with 666 degrees of freedom. The significant value for the Barlett's test was p = .000; this proves that the item has been factored.

The factor analysis was done by the researcher to determine the number of factors to be extracted, which was five as categorised in the questionnaire. Table 4 shows the component matrix with a rotation varimax and factor loading. The rotation varimax method was used, as it reduces the number of complex variables and can increase the expected yield. The meaning and the importance of the items were examined to determine whether the item should be retained or removed. The problematic items were removed iteratively and the fit indices were examined every time an item was deleted. The results revealed

Table 2
Values of the study items' reliability

Section	Construct	No. item	Alpha Cronbach Value
Green Practice	Recycling practice	9	0. 927
	Electricity saving practice	7	0.893
	Eco-friendly product consumption	7	0.926
	Paper resource consumption	8	0.910
	Water saving practice	6	0.886

Table 3

Suitability test for the use of factor analysis and the uniformity of the KMO items and the Bartlett's Test against the Green Practice Constructs

Kaiser-Meyer-Olkin	Measure of Sampling Adequacy	0.855
Bartlett's Test of Sphericity	Approx. Chi-Square Spherecity	3361.795
	df	666
	Sig.	0.000

Table 4

Component matrix with rotation varimax and factor loading

Component									
Recyling	FL	Electricity Saving	FL	Eco-friendly	FL	Paper Resource	FL	Water Saving	FL
Ah 19	0.675	Ah 9	0.730	Ah31	0.696	Ah1	0.698	Ah 16	0.604
Ah 20	0.709	Ah10	0.744	Ah32	0.761	Ah2	0.616	Ah17	0.655
Ah 21	0.641	Ah11	0.641	Ah33	0.708	Ah3	0.694	Ah 18	0.652
Ah 22	0.653	Ah 12	0.762	Ah34	0.776	Ah4	0.745	Ah 28	0.714
Ah 23	0.725	Ah 13	0.677	Ah35	0.740	Ah5	0.770	Ah 29	0.617
Ah 24	0.681	Ah 14	0.699	Ah36	0.715	Ah6	0.724	Ah 30	0.647
Ah 25	0.712	Ah 15	0.637	Ah37	0.758	Ah7	0.642		
Ah 26	0.670					Ah8	0.690		
Ah 27	0.671								

that no item should be dropped, as all the items had an anti-image correlation matrix value of more than 0.5. According to Hair et al. (2010), a factor loading exceeding the value of 0.50 is required to ensure that an item measures what it is supposed to measure. It was found that the factor loading for each latent variable was above 0.50. The value of Ah 19, Ah 20, Ah 21, Ah 22, Ah 23, Ah 24, Ah 25, Ah 26, Ah 27, belonged to component one, which is recycling practice, while the value of Ah 9, Ah10, Ah11, Ah 12, Ah 13, Ah 14 and Ah 15 were accumulated in component two, the electricity-saving group. The Ah 31, Ah 32, Ah 33, Ah 34, Ah 35, Ah 36, and Ah 37 values were accumulated in component three, which was environmentally-friendly product consumption. The Ah 1, Ah 2, Ah 3, Ah 4, Ah 5, Ah 6, Ah 7 and Ah 8 values were accumulated in component four of the paper, which was the consumption practice group. The values of Ah 16, Ah 17, Ah 18, Ah 28, Ah 29 and Ah 30 were accumulated in component five, which was the water-saving group.

In addition, the values shown in Table 4 also refer to the coefficients or factor loading for each item that tends toward each factor being grouped. This value shows the

correlative relationship between the item and the factor formed, and this is the key to understanding the nature of these factors.

Confirmatory Factor Analysis (CFA)

CFA was conducted to validate the measurements that had been undertaken during the EFA. The data were collected from 100 samples, and five factors of the measurement model were tested using AMOS 20.0. Some modifications were made to improve the model. One of the modifications was the deletion of items with low factor loadings. After the modifications, the overall model showed that the corresponding index value was p = 0.000, the normed chi square = 205.394, the CFI = 0.911, and the RMSEA = 0.084. The value produced by the CFI was equal to 0.911. The value was greater than 0.90, indicating that this model is valid and that there is high compatibility between the model and the data (Hu & Bentler, 1999). The resulting value of the GFI, which was 0.821, approximates 0.90. This shows that the resulting model is good. In addition, the RMSEA for this study was equal to 0.084; this value is less than 0.10. Hair et al. (2010) stated that 0.080 is a good value for the RMSEA, but that a value less than 0.10 is acceptable. This indicated that the fundamental factor of the green practice constructs in Figure 2 is valid and acceptable (Hair et al., 2010).

The correlation between the constructs is shown in Table 5. The value shows the correlation between the constructs. The conditions for the correlation between the constructs are met where all the values for the diagonal are greater than the values below. This is simililar as described by Shevlin and Miles (1998), where values greater than 0.9 are acceptable when the sample sizes are smaller.

However, measurement errors were found between items Ah 1 and Ah 2, and Ah 9 and Ah 11. These items are correlated with each other at 0.40 and 0.32. The findings based on the observation made showed that these four items had almost the same meaning. This situation prompted the respondents to choose answers that were almost identical. For items Ah 1 and Ah 2,

Table 5
Correlation between constructs

Constructs	1	2	3	4	5
Recycling practice	1.00				
Eco-friendly product consumption	0.81	1.00			
Paper resource consumption	0.67	0.66	1.00		
Electricity saving practice	0.73	0.75	0.82	1.00	
Water saving practice	0.77	0.62	0.78	0.93	1.00

the word usage led to overlapping. Items Ah 9 and Ah 11 used a word in their sentence structure which caused them to look the same. Therefore, they produced statements with very similar meanings. Based on the modifications index (MI), correlating the measurement error between the items is recommended. Overall, the model is acceptable and provides factorial validity to the determinants of green practices among students.

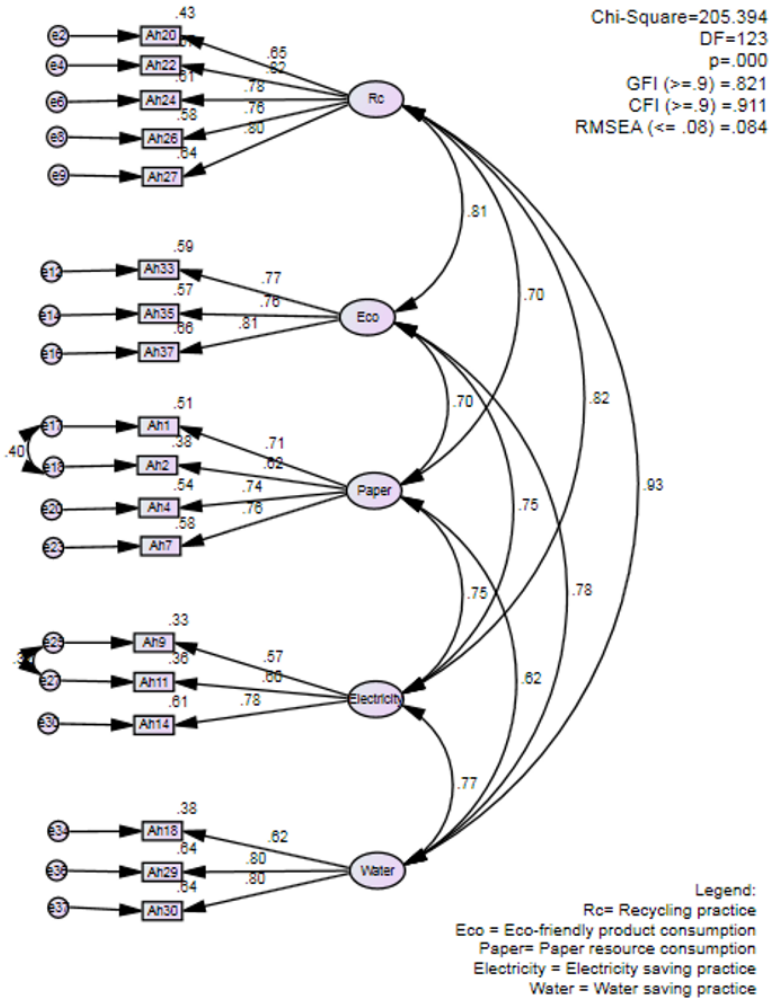

Figure 2. Confirmatory factor analysis (CFA) of green practice constructs

CONCLUSION

The adoption of green practices among students should be carried out at the school level, as it is a trigger for the implementation of green practices in the future. Frequent issues associated with a low level of awareness regarding the implementation of green practices are continually increasing. Factors such as time constraints and a lack of knowledge regarding how to implement green practices are the main reasons that students do not carry them out in their daily lives. Thus, the role of the school, teachers, and the media is very important in raising awareness about green practices. Research on green practices should also be increased to enable the students' level of awareness of green practices to be directly measurable and to be improved.

The results of this study have shown that the determination of the construct validity in this study proves that convergent and discriminant validity has been achieved based on a CFA analysis. Some items were removed in order to obtain a better compatibility index and five factors have been generated in the implementation of green practices; i. paper resource management practices, ii. electricity-saving practices, iii. water-saving practices, iv. recycling, and v. eco-friendly product consumption. A correlation analysis between the variables was conducted to examine the existence of relationships between the constructs in which the correlation coefficient between the variables was less than 0.90. This provides an early indicator that each variable measures different things.

Thus, it can be concluded that this measurement model conforms to the characteristics of a good fit suitability model in identifying and validating important aspects that specifically verify green practices among students. However, this study could still be improved in the future, taking into account several other aspects leading to green practices that are not included in this study. Further, this study could be improved in the future by taking into account the number of samples and by varying the analysis techniques. The instrument is suitable for use in the context of education in Malaysia.

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