
EXPLORING CRITICAL SUCCESS FACTORS OF EDUCATION FOR SUSTAINABLE DEVELOPMENT (ESD) IN MALAYSIA

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Abstract – This study seeks to explore the critical success factors of education for sustainable development. As the world has realized a move towards sustainability is inevitable, sustainable development (SD) was adopted and headed by the United Nations. To embed the concept of sustainable development in the minds of young people who will be the future generations and to create the best practice and attitude towards environment, education for sustainable development (ESD) was introduced as an approach of teaching and learning in schools. Malaysia has implemented (ESD) and became a member of the Foundation of Environmental Education (FEE) and a member of the Worldwide Fund for Nature (WWF) which is running the eco school program nationally. However, as the uptake of the eco-school status and environmental excellence of ‘Green Flag’ is very low, this gives the hint of the need for these schools to be aware of the success factors which can lead to effective implementation of education for sustainable development. Hence, an exploratory study based on the grounded theory approach was conducted. The data was attained from interviews with eco leaders of awarded eco-schools and with a “program officer” of the eco-school program in WWF Malaysia. The findings suggest for a model that consists of 33 critical success factors of implementing (ESD), fulfilled through four main elements of 1) the eco- committee, 2) the teacher (eco leader), 3) the students and 4) the school management. This model can be used as guidelines for those seeking to effectively implement education for sustainable development in eco-schools. The findings also emphasize on the importance of cooperation and collaboration between the school community, the public and private agencies, and non-government agencies to fulfill the sustainable development goals.

Keywords – *Eco learning, Environmental education, Effective education for sustainable development, Education for sustainable development schools, Green schools, Sustainable and eco-friendly schools.*

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I. Introduction

The future of the earth has become a matter of great concern due to the activities of human beings which affected the ecosystem and led to the deterioration of the environmental conditions in many parts of the world. Therefore, the United Nations (UN) declared that sustainable development (SD) should become a recognized goal for human society, and it has to have a crucial role in businesses and resources conservation in the 21st century (Avesani, 2020). To embed the concept of (SD) in the society and create the best practices towards the environment, it is found out that directing education towards sustainable development is one of the best ways to promote for sustainable development. Therefore, Education for Sustainable Development (ESD) was introduced, and several events held by the UN were dedicated for that purpose (Pauw et al., 2015).

Many countries around the world have incorporated ESD in their education. Malaysia also has made a considerable effort towards implementing education for sustainable development and in 1972 became a member in the Foundation of Environmental Education (FEE) which runs the eco-school programs internationally, and in 2010 as a member in the Worldwide Fund for Nature (WWF) which runs the eco-school programs in Malaysia. However, an important question could be raised which is how the effectiveness of implementing education for sustainable development in the eco schools is guaranteed? Are there areas in which good performance is necessary to reach the goal of conducting (ESD) successfully? In fact, according to the latest figures obtained from WWF Malaysia, there are 328 registered eco-schools across Malaysia. 17 schools have been awarded Bronze award, 35 schools have been awarded Silver award, and only 13 schools have been awarded the Green Flag award as per December 2019. The Eco-Schools Green Flag is an internationally recognized award for excellence in environmental action and learning (Flag, 2020). Another way to view this, among the total number of schools registered in eco school programs run by WWF Malaysia, only 3.9% of them have achieved excellence in implementing education for sustainable development (ESD) while others are still trying. This is an indication of the need for these schools to understand the causes and factors that lead to a successful implementation of education for sustainable development. Knowledge of critical success factors of education for sustainable development particularly in the context of the eco-schools is nevertheless fragmented and has not been properly integrated. Based on the authors synthesis of the existing literature, it shows that researches mostly focused on four points when it comes to implementing education for sustainable development (ESD):

1. Assessing the effectiveness of (ESD) in eco-schools through evaluating the sustainability consciousness and behavior of both students and teachers.
2. Investigating critical success of (ESD), however in a university context not in a school context.
3. Investigating the criteria or measurable indicators necessary for the evaluation of implementing education for sustainable development.
4. Identifying only one or two success factors of implementing (ESD) in eco-schools, which is not sufficient.

Therefore, the literature shows that there is an inadequacy in realizing comprehensive factors that lead to an effective and successful implementation of education for sustainable development (ESD) in eco-schools in Malaysia. In this light, the purpose of this study is to explore critical success factors (CSFs) for the implementation of ESD in eco-schools and constitute a model of best practice. Two research questions were set, which are:

1. What are the critical success factors that can contribute to successful implementation of ESD in eco-schools?
2. How can the critical success factors of implementing ESD in eco-schools, be prioritized and combined to develop a best practice model that can be referred to?

This study is important for the eco-schools or any environmentally active school which aspire to apply ESD effectively, successfully and fruitfully. It is helpful for the educators to deliver the environmental knowledge to the minds of learners in the most productive and effective manner to create the habit and the positive attitude towards the environment and consequently produce future caretakers of their planet. This study encourages to expand the level of cooperation and collaboration between the school community in one hand and the surrounding community, the public and private agencies, and non-government agencies (NGOs) on the other hand so they can all work together to fulfill sustainable development goals in the society and reach the desired outcomes. Comparing this study with the existing researches, the latter focused on evaluating and assessing the effectiveness of implement ESD through observing the level of awareness and sustainability consciousness of students and teachers only. However, we attempt to explore the critical success factors that lead to effective

ESD implementation which eventually result in raising the sustainability consciousness and awareness towards the environment.

II. Literature review

This research was designed as a qualitative study. Hence its approach is slightly different from other literature reviews because it adopts grounded theory as a research method. Therefore, it is not using exiting theories to improve on; rather it draws a context for the research and supports its rationale. The findings of the research are generated after collecting and analyzing the data.

Sustainable Development

Sustainable development, as defined by World Council for Economic Development (Siraj-Blatchford, Mogharreban, & Park, 2016), is the development that “meets the needs of the present without compromising the ability of future generations to meet their own needs” (Annan-Diab & Molinari, 2017). The importance of sustainable development comes at enabling human beings to achieve economic and social advancement and progress while protecting the long-term values of their environment and taking care of their planet. SD urges integration between environmental policies and economic strategies (Molotokienė, 2020). There have been always calls and concerns as to responsible use of natural resources in the interest of present and future generation (Du Pisani, 2006; Purvis, Mao & Robinson, 2019). In September 2000, a collective and collaborative action has been taken by the world leaders who came together at the United Nations Head Quarters in New York City to adopt the declaration of the Millennium Development goals (MDGs). The declaration committed the worldwide nations to a global partnership to reduce extreme poverty. In Rio+20 summit in June 2012, UN secretary-general Ban Ki Moon appointed global sustainability panel and issued a report recommending that the world adopts a set of Sustainable Development goals (SDGs) (Sachs, 2012). Among the 17 sustainable development goals (SDGs) adopted in September 2015 for 2030 agenda, goal number four (SDG4) was “quality education”, which aims to ensure inclusive and equitable quality education and promote lifelong learning opportunity for all by 2030. Under that goal, there were 10 targets where education for sustainable development (ESD) was stated clearly in target 4.7 as follows: (By 2030, ensure all learners acquire knowledge and skills needed to promote for sustainable development, including among others through education for sustainable development and sustainable lifestyle) (Mokshein, 2019).

Education for Sustainable Development (ESD) and Eco-schools

The UNESCO definition of (ESD) reads: “Education for Sustainable Development means including key sustainable development issues into teaching and learning; for example, climate change, disaster risk reduction, biodiversity, poverty reduction, and sustainable consumption (Pauw et al., 2015). The education for sustainable development aims to prepare learners for sustainable decision-making for the sake of their future lives through the process of learning (Olsson, Gericke & Chang Rundgren, 2016). Eco schools international program is the largest global sustainable school program developed as a response to the needs identified at the United Nations Conference on Environmental and Development and launched in 1994 in Denmark and some other European countries with the support of the European commotion (<https://www.ecoschools.global/>). The program operates within the framework of the Foundation for Environmental Education (FEE), a non-governmental organization bringing together national governmental and non-governmental organizations and implementing programs for environmental education, management, and certification. The main principle of the program is that eco-thinking should become a way of life (Boeve-de Pauw & Van Petegem, 2011). The program is an international initiative which was designed to guide schools to implement a whole-school approach towards environmental and sustainability education. Through this program, young learners experience a sense of achievement at being able to have a say in the environmental management policies of their schools, ultimately steering them towards certification and the prestige which comes with being awarded a Green Flag (FEE, 2020).

Malaysia gave priority towards education for sustainable development and has taken bold steps to align with the principles of sustainable development. In 1972, it became one of the 76 members of the Foundation of Environmental Education (FEE) around the world. At the international level, FEE is running the eco school programs. However, it has one national member organization per country representing FEE on the national level and in charge of implementing FEE programs nationally. In Malaysia, it is known as Tabung Alam Malaysia or WWF-Malaysia (Worldwide Fund for Nature). WWF-Malaysia became an associate member of FEE in 2010. It also became the national operator for the Eco-Schools Program in Malaysia (Mokshein, 2019).

Critical Success Factors for Education for Sustainable Development

Bruno and Leidecker defined CSFs as the characteristics, conditions or variables that when properly maintained, sustained or managed can have significant impact on the success of a firm competing in a particular

industry” (Baporikar, 2020; Naveed & Ahmad, 2019). Rockart (1979) defined CSFs as the limited number of areas for any organization in which satisfactory results will ensure successful performance for an organization (John F Rockart, 1979). Consequently, if these few areas are not adequately performed and/or maintained, the organization's outcome will be less successful. Rockart believed that CSFs are not an organization's goals, but the areas where good performance is necessary to ensure that those goals are reached. These factors should receive consistent and careful attention from management.

Overviewing the existing researches concerned with critical success factors of education for sustainable development, some studies set the setting in the Malaysian context. A study by Abdullah and Muslim (2017) identified the factors of university governance that contribute to the success in implementing Sustainable Campus Operation (SCO) initiatives. Nine CSFs that could contribute to a successful transition to a sustainable campus were offered. Although the study was conducted in Malaysia, it is more applicable to a university context more than a school context. Another study was conducted on sustainable universities, focusing on the participatory approaches that can contribute towards the integration of sustainability concept into the university culture (Mahat, 2017). There are similarities in the two studies as both were looking at the university needs, but the focus was different, which is between staff participation (Mahat, 2017) and role of management (Abdullah & Muslim, 2017). Another study was conducted by Denan et al., (2017) that suggests the development of holistic eco-schools in Malaysia needs essentially the support of related authorities, NGOs, potential sponsor and communities. In fact, this is one factor of numerous critical success factors necessary for effective implementation of education for sustainable development. What can be concluded from this is the need for more comprehensive success factors to be explored which is the main objective of this research.

Another research about education for sustainable development conducted in Malaysia “Environmental knowledge, attitude and practices of student teachers” surveyed the environmental knowledge, attitude and practice of the pre-service secondary teachers. The study suggests teachers should have knowledge about the environment and consequently pro-environmental attitude to ensure effective teaching delivery (Esa, 2010). Once again, this is one factor of the so many critical success factors of education for sustainable development which this research attempts to explore. There are several studies which have been conducted in implementing education for sustainable development in other countries around the world like Sweden, Canada, Israel, and South Africa. However, these studies mainly focused on assessing the effectiveness of implanting education for sustainable development through observing the sustainability behavior and consciousness of students while this research will explore the factors that eventually lead to sustainability consciousness. For instance, Igbokwe (2016) main findings in her study about the eco schools in Ontario, Canada, was that the Eco school program was invisible to 84% of the students, and 75% of the students were not aware of the eco school program or knowledgeable of what it entitled (Igbokwe, 2016). A summary of the CSFs of ESD in previous studies is presented in Table 1 below.

Table 1: Critical Success Factors of ESD mentioned in Previous Studies.

Critical Success Factors (CSFs)	Abdullah & Muslim (2017)	Mahat (2017)	Disterheft et al. (2015)	Denan et al., (2017)	(Esa, 2010).
Sustainable school mission and vision	√	√	√		
Strategy and action plan implementation	√	√	√		
Monitoring system		√			
Reporting system		√			
Develop a network	√	√			
Setting -up working group	√				
Smooth communication	√				
Identify leader /expert .	√				
Allocate sufficient resources	√	√			
Develop policy and guidelines	√	√			
Raise awareness among campus community.	√	√			
Making sure that the right people are at the table and that they are heard			√		
Stimulate positive feelings			√		
Tangible objectives			√		
Activities and greening projects		√			
Development of environmental information		√			
Capacity development		√	√		

Garden management system.		√			
Strategy and action plan for greening.		√			
Usage of product and green technology		√			
support of related authorities, NGOs				√	
Environmental knowledge of the teacher.					√

III. Data and Methodology

This research was conducted as a qualitative study, and this section describes the method following the steps of the grounded theory in analyzing the data. The grounded theory was first introduced in 1967 by Glaser and Strauss when they published 'The Discovery of Grounded Theory', in which the method studies people's experience with process or phenomenon, and then creates or generates a theory of how that process works. A grounded theory identifies categories of meaning from data and gives us a guideline on how to link and establish a relationship between these categories. Finally, to develop a theory from the integrated categories, the researcher uses several key strategies like coding, constant comparative analysis, theoretical sampling, and theoretical coding (Glaser & Strauss, 2017). Figure 1 illustrates the research design and data analysis process.

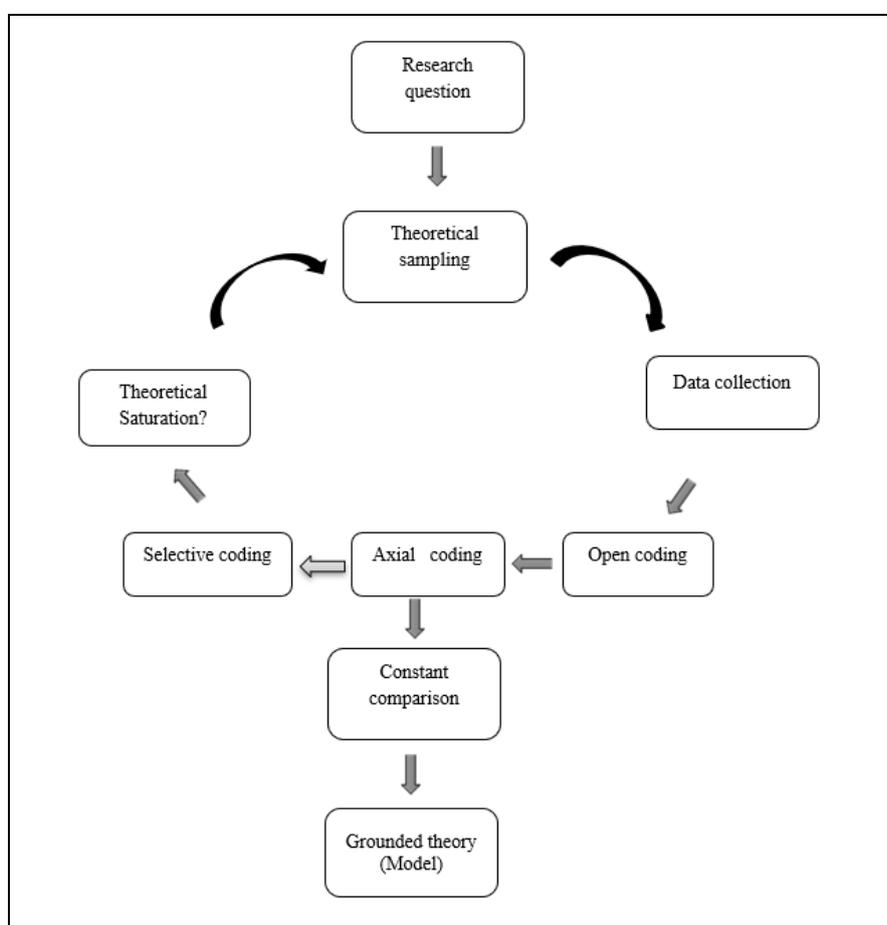


Figure 1: The Research Design

Research Questions

The study began with constructing the research questions for answering the research objectives. The two research questions are:

1. What are the critical success factors that can contribute to a successful implementation of ESD in eco-schools?

2. How can the critical success factors of implementing ESD in eco-schools, be prioritized and combined to develop a best practice model that can be referred to?

Sampling

Then, the sample was set which is the eco-schools and environmentally active schools in Malaysia. The information about these schools was obtained either from the school's official website or from the WWF Malaysia eco-school program officers. Since this research was a qualitative study, the researcher used purposive or non-probability sampling where the members of the population were chosen based on the own judgment of the researcher. Therefore, the researcher selected participants who were knowledgeable concerning the research problem (Strauss & Corbin, 1990) and can assist with building a model of critical success factors of education for sustainable development (ESD). The informers were the eco leaders of the eco-schools since they were the ones who had excellent information about the area of this research. The sample size was determined by data saturation (Dworkin, 2012). In other words, the researcher was not focusing on how many participants were interviewed, rather on how many new ideas and concepts were emerging. The researcher continued the process of sampling, collecting and analysing the data until it was saturated and no longer new insights were occurring. The generalization of the study is the extent to which a generalization can be applied from the sample to the population (Schreier, 2018).

Data Collection

The main form of collecting data was through conducting interviews with the eco leaders of four eco-schools which have been awarded "Green flag" award or other environmental awards for achieving excellence in implementing education for sustainable development. The fifth interview was held with an expert in the eco-school program in WWF Malaysia. In semi-structured interviews, usually specific data is required from the respondents. However, the questions are flexibly worded. This allowed the researcher to respond to the situation at hand and get more new ideas and concepts on the topic (Sharan, 2009). The interview questions listed below were designed by expanding the research questions.

1. When was the school established?
2. What is the mission and vision of the school?
3. How do you apply the concept of (ESD) in the school?
4. What are the success factors that led to a successful implementation of education for sustainable development?
5. What do you think the most important factor among them is?

The researcher also paid attention to the physical setting of the interviews, which were held with the eco leaders without the presence of the management staff (admins) or the academic staff (teachers), to get as much unbiased information as possible. In addition, the researcher made sure not to do any encouraging or discouraging facial expressions or gestures to get unbiased information based on suggestions from Sekaran and Bougie (2016). The interviews were transcribed using the correct set up for interview transcripts and they were prepared for the analysis process.

Data Analysis

After conducting the interviews, the researcher started to transcribe the interviews and then set up a format of the interview transcript of each interview. To enable analysis, the researcher added line numbering down the left-hand side of the pages and left wide enough margins on the right-hand side of the page to add notes and codes (Sharan, 2009). The analysis process went through three levels: (a) open coding, (b) axial coding and (c) selective coding.

- a. Open coding.

The first step in analyzing the data is open coding. Open coding is a process of making meaning or making sense out of the data. It is simply going through the interview transcript line by line, reading and manually jotting down notes and comments "codes" on the margins of the interview transcripts. The researcher would make notes to any bits of data that would strike as potentially relevant for answering the research question, which is the success factor of implementing (ESD) or eco learning at eco schools. Figure 2 shows an example of open coding.

16. this is my observation. However, from their side,
 17. they told us that when the students were presenting, it seemed
 18. that the work that has been done was not the students' work, but the teacher's
 19. So what WWF wants is the students to apply this work and
 20. the purpose of the teacher is to guide the, Factor2 (Empowering students)

Figure 2: Sample of Open Coding

b. Axial coding

In this step, the researcher went back to the marginal notes' "codes" made in the interview transcript during the open coding step and tried to form or create a sort of meaningful connection between these codes. The codes that seemed to go together under one category were grouped. The codes were classified under four categories which are four main school elements:

- 1) The eco-committee
- 2) the teacher (Eco leader)
- 3) the student
- 4) The school management.

Figure 3 shows an example of the revised axial coding.

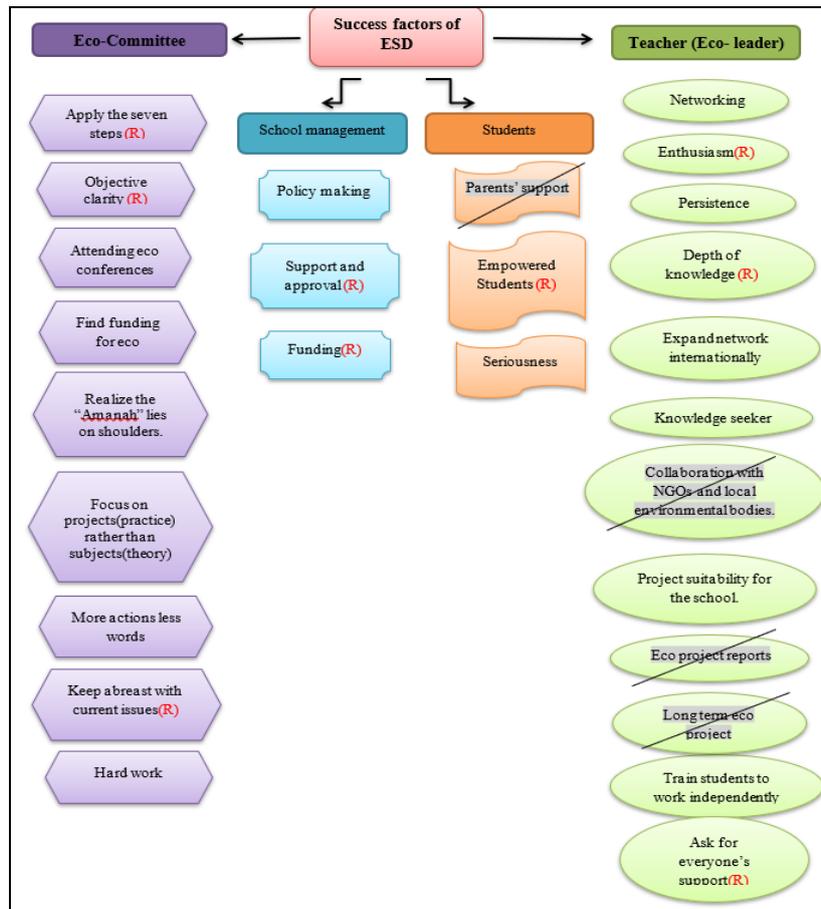


Figure 3: The Revised Axial Coding of Interview 2

c. Selective coding

The next step of analyzing the data is selective coding; in which a core category is identified and related to all categories and subcategories emerged from the data. After comparing the lists of “axial coding” for all the five interviews, merging what could be merged from the codes, combining some and subsuming others under each other, a master list was finally produced. The core category is the quest of our research which is “the success factors of ESD”. The four main categories through which these factors can be fulfilled are four main elements of the school, the eco-committee, the eco leader (teacher), the students and the school management. Under each element, a few themes (factors) emerged. The themes were listed in columns highlighted with different intensity of colors. The darker the color of the column is the more frequent these factors were mentioned by the participants. The lighter the color is the less frequent these factors were mentioned by the participants. Once the themes are tabulated, then each one will be described supported by excerpts from the participant statements. Table 2 shows an example of the excerpt on “Passionate and interested”.

Sixty percent of the participants expressed truthfully that passion and interest of the eco-leader was a major driving factor to carry out the eco work. Participant 4 (Int4A) described how he sometimes spend his own money to fund the eco projects when there is no enough funding. Participant 2(Int2S) declared that because of his passion for eco learning, he is always willing to explore more and work even during his holidays.

Table 2: Excerpts on “Passionate and interested”

Line / session / speaker	Quotation
559-560/ session 2 / (Int2S)	“Another point that should be available in the eco teacher is the enthusiasm. To know how and know why.”
14-18 / session 3 / (Int3M)	“So I would say it is the passion of teachers, students and the principal, especially when they are supposedly have different batches of the year, and they manage to keep the program running, it is because of that passion. That is one thing that I would say is the most successful factor.”
400-402/ session 4 / (Int4A)	“Because I got the interest and the passion, I would not bother if I spend my own money if the program needs more money and there is no enough funding. Why? Because my aim is to the success of the program.”

IV. Findings and Discussion

The findings of this research have produced a model which contains twenty-nine critical success factors of education for sustainable development as shown in Figure 4. These factors were classified under four main school elements through which they are fulfilled.

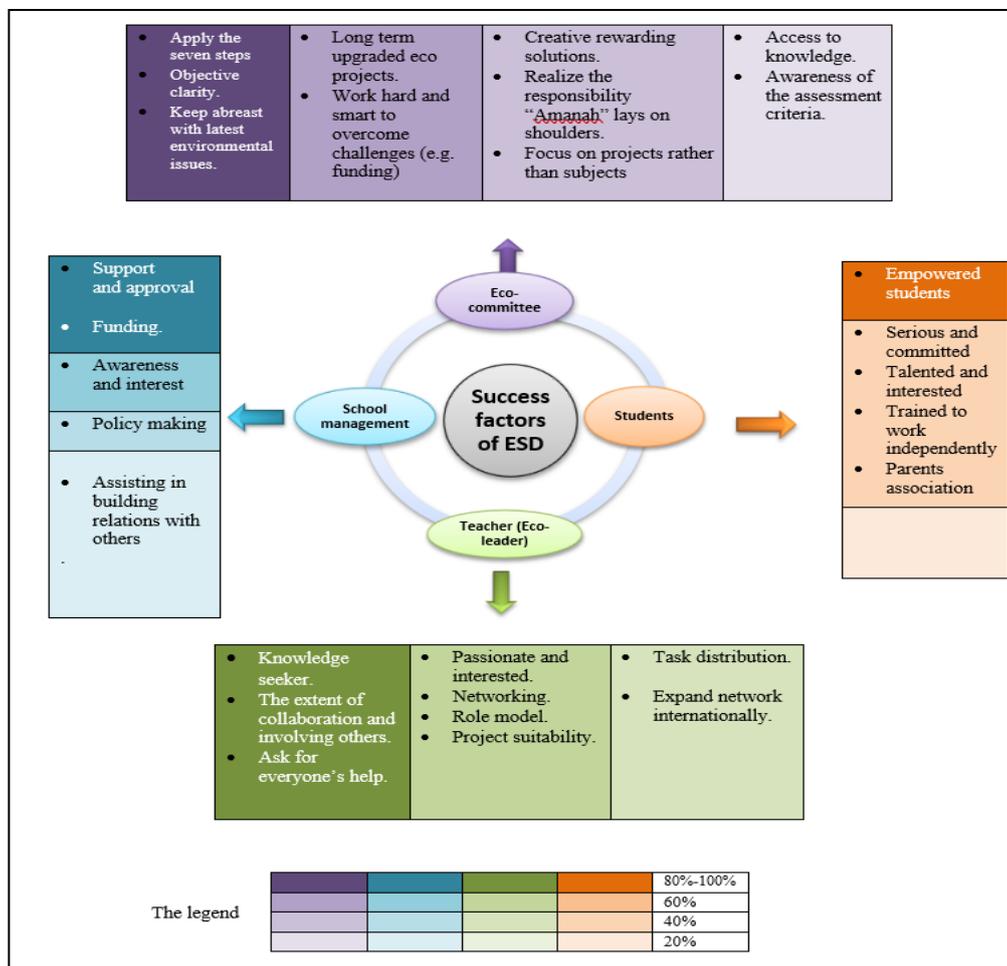


Figure 4: The Model of Education for Sustainable Development Critical Success Factors

In Figure 4, the factors were highlighted with colors of different brightness based on how frequent they were mentioned by the participants. The ones in dark columns or the least bright ones were usually the most frequently emphasized factors by participants (80%-100%). The findings show that the effectiveness of education for sustainable development is at its peak when all the above-mentioned factors are achieved. Nevertheless, if all of them cannot be fulfilled, but the factors listed in dark or the least bright columns can, the results will still score high. To put it differently, when the eco committee of the school is clear about its objectives, follows the guidelines of the seven steps properly and stay up-to-date with latest environmental events, issues and activities, that means it is accomplishing best performance in applying the eco learning (ESD). Likewise, the eco leader achieves high productivity when he elevates the level of his/her awareness and constantly seeks knowledge, tries his best to involve everyone around him whether inside the school community or by collaboration with NGOs, public agencies and private companies, and asks the help of everyone so the maximum amount of eco work can be done in a considerable time. Highly powered students who carry out the eco work independently as well as a supportive school management are vital factors for fruitful eco learning. It must be remembered here that these factors were given the priority and significance over other factors obviously based on the data obtained from participants' statements.

V. Conclusion

The study was conducted to explore the critical success factors for the establishment and development of

the education for sustainable development. The model of critical success factors formulated from the finding is important for eco-schools in Malaysia as well as around the globe aspiring to apply the eco learning and get the recognition of eco school status by winning the “Green Flag” award. It provides clear understanding and guidelines for the eco-schools, especially in developing countries, to effectively implement education for sustainable development which eventually leads the school to win the award of excellence in environmental education. Hence, the school will pin its name in the world map and become recognized internationally. It helps everyone to be clear about the school role towards the environment and increases the level of awareness and sustainability consciousness. It creates a platform of collaboration between the school community and the society at large including public and private agencies and NGOs by creating cooperative society members who help the policy makers to carry out their plants smoothly and eventually achieve sustainable development goals. However, there are few limitations of the study. The findings of this research would be more solid if more interviews would be conducted with more “eco leaders” of eco-schools in Malaysia. By further exploring on the issue, it could establish a better understanding of the challenges that eco-schools are facing and creating a sustainable success factors of education for sustainable development.

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