

A Successful Model to Inculcate Low Carbon Awareness among School Students and Teachers

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Abstract – *This five-year study was conducted to identify a model that can be used as a guiding model for other cities in Malaysia and Asian countries to form a Low Carbon Society. The research was conducted in Iskandar Malaysia, a southern economic region in Johor, Malaysia to inculcate low carbon awareness among school teachers and students. The research involved a series of meetings, focus group discussion, writing of blueprints and implementation of the blueprints that includes organizing competitions, teacher trainings, talks, campaigns and exhibition. The impact of the implementation was measured using teacher survey, student survey, interviews and observation at schools. Through the researchers' reflection, the experience of the study especially in the implementation of low carbon awareness programs, a successful model is generated as a reference for future research. Copyright © 2015 Penerbit Akademia Baru - All rights reserved.*

Keywords: Low Carbon Awareness, Implementation Model, Blueprint

1.0 INTRODUCTION

A low carbon society is a concept which refers to a minimal output of greenhouse gas (GHG) emissions into the atmosphere. In a low carbon society (LCS), a different lifestyle will be adopted [1]. The society will make more use of the renewable resources (Recycle, Reuse) and minimize the usage of non-renewable resources (Reduce). In order to embed the above concept into the society, education is to be considered as the fundamental method and the results are foreseen to produce a long term effect to the society, environment and economy. According to the United Nations Decade of Education for Sustainable Development 2005 – 2014, the key role for education is to inspire the belief that everyone has the equal power and responsibility to bring along positive change on a global scale. It is believed that education is the primary agent of transformation towards sustainable development, fosters the values, behaviour and lifestyles required for a sustainable future. Furthermore, education helps to build the capacity of futures oriented thinking which are learning how to make decisions that consider the long term future of equity economy and ecology of all communities [2]. This

paper will summarise all the efforts taken by a team of researchers to inculcate low carbon awareness among school teachers and students through various activities and present a successful model for the education of low carbon awareness for Iskandar Malaysia (IM), Johor.

2.0 BACKGROUND

It is clear that during the recent decades, Malaysian government is actively involved in various activities towards the contribution of the low carbon society in order to create an economically, socially sustainable society. Moreover, the Prime Minister of Malaysia has announced the launching of low carbon cities framework, with the target to reduce carbon dioxide emissions intensity by 40% by 2020 [3]. According to Datuk Seri Mohd Najib Tun Razak, sustainable development is to ensure resources were used wisely instead of no development.

Iskandar Malaysia (IM) is a southern corridor economic area located at southern region of Johor with an area of 2217km² and covers overall Johor Bahru, Pasir Gudang and some part of Pontian and Kulaijaya districts [4]. Iskandar Regional Development Authority (IRDA) which was established in year 2007 under the Act of IRDA 2007 functions to determine policy, aim and strategy to develop IM. In order to draw a Low Carbon blueprint for a sustainable developed IM, an international research project sponsored by Japan International Cooperation Agency (JICA) and Japan Science and Technology Agency (JST) were started in year 2010[3]. The project combined researchers from Malaysia and Japan to draw policies, programs, and suitable actions to ensure IM achieve the reduction of greenhouse gases.

In 2012, the Low Carbon Society Blueprint for Iskandar Malaysia 2025 was produced and approved by the Malaysian Prime Minister [5]. The blueprint was edited to the third edition in 2014[6]. In the blueprint, 12 actions were drawn under triple bottom pillars namely Green Economy, Green Community and Green Environment. Under the Green Community comes two actions which are Low Carbon Lifestyle, and Community Engagement & Consensus Building. There are five sub-actions under the Low Carbon Lifestyle action where Awareness through Education is the core of this paper since one of the measures of this sub-action is to enhance school children awareness through various programs drawn in the blueprint. The programs are LCS education across curriculum, school clubs for LCS & 3R (Reduce, Reuse, Recycle) programs, Children Eco-life Challenge project, interschool 3R project competitions, 3R measures at schools, LCS measures at schools, collaboration with relevant government agencies & NGOs, and students to collect reusable & recyclable wastes from home and neighbourhood. The details of the programs can be referred to the Road Map [5].

3.0 LITERATURE REVIEW

Education plays an important role in preparing individuals in the society to handle current environmental problems and preventing future ones. It provides individual with necessary knowledge, understanding and skills to enable them to make informed choices of more sustainable lifestyle such as low carbon products and services, and 3R practices. Such education (environmental education, EE) started from the field of studies related to natural history and elementary science, focusing around the care and conservation of the natural environment [7]. In modern curriculum, environmental elements were introduced into

subjects like geography and biology, focusing on the ecology and its preservation, and limited to field studies [7-8].

In 1972, education was identified as an important way to address environmental issues in the United Nation Conference on the Human Environment held in Stockholm[9] and once again stressed in Agenda 21, the agreement reached at the Earth Summit, held in Rio de Janeiro in 1992[10]. The major goals of EE are to create awareness and concern about the environmental issues, and to provide each individual the opportunity to acquire the knowledge, attitude, skills and commitment to protect and improve the environment [11-16].

In the International Working Meeting on Environmental Education in the School Curriculum [12], environmental education should be incorporated in all school subjects. Similarly, in the Belgrade Charter [14] and Tbilisi Report [15], it was stated that environmental education is interdisciplinary in nature, cutting across various subjects. As such it would be best to be integrated into existing curriculum, and not to be a stand-alone subject. Other scholars [13,17-19] also advocate the integration of environmental elements or components into the existing curriculum to reflect its interdisciplinary nature, without changing the entire structure of the curriculum. Introducing environmental concepts (LCS & 3R in this research project) within existing subjects will enable students to connect the knowledge and skills they acquire “in the classroom” with the issues “outside the classroom”.

Other than the four working definition of LCS accepted in the first Japan-UK LCS workshop in year 2006[20], it was also emphasized that the definition includes the importance of technology and also the need of lifestyle and social change [21]. Although education (Green Labeling and Eco labels) is listed as a part of the policy package proposed in the development Iskandar Malaysia into a Low Carbon City [22], there are no further elaborations on the education approach. As EE is a means to increase the awareness and promote attitude and behavioural change towards the environment, it is vital to include formal education in promoting Low Carbon Society in the long term.

The general guideline to foster LCS and 3R among school students and teachers is to promote actions to recycle and reuse the renewable resources at its highest possibility and reduce or practice rational use and management of non-renewable resources. According to the Decade of Education for Sustainable Development (DESD) strategy [2], it is also to respect and care for the greater community of life in all its diversity which involves the protection and restoration of the Earth’s ecosystems. Therefore, it is believed that the transformative power of education could bring about the fundamental change demanded by the challenge of low carbon society and 3R [23].

As related to the education and awareness, several suggestions had been raised formerly by Gough & Scott [24]. There is a need for restructuring the reward systems to encourage the teaching and administration that enhance education for LCS and 3R, promotion of interschool work and engagement of student organisations in recycle, reduce and reuse of resources. Besides that, appropriate training should be provided to teachers to ensure that the educators understand the concept of LCS and 3R and are familiar with its principles. By this, they can help to examine the curriculum and school activities, inserts examples that illustrate LCS and 3R and create awareness among the students and educational community. The policy of schools in this situation will shift from solely viewing in terms of product to as process of developing potential and capacity through life at individual and community levels through continuous learning [25].

There are a few efforts in education that try to educate and give awareness to students through school curriculum. For instance Pavlova and Turner [25] introduced a Plastic Product Design course where students were asked to design and make a board game for children. The course covered the designing and learning about eco-technologies as well as the concept of sustainable development, including plastic for sustainable future, recycling, product analysis, properties and uses of plastic. As the interview result after the course, students' beliefs about the way to achieve sustainable development were clearly identified. Besides that, staff (teachers and principals) development and rewards, in-service training, students' opportunity to receive design award through campaign and other learning activities will possibly change their neutral or uninformed attitude towards sustainability and considered it an important issue for themselves and their future professional activity [23]. Education innovations workshops in May 2006, Kenya were designed for university lecturers to learn about integration sustainability issues into their institutions and practice. At the end of the workshops, all participants had developed an action plan for their own contexts [24].

In this research, the learning activities such as exhibitions, training, and competitions were planned in a coherent manner to be used within education classrooms because developing behaviour in students that is supportive of LCS and 3R is a crucial component of the campaign proposed in this research. And the successful implementation of the campaign requires responsible, accountable leadership by teachers and principals. Thus the level of knowledge and enthusiasm of the educator is also a key factor in stimulating the learners' interest and appreciation of issues of LCR and 3R [2]. Hence, workshops and seminars for teachers and principals were one of the objectives in this research to enhance their level of knowledge.

In order to enforce the action steps and policy in the targeted region, more close works are needed with Johor State Education Department or JPJN (*Jabatan Pendidikan Negeri Johor*), District Education Office or PPD (*Pejabat Pendidikan Daerah*) Johor Bahru, PPD Pontian, PPD Kulajaya and PPD Pasir Gudang to develop the ambitious plans. Thus, a clear set of targets should be set out for actions as well as the route of progress and milestones, robust and strongly evidence based strategy for how carbon reductions and 3R can be achieved should be developed as well. And finally, to produce a delivery plan that involves all its partners. In general, there are two phases in fostering low carbon society, which are to describe a desired goal and to seek ways toward the goal [26].

4.0 RESEARCH METHOD

The research aims at understanding how to implement low carbon successfully in Iskandar Malaysia in five years. The experience of the researchers are captured using reflection notes that were written during the research which includes series of meetings, focus group discussion, writing of blueprints and implementation of the blueprints (organizing competitions, teacher trainings, talks, campaigns and exhibition). Reflexivity is very important in a longitudinal study. According to O'Reilly [35], reflexivity is "thinking reflexively about who has conducted and written ethnographic research, how, and under what conditions, and what impact these might have on the value of the ethnography produced" (p.187). Delamont [36] stated that reflexive is where the researcher being aware his or her role in a study, describing and looking critically at his or her own experience as situated in the culture being studied.

Researcher's reflection notes encourages reflexivity throughout the study and help the researcher to learn [37]. Delamont [36] kept a set of personal reflections in her 'out of filed diary' to record her own reflection on the events she observed and experienced. By analysing the reflection notes and the experience of the researchers, a model to inculcate low carbon awareness at schools can be generated through thematic analysis [38,39]. The steps for the thematic analysis are (1) get familiarized with the data; (2) generate initial codes; (3) search for themes; (4) review the themes; (5) define and name the themes; and (6) produce the report. In this research three major themes were defined which are (1) role of different agencies; (2) consensus building & community engagement; and (3) impacts. There are sub-themes under each themes as described in the following sections.

5.0 ROLE OF DIFFERENT AGENCIES

There are several agencies involved in this project which are the researchers, JPNJ and government agencies, with their respective roles.

5.1 Researchers

The researchers in this project can be divided into two main groups which are researchers from Malaysia and Japan. The Malaysian researchers are from Universiti Teknologi Malaysia (UTM) under the UTM Low Carbon Asia Research Centre while the Japanese researchers involved several universities and agencies such as Kyoto University, Okayama University and National Institute for Environmental Studies (NIES). The Malaysian team is led by Prof. Dr. Ho Chin Siong for the whole project while the Education group is led by Assoc. Prof. Dr. Fatin Aliah Phang. The Japanese researchers involved in the Education group are Dr. Junichi Fujino and Ms. Maiko Suda. With this combination, the roles of the researchers are to study best practices from around the world on how to best educate Iskandar Malaysia community towards low carbon awareness and to draw a blueprint that could realise goal.

5.2 Johor State Education Department (JPNJ)

The role of JPNJ officers are to help coordinate efforts taken by the state to promote environmental education and to authorize the involvement of schools in the research project. JPNJ officers involved in this project are Mr. Mohd Azam Anuar and Ms. Aerma Nurazalina Musa. They help the researchers to gather data from schools and other sectors in JPNJ, coordinate schools involvement and give directive order to PPDs to help monitoring schools involved in the research project.

5.3 Government Agencies

There are several government agencies involved in this project. IRDA as the authority of the region coordinates relevant NGOs and government agencies to involve in the project. The agencies involved in the projects are Department of Environment or JAS (Jabatan Alam Sekitar), Solid Waste Management & Public Cleansing Corporation (SWCorp) or PPSPPA (Perbadanan Pengurusan Sisa Pepejal & Pembersihan Awam) and local authorities. NGOs that are involved in the research are Green Earth Society, Malaysian Nature Society and Junior Chamber International Malaysia.

Table 1: Lists of 3R and LCS measures agreed by schools at the end of the FGD [3]

| A 3R MEASURES | |
|-----------------------|--|
| REDUCE | |
| 1 | Eating to be restricted in canteen area (to reduce the needs for packing/ take away) |
| 2 | No plastic bag/ polystyrene policy in canteen |
| 3 | Encourage 2-sided printing (set the printers to 2-sided) |
| 4 | Prepare purchasing plan before buying |
| 5 | Buy according to needs |
| 6 | Buy & use refill (ink, cartridge) for printing |
| 7 | Use internet system to circulate information rather than mails. |
| REUSE | |
| 1 | Do not prepare polystyrene / paper cups at water-cooler (encourage staffs to refill using their own bottles) |
| 2 | Reuse banner by leaving the year or date or time blank for annual events (eg., welcoming banner, banners for recurrent programs) |
| 3 | Reuse one-side printed paper for notes / drafts |
| 4 | Encourage the usage of old / unused exercise books (lined notebooks) from previous academic year |
| 5 | Encouraging school leavers to donate their references book to school for students use in future |
| 6 | Art teachers should teach school students to make items from recyclable materials (eg., Baskets from paper) |
| 7 | Reuse of students record files |
| 8 | Reuse of binding rings after the documents are taken out |
| RECYCLE | |
| 1 | Prepare recycling bins (3-coloured bins) in each school block (building) |
| 2 | Provide the recycle boxes in each class for recycled paper |
| 3 | Competition among classes on waste segregation and collecting recyclables |
| 4 | Recycling day in school (encourage students and staffs to bring recyclable goods to school, arrange schedule pick-ups from recycling centre) |
| 5 | Creating a group of students whose role is to monitor the activities of recycling in schools (such as the Environmental Club) |
| B LCS MEASURES | |
| 1 | Only switch on fans / lights during school time |
| 2 | Switch off all computers when not in use |
| 3 | Install separated (individual) switches for fans and lights |
| 4 | Set air conditioner temperature at 24C in administration buildings |
| 5 | Use eco-friendly air conditioners in vehicles transporting students to schools |
| 6 | Increase outdoor activities to reduce the use of electricity in classrooms |
| 7 | Install ventilation / exhaust fans on the roof of school buildings |
| 8 | Install wind turbines on school roof (generate electricity) |
| 9 | Students living nearby should walk to school |
| 10 | Use public transport to schools |
| 11 | Separate food waste at canteens to make bio-fertilizer to be used in school compound) |
| 12 | Plant trees / landscape in school compound |
| 13 | Use clay flower pots for plants |
| 14 | Plant trees for shading |
| 15 | Create herb garden (plant lemongrass, tumeric, ginger, roselle etc.) |
| 16 | Use organic fertilizer |
| 17 | Create landscape with water elements |

6.0 CONSENSUS BUILDING & COMMUNITY ENGAGEMENT

The first step to bring about low carbon awareness is to build consensus among the parties involved. In the education context in IM, JPNJ, PPD and schools are the main players. Therefore, a meeting with officers at JPNJ was initiated by UTM researchers and it involved

officers from IRDA. After the idea of low carbon was accepted by JPNJ and it was perceived as aligned with the environmental education of the school curriculum, directive order were given to schools' principals to attend a focus group discussion (FGD). There are three levels at schools to be involved stage by stage, they are the school management, teachers and students. According to JPNJ, there are at least 226 primary schools and 98 secondary schools in IM which amounts to about 16,000 teachers and 300,000 students.

6.1 Focus Group Discussion (FGD)

FGD is very important in consensus building [27]. In December 2011, a FGD was conducted at UTM. It was participated by representatives from 33 primary and secondary schools in IM who are the member of the school management team such as the principals, deputy principals or senior teachers. They were briefed about the idea of LCS and their schools' participation in making IM a LCS. As most of the teachers are more familiar with 3R than LCS, the FGD was divided into two groups to discuss the 3R and LCS measures which the schools have or are willing to adopt. At the end of the FGD, a list of 3R measures and a list of LCS measures were concluded as in Table 1. The measures were reported in the blueprint [3].

The schools' management are very supportive of the development of LCS in IM. This gives encouragement to UTM to continue to pursue the dissemination of the low carbon awareness to the second level which are the teachers.

6.2 Teacher Training

It is difficult to train all the teachers in IM as there are more than 16,000 teachers but training is important to disseminate low carbon awareness to teachers as teachers are the most important agents to raise awareness among school students. It is through teachers who have gained low carbon awareness that they will in turn educate their students. For the teacher training, it was conducted as a part of the requirements for the Iskandar Malaysia Ecolife Challenge conducted since 2013 in primary schools in IM [28-34].

Since the implementation of the Iskandar Malaysia Ecolife Challenge in 2013 until 2015, at least 300 primary school teachers went through the formal training of low carbon awareness and how to practice low carbon measures at school and at home. The training includes the introduction of global warming, climate change, greenhouse gases, carbon emission, carbon reduction and measures to reduce carbon emission through daily life activities. The training module was developed by researchers from UTM.

6.3 Talks & Campaigns

UTM researchers are also actively giving talks to schools that are targeting teachers and students. For example, during the Go Green Run day organized by SMK Taman Johor Jaya 2 in January 2015, UTM researchers were invited to give talk to all the teachers and students on the importance of preserving the environment. Low carbon awareness were instilled in the talk and the audience were given a bookmark that illustrates how carbon impacts on global warming and listed measures that could be taken to reduce carbon emission.

During the Iskandar Malaysia Ecolife Challenge, schools are encouraged to conduct campaigns on 3R and energy & water saving. These campaigns are a part of the competition in the Iskandar Malaysia Ecolife Challenge where schools with the highest weight of

recycling sold and highest percentage of water and electricity bills reduction were given prizes. Through the campaigns, both teachers and students become aware of LCS.

In February 2015, UTM organized the Iskandar Malaysia Sustainable and Low Carbon Schools Exhibition 2015 to provide an opportunity for schools to showcase their green efforts. It was an exhibition cum competition where participating schools were judged for their green efforts and given the appropriate recognition. During the exhibition, 11 sessions of talks and workshops were given by experts. More than 400 participants from schools around Johor participated the exhibition.

6.4 Competitions

The competition organized in IM is the Iskandar Malaysia Ecolife Challenge. There are two stages of the competition. In the first stage, all the primary 6 students were given a workbook to complete. The workbook instills low carbon awareness through household accounting and other self-reflective activities [28,34]. The schools also competed in recycling collection and energy and water saving projects as mentioned in the previous section. The second stage of the competition is for the students to present their understanding and practice of low carbon. The finalists were selected based on the workbook completion and achievement of the projects. A total of 15 finalists were selected to the second stage of the competition and the winners went for a study trip in Kyoto, Japan where the original Children's Ecolife Challenge was initiated by KIKO Network [32-33].

The Iskandar Malaysia Ecolife Challenge 2013 involved only 23 schools as a start. It was expanded to 80 schools in 2014 and in 2015, it involves all 226 primary schools in IM and a total of 27,626 primary 6 students. The competition also involves at least 300 teachers. Thus the dissemination of low carbon awareness can be multiplied by this competition.

6.5 School Clubs

Under the measures suggested during the FGD, many teachers agreed that school clubs play an important role in implementing the measures. Most of the schools have the Environmental Club. Some schools have Recycling Club and recently, after the implementation of Iskandar Malaysia Ecolife Challenge, some schools set up Ecolife Club. The clubs were led by students and they meet twice a month to conduct relevant activities and programs. At least one teacher will advise the clubs and monitor the operation of the clubs. Some schools entrust the clubs to run the projects under the Iskandar Malaysia Ecolife Challenge.

7.0 IMPACTS

From all the activities and programs to build consensus and disseminate low carbon awareness through community engagement, several effects are expected and measured. It is hoped that some champions and ambassadors on low carbon can be produced from among the school management, teachers and students.

7.1 Champions

Champions on low carbon can be fostered among the school management like the principals and teachers. Through all the activities and programs, it is expected some champions are produced at school level. They will make low carbon as a school agenda encompassing not just the activities and programs of the schools but also in their practices. A low carbon champion from among the principals will ensure that all the teachers and students follow certain practical measures to reduce carbon emission and support any activities or programs related to LCS. There are already a few champions from among the school principals such as principal of SMK Taman Johor Jaya 2, SK Kempas, SJK(C) Pulai and so on.

Teachers who are responsible of school clubs related to EE, campaigns and coordinate the Iskandar Malaysia Ecolife Challenge are likely to become the low carbon champions. They will ensure that activities and programs related to low carbon are planned and executed. They will also influence other teachers and students to follow the good practices. Champion teachers will not only influence students during extracurricular activities but also during formal education in classes. This will generate wider and in depth impact to the students.

7.2 Student Ambassadors

Student ambassadors are produced through activities and programs under school clubs. Students who lead the clubs will become low carbon ambassadors at their schools. Under the Iskandar Malaysia Ecolife Challenge, finalists who went to the second stage of the competition are hoped to become the low carbon ambassadors. All the finalists are coined as Ecolife Warriors and they are expected to bring the effects to secondary schools. The winners who won the study trip to Kyoto, Japan are hoped to learn as much as they can from the good environment of Kyoto and disseminate the practices and lifestyle to their peers in Malaysia.

7.3 Parents

One of the most interesting impacts of the Iskandar Malaysia Ecolife Challenge is that the students discuss more on environmental issues with their families. This was measured through a survey which was embedded in the workbook. The post-test of the survey shows that the highest increase from the pre-test of the items measured on the students practice is on discussion with family [34]. This indicates that students talk to their families of what they are doing with the household accounting and other activities in the workbook [28]. This ripple effect is hoped to transform IM into LCS through school activities.

7.4 Research

Research is very important to measure the impact of the activities and programs as well as the implementation of the blueprint. The success of implementation can be easily seen through research. UTM has carried out survey on students and teachers who participated in the Iskandar Malaysia Ecolife Challenge and teacher training. There are significant differences between pre-test and post-test of the students survey and teacher survey [34]. Interviews with teachers and students also indicate that they learn from the activities and begins to change their mindset [28]. More research report will be produced especially in terms of carbon emission.

7.5 Recognition

Finally, recognition is very important to ensure the success of the formation of a LCS from the school context. Recognitions to individual students, teachers and schools can produce bigger impact. For example, the winners of Iskandar Malaysia Ecolife Challenge 2014, SK Kempas set up an Eco-Friendly Station which consists of rainwater harvesting, tree planting, composting and recycling areas after they have won the first prize and learned from their experience in Kyoto.

Recognition from the Iskandar Malaysia Sustainable & Low Carbon Schools Exhibition 2015 also encourages more schools to make more efforts on environmental issues. SJK(C) Kulai 1, for example, after winning a gold medal at the exhibition, the school decided to make green agenda the top agenda of the school. It is noted that the champion teacher at the school has been working on so many green efforts but it was not fully recognized by the school. However, through the recognition given by the exhibition, the school management noticed the potential.

IRDA also helped some 22 schools to apply the status of UNESCO schools. With this recognition given by an international body, more schools are keen to support the low carbon efforts. The Department of Environment also gives Sustainable School status to schools that comply to the green requirements after a rigorous audit. This national network of Sustainable Schools further increase the low carbon agenda in IM.

8.0 MODEL TO INCULCATE LOW CARBON AWARENESS

Figure 1 shows a model to inculcate low carbon awareness among school students and teachers. All the components of the models were explained in the previous sections. The core of the model is the school players, which are the Principal or the school management at the top level, followed by the teachers at the second level and the students at the third level. Through directive order from JPNJ, most of the activities and programs as well as the blueprint measures can be conducted at schools with cooperation from the schools and monitored by the PPDs. Supporting government agencies are important to ensure that the necessary vehicles are put in place to help the schools.

Consensus building can be made through FGDs with school management. Most of the major activities or programs of LCS should be made clear to the school management. This can be done through JPNJ directive letters or briefing to the principals. The agents to educate the students are the teachers. Therefore, training should be given to teachers through friendly modules. Talks and campaigns can intensify the low carbon awareness to both the teachers and students.

Moreover, competitions can be an effective platform to get the teachers and students to pay attention to the low carbon agenda. Some competitions can be directly linked to the existing school clubs and manoeuvre students and teachers towards achieving the goals of the competitions.

In this way, more champions and ambassadors can be produced from among the principals, teachers and students. They will also become the agents to disseminate low carbon awareness to their families through discussions and actions. This ripple effect will transform IM community into LCS. To strengthen the impact, recognitions are important to let the

champions and ambassadors become exemplars to others. And finally, research will help to solve arising problems and further enhance the effort to produce LCS in IM.

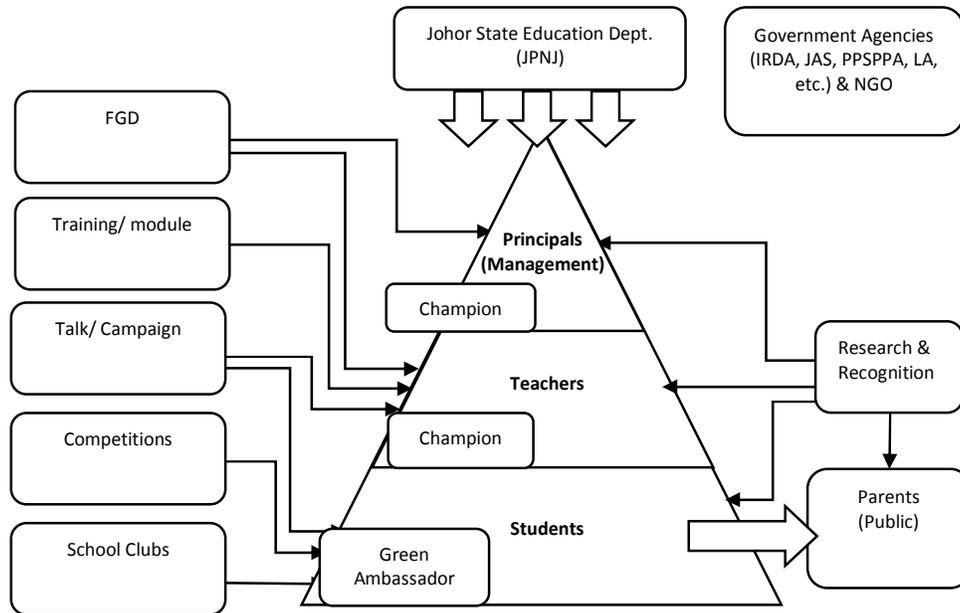


Figure 1: Model to inculcate low carbon awareness through schools

9.0 CONCLUSION

The model shown in Figure 1 is a model that emerged through research and implementation of low carbon blueprint for 5 years. This model could help other cities in Malaysia and other countries to create a LCS which is in line with the research project [3] to disseminate good practices to other Asian countries in order to cut down the carbon emission in this region. It is hoped that by year 2050, IM will truly become a LCS.

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