

## Paper No: 693 Engaging Architects and Architectural Students in Global Warming Awareness

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### Abstract

Today, Global warming is a major dilemma facing our globe that has changed the world concerns to reconsider the pollution sources affecting planet earth. This along with the tremendous increase in carbon dioxide emissions all over the world in the last decade has simulated the EDRG (Environmental Design Research Group, at the Architectural Engineering and Environmental Design Department) at the AAST (Arab Academy for Science and Technology) to setting the Environmental awareness campaign in the Schools of Alexandria, Egypt. The campaign is run mainly by Architecture professors, and both graduates and postgraduates of the architecture department and this is where the novelty of this campaign mainly lies and will be discussed in this paper. Environmental issues are not properly integrated in curricula of secondary schools in Egypt, and attract quite a little attention there. Continuous research carried out by the EDRG founded by the authors of this paper highlighted the problem of local environmental awareness in Egypt and that it was one of the main obstacles behind lessening pollution rates in this region and saving the environment. Therefore, this campaign has set this awareness program as today's kids are the aim of proper development in Egypt.

This project has two main objectives to fulfil; one is to engage the architectural students in raising sustainable and environmental awareness in our non-sustainable societies and second is to raise environmental awareness of school children and the youth by using artistic means, and to encourage them to participate in solution of environmental problems in their communities. Theatre, movie, painting and social role-plays are perceived as an interactive method to speak up global environmental problems in understandable and creative way. The campaign promotes and aware students within all education levels about the main reasons behind global warming, climate change and pollution and the proper use of renewable energy technologies, ecological and sustainable approaches to decrease carbon dioxide emissions all over the world and save our planet earth. The paper considers the role of environmental awareness at an early stage in the proper application of alternative energy sources in our built environment. The environmental awareness campaign is discussed along with its main aims and outcomes in this paper. The paper also contemplates the role of Architects and Architecture students in social interaction and in awareness of their communities.

Keywords: Environmental awareness, Sustainable Societies, Green Day, Public awareness

### 1. Introduction

World Environment Day (WED), commemorated each year on the 5th of June, is one of the principal ways the United Nations stimulates worldwide awareness of the environment and enhances political attention and action [1]. This project along with others run by governments and NGO's worldwide has motivated us as architects and academia to start our new campaign. The novelty of this project lies in engaging architecture design students both on the undergraduate and postgraduates level and fitting this project within the academic context of their architecture programme. The campaign that was titled "The Green Day campaign; Save Our Planet Earth" carried out on a two year stage is presented in this paper.

Starting last year in May 2007 with the International Deutsche School (Schule der Borromaerinnen) followed this year with five more National and International schools in Alexandria, Egypt. The EDRG team included professors, teaching assistants and students from the Architectural and Environmental design department of Alexandria, Egypt. Scrutinizing the campaign that ran the first year, some modifications were carried out on the 2<sup>nd</sup> year in order to involve more of those who are concerned from the NGO's and to have more leaflets and brochures to spread out. Thus, for the latter year the campaign was set in co-operation with Rotaract club of Alexandria El-Nozha and with the Environment Friends Association (EFA) an NGO in Alexandria concerned with environmental

issues. As of operating the first year campaign it seemed that networking with other organization can be useful for the promotion of this project. This was also out of a deep belief of the importance of incorporating and simulating Non-Governmental Organizations (NGO's) in taking a major role of spreading global warming and the mal effect of increasing carbon emissions awareness all over the world [2].

“Save Our Planet Earth”, was the theme for the campaign, it lasted for five weeks each year. Different forms of presentations were prepared for kindergarten, juniors, middles and senior grades, explaining how global warming will affect our planet and methods of saving it.

In addition to open discussions between the students and the EDRG team for using renewable energy technologies and ways of decreasing pollution in our country and how future generations can change the catastrophic present we are facing.

Moreover, for younger ages the team started with some simpler presentations and mainly focused on workshops to provide them with a quick introduction about what is happening all over the world in the former issues through some art work expressing the current situation and some solutions concerning renewable energy sources.

## 2. Preparations Done

Preparing for the campaign involved lots of actions and training sessions for the participants prior to its start. First of all, preparing the undergraduate students for a proper engagement within the project required putting a framework for involvement within their curriculum. The students were chosen on a specific criteria based on their study for environmental studies courses. The project was then fitted into 3 main courses, two of which on the undergraduate level; RIBA (Royal Institute of British Architects) part 1 recognized and accredited, and the third on the postgraduate level (RIBA part 2 level).

### 2.1 1<sup>st</sup> Phase; Deutsche Schule der Borromaerinnen

The preparations for the campaign required meetings and awareness sessions for the teachers to be carried out before commencing the workshops in order to have useful input from them throughout the workshops and for fitting this project within their agenda [3] [4]. These sessions were useful to know how far they are aware with the environmental problems we are facing and were carried out in all schools visited. Later they are to give an introduction to the students for the aims and objectives of the campaign, preparing them for the session. Teachers also clarify to the EDRG team the student's ability to understand the presentations which have been translated into different languages according to the schools first language (German, Arabic and French).

In case of the Deutsche School teachers had a prosperous background about the former issues and added throughout the workshops some extra topics for further discussions on how to maintain

cleanliness in our city; also they have added their own recommendations for the city development.

### 2.2 2<sup>nd</sup> Phase; National and International Schools

Early 2008, the EDRG team decided to widen the circle of raising the environmental awareness in the city and later in the country for the second phase to involve some other young community members in participating and organizing the campaign [4]. The principal coordinator (Dr. A. ELNOKALY) has been giving lectures and sessions to some of the Rotaract members aged 16-24 in Alexandria, Egypt about global warming and zero carbon cities.



Fig 1. One of the Green Day posters designed for distribution in schools ( March 2008)

Following those sessions the Rotaract youths revealed high interest on the subject and the idea of the project and were keen on collaborating with the EDRG in the organization of the second phase. Preparing for the second campaign involved lots of meetings and sessions with the EDRG team and the Rotaract and the EFA members to clarify the tasks for everyone and set main aims and goals.

The organization for the second campaign engaged some extra ideas than the prior one. Posters and flyers were designed by the EDRG and distributed to all of the participating schools. Students whom were not capable of attending the presentations were given a “Go Green” checklist brochure. The checklist included all the recommendations needed for decreasing the impacts of global warming (lessening carbon emissions) and saving our planet, and how the simplest and diminutive action can certainly make a change. Beside the checklist, younger ages were given a booklet of artwork, puzzles and

games about the same issues that have been discussed.

### 2.3 Workshops and Presentation set for the Rotaract Clubs

The Rotary Foundation is an international non-governmental organization well recognized for its effective work in community service [5]. One of the main targets for the rotary clubs work is to include projects working with the environment. One of the important projects held by the Rotary (seniors) is the RYLA (Rotary Youth Leadership Awards) [6]. It's a youth program including lectures and lots of other activities for the youth covering a certain Theme. The Rotary club of Alexandria El-Nozha held the RYLA in 2007 with the "World Peace" theme, engaging all environmental issues, as they are one of the main problems facing our world peace and endurance and was held in Alexandria, Egypt. The EDRG coordinator ran a seminar explaining all the environmental problems and different ways of solving it and renewable energy technologies RETs available [7]. The session was then followed by a workshop, where the participants came out with lots of ideas and recommendations through different collage work. The workshop was run by the EDRG team involving architecture students too.



Fig 2. Workshop carried out for the Rotaract members concerning Global warming ( Feb.2008)

After the session was held the Rotaract members whom attended the RYLA were interested in collaborating with EDRG to start the "Save Our Planet Earth" campaign, phase two. Lectures have also been presented to different Rotary clubs around Alexandria for the effective role they can play to raise the awareness of the locality.

### 3. Sessions

Sessions as discussed earlier were held at schools campus and the plan was to have for each group a lecture or presentation first, followed by a workshop [3].

#### 3.1 Presentation set for Junior Classes

The Campaign started on the 11th of June, 2007 with 4<sup>th</sup> grade presentation. The lectures focused on main reasons behind the problems facing our globe, in order for them to have a clear easy understanding of the problem, reasons and means of solving or helping to solve those

problems. It introduced the meaning of global warming and the green house effect on earth. Presentations demonstrated the extinction that will happen to certain species and the melting of the ice cap which will lead to the raise of the sea level causing catastrophic floods [8]. Also consequences of deforestation and how cutting forests will raise the Earth's Temperature in the next decade due to the increase in CO<sub>2</sub> emissions. That was influenced with the assistance of animation videos and simple illustrations to simplify the idea.

The presentation included how building a better environment using energy resources as: Solar, wind, Biomass and Nuclear Energy instead of fuels might be possible [9].

Simplified presentations were given to the 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> grade. Environmental issues were presented through cartoons and animated illustrations prepared by the EDRG team. These are followed by workshops carried out with the youngsters, getting them more interested in the subject and broadening their understanding.

The team also set some artistic work and games to encourage the students on understanding the problem. It included face painting and drawing on balloons the impacts of global warming and the ways of saving planet earth.



Fig 3. First session in the campaign given to 4<sup>th</sup> grade, Deutsche School (June 2007)

The students were interested in knowing more about the subjects discussed earlier in this paper and showed high level of interaction with the team. Sessions were usually followed by half an hour open discussion and brainstorming with the students followed by feedback forms from the tutors, teachers and students.

The feedback was really thriving with lots of questions and ideas from the students about how to save our planet from the disasters we are facing, ways of decreasing all kinds of pollution which is in a vast increase in our region. One of the interesting suggestions is proposing a cycling lane in Alexandria as a sustainable transportation system, which is not as of yet considered in our communities, and is deemed the "transportation for the poor". Moreover, students asked about the ozone layer and how we can save the ozone hole from getting wider.

Some of the sessions carried out in some of the schools with the junior classes demonstrated

difficulties to deal with pupils who were surprised and astonished by the information given specially that these topics are not at all included in their curricula, and that environmental issues is hardly ever thrashed out in their classes.



Fig 4. Presentation given to 4<sup>th</sup> Grade in one of the English international schools in Alexandria (March 2008)

### 3.2 High School Presentations

Advanced presentations were prepared for 9<sup>th</sup> to 12<sup>th</sup> grade, starting with the meaning of global warming and illustrating how we can live lightly on earth.

The presentation started with a brief about the globe and the gases surrounding it. The aim of sustainable developments in our communities is then heavily discussed. Sustainable development as an ethical requirement which we planners, architects, teachers, government and citizens have to instigate was debated and then confirmed as the only means to secure a better living on our globe [10]. Sustainable development was defined as the “*development that meets the needs of the present without compromising the ability of future generations to meet their own needs*” (defined by the United Nations World commission on Environment and Development) [11].

From issues discussed was the fact that “Earth was not inherited to us by our ancestors, and was lent to us by our kids” [9], saving our natural resources, minimizing the CO<sub>2</sub> emissions, and employing alternative renewable energy sources. The vital requirement of getting active and talking about the previous problems to friends and teachers is always pointed to in all sessions.

Among the advice given to students in sessions were; becoming experts in those problems we are facing, to read a lot and try finding solutions and also convincing others to do the same; trying to for instance decrease the use of air conditions or we just might lower the thermostat to save energy which is extensively used in our hot arid region [2]; trying to shop locally and stop importing food from other countries and promoting local food available; reducing, reusing and recycling every single thing we use as much as possible in our daily life. The need for a healthy, clean environment for upcoming generations is also discussed. Finally, the

transfer of the knowledge gained by the EDRG team to other members of the society was always pointed to as one of the campaign main objectives.



Fig 5. Group of students from the 9<sup>th</sup> and 11<sup>th</sup> grade with the EDRG team (June 2007)

Renewable Energy was also introduced to the students and the resources we have in Egypt [7] beginning with solar energy and the use of photovoltaic panels in transportation systems like bikes, cars... etc. Wind Energy and how our country implemented a wind farm in Zafaarana and we are on our way to increase and widen those farms all over the country. Biomass energy and some future projects that might be implemented in the near future is also discussed throughout the sessions [7].

In order to save the planet we have to save the resources we have and find other alternatives, we could just start with our home, school, street...etc. by turning off the lights and saving electricity, recycling wastes and also the segregation of different types of wastes like organic and inorganic stuff for further usage.



Fig 6. One of the students having a painting on her hand by an EDRG member (June 2007)

### 4. Workshops

The campaign in all schools usually ended with a workshop for the students. Its main target was to be acquainted with what they comprehended from all those presentations given, workshops and brainstorming session and to see how the architecture design students can effectively play an effective role in their society related to this issue. The workshops were usually formed of 5 or

6 groups lead by the architecture students and supervised by the staff available to insure maximum benefit of our students out of these workshops.

The team worked on capturing students' thoughts and ideas in the form of artwork. Every single pupil was required to get the unused stuff available at their home including paper, plastics, bottles, newspaper, carton, cardboards, old toys...etc. in order to reuse these things in their artwork as an application of reducing, reusing and recycling.

#### 4.1 Workshops for the junior classes

Workshops set for the junior students were composed of two projects. In the first project the class was divided into two groups. One group looks at all the problems facing our planet and the ongoing deterioration. As for the other group they propose all forms of possible solutions to make our earth a happier and healthier place to live. Students wrote down all the problems and all their recommendations on balloons and they were hung at the school as a way of awareness for other students whom did not attend the sessions.

Second project they were requested to make a model to be hanged in their school of the "**Happy Earth**" which will include all means of saving our planet, and the renewable energy resources. This group modelled wind mills and photovoltaic panels using the recyclable materials they've got and covering again the north and south poles with ice to prevent the melting of ice cap. They added pictures about sustainable transportation systems, trees, and extinct species which were a conclusive piece of work.



Fig 7. 1<sup>st</sup> grade Workshop; Group working on the Sad Earth (June 2007)

The other group worked on the "**Sad Earth**" expressing the global warming in the form of fire coming out of Earth and CO<sup>2</sup> emissions from cars and factories; dead fish as of water pollution. Pictures added were showing how we pollute water by sewage and garbage disposal in rivers and seas.

#### 4.2 Workshops for the senior classes

The team thought of working on a workshop also for the 9<sup>th</sup> and 11<sup>th</sup> grade which did not take place in the campaign held the first year.

New ideas evolved about having a collage board including the ideas of the students about how to have a better environment. We have asked the students to get magazines, scissors, markers and glue sticks to work on that project. They were four classes and each class was divided into three groups lead by the architectural design students. Each group had to design a collage board using the magazines to express ways of having a better environment.



Fig 8. Higher grades Workshop; Group working with the collage boards (April 2008)

The students came up with lots of different ideas. Mainly they have included pictures and phrases about using renewable energies and increasing the use of trees for oxygen production. Water and Electricity savings was also included. In addition to the public awareness and that we have to all work hand in hand to save our planet from the disasters facing it because of our mal-usage.

#### 4.4 Workshop activities "Green Tree"

Other schemes that showed high level of collaboration from all participants was the "**Green Tree**". This was simply a tree that each school designs and add to it the "leaves" which was the names of all those who contributed in delivering the sessions, presentations and workshops and all those who attended and participated. This was just a reminder left behind in each school to keep that spirit born thriving.



*Fig 9. Green Tree, Every leaf had the sign of a participant of the campaign*

#### 4.3 Workshop feedback

The feedback from the workshops showed high interest from the students who had a better understanding of environmental problems our globe is facing. The architectural students had a big impact on convincing junior students and this is referred to their young age. Many of the comments made by teachers were to convince us to carry out this work and try to seize it further to a higher level. Others pointed out to the significance of networking with other projects already running in schools or different organisations in order to insure the maintenance of such projects. These feedbacks along with others endorsed in a way that the idea of this campaign was a successful one.



*Fig 10. EDRG team and the Rotaract members (March 2008)*

#### 5. Conclusion

The campaign was set to address kids, teenagers and youngsters as it is believed that they are the only hope for a real change all over the world not in Egypt. There have been many awareness-raising projects concerning the environment, but perhaps fewer involving students from university design programmes, and especially those undergoing architecture and environment design courses, which is where the novelty factor lies in this case. The environmental awareness campaign set by the EDRG team had grasped a lot of attention on the local level. The AAST under which this research group is set has also shown a lot of interest in the work and tried to back the project up, in a belief of the importance of involving design students in sustainable and environmental awareness campaigns. The final design projects submitted by the Architectural Students involved in this project has shown in ways how this life project has definitely affected their outcomes and understanding of sustainability and environmental issues. Engaging nongovernmental organizations in this project has proven successful in order to get as many organisations interested and who will certainly later be able to carry out the same job effectively and thus assure the continuity of this project within our communities. Public participation in raising sustainable and environmental developments and understandings is one of the main things required in developing

countries to raise the social awareness. Although different awareness projects are in operation, it is believed that it is to the day not running with the magnitude required in these regions.

#### 6. Recommendations and future enhancement

Advice, Advice and Advice is the aim pointed to by the group all sessions in order to build a better environment. Recommendations from this experience and from feedback we had from students, teachers and organizers.

- The Ministry of education is highly requested to introduce the issue of global warming and sustainable development in school curricula. Possibility of implementing a course related to environment, renewable energy and ways of saving the planet.
- Encourage other universities, institutes, and organizations to have similar campaigns in schools, companies, local gathering places... etc. because people need to be aware of the problem and that's our role as tutors.
- Enhancing healthy life styles by implementing schemes as cycle lanes in Cairo and Alexandria. For example adding sustainability issues to the government city development agenda; a cycle lane to the already undergoing project of developing the Cornish Street (Alexandria main waterfront road) can be a successful preliminary aim for implementing the scheme in all cities.
- Sponsoring well-designed media and advertising programs, banners, and posters in streets, and public spaces for local awareness. These along with other ideas can help build a community that supports sustainable and environmental ethics.

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