Communicating Climate Change Importance through Interactive Multimedia Frame Work for Promoting Education and Effective Public Awareness on Climate Change

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Abstract:

Climate change is one of the major challenges that we are facing in the present century. Many factors have been attributed to contribute to global climate change. As such, numerous efforts are being made by stakeholders to combat climate change. However, we are confronted with a perpetuation of disparities between and within nations, a worsening of poverty, hunger, ill health and illiteracy, and the continuing deterioration of the ecosystems on which we depend for our well-being. At this juncture climate change poses additional threat to the vulnerability of human sustenance. Hopes are high on effective integration of environment and development concerns and greater attention to climate change for a more prosperous future. Therefore developing necessary Climate Change Information and promoting Education, raising of public awareness through proper channel, which makes public to understand the importance of Climate Change are linked to virtually all areas and even more closely to the ones on meeting basic needs, capacity-building, data and information, science, and the role of major groups. This
paper, therefore, examines the role of Interactive Multimedia Framework for disseminating climate change information right from the individual level targeted groups like school children, community level illiterate people, regional level population like a State and National level initiatives to spread the message of climate change vulnerabilities and ways to adapt to or mitigate climate change.

**Keywords:** climate change, literacy, interactive multimedia, education, climate change, framework.

1. INTRODUCTION AND BACKGROUND

The Intergovernmental Panel on Climate Change (IPCC) in all its assessment reports invariably states that the past three decades have been successively warmer than any preceding decade since 1850. Globally the average temperature of land and ocean put together has increased with a linear trend of warming by 0.85°C over the period 1880 to 2012 (IPCC 2015). This has been attributed to the ever increasing concentration of the greenhouse gases like carbon dioxide, methane etc., in the atmosphere. According to the National Aeronautics and Space Administration (NASA), the concentration of carbon dioxide in August 2014 is 400.57 parts per million (ppm), which is in contrast to the commitment under the Kyoto Protocol (1998) that states that the overall emissions of greenhouse gases shall be reduced by at least 5 per cent below 1990 levels in the during the period 2008 to 2012.

The impact of the changing climate is observed in all sectors that are basis of living like agriculture, water resources, coastal areas, forests and biodiversity, human health etc. (Hitz and Smith, 2004). However the scattered knowledge and understanding of climate change science, climate change projection, its impacts and the measures to mitigate or to adapt, hampers implementation of relevant strategies in various sectors. Effective communication of the knowledge and sharing of experiences across sectors and social strata becomes one of the most important aspects of climate change action (Adger et al., 2009).

Educational and mass media systems are two very important social channels for the transmission of culture in the society (Peter and Murdock, 1991). Their importance stems from the fact that they do reach and influence large number of people in such a way as to alter their behaviour. The E-Learning industry has undergone radical changes over the past ten years. From a position of strength where it was perceived as the ideal solution to almost all learning and training needs E-Learning is now
viewed as the best means of communicating some of the most important issues of the world.

Thus the purpose of this study was to introduce a framework to investigate the effectiveness of Interactive Multimedia in creating awareness and how rapidly the people using the framework can able to understand the importance of Climate Change in general. The objectives of this research is to 1) reach out to the target illiterate people to create awareness on climate change and 2) to educate the children on climate change so that they are sensitised to global issues at an young age itself.

2. CLIMATE LITERACY AND CLIMATE CHANGE EDUCATION - CHALLENGES

One of the biggest barriers is the lack of adequate knowledge and information at every level, national, regional and local. Climate literacy and education are the ability to participate in a discourse about climate change with a full understanding of the terminology. Climate change is still not taken as an emergency, even 40 percent of adults on Earth have never heard of climate change. Not knowing the risk makes more vulnerable to risk. In worldwide, education in user friendly manner is the biggest predictor of climate change awareness. However, as more climate change science has emerged over the years, many businesses are accepting this and even asking their governments for more action so that there is quick clarification on the new rules of the game so they can get on with their businesses. A primary study was conducted with various levels of peoples about the climate change awareness and about various levels of climate change education.

The following are the major hurdles in disseminating climate change information by climate literacy and education

- No proper awareness about climate change.
- Awareness is not in regional languages.
- Lack of proper knowledge due to miscommunication.
- Not giving importance to Climate change.
- Climate change is not a part of education.
- Reachability is very poor among communities.

Individuals, policymakers, and societies must be aware of and have at least a basic understanding of a threat to make informed decisions about how to respond. Prior research (Gallup 2010), has found that only 37 percent of Indians nationally say they know “a great deal” or “something” about global warming. This study also found
limited awareness of global warming as an issue. Figure 1 shows the percentage of knowledge

![Percentage of Knowledge level](image)

**Figure 1:** Percentage of Knowledge level

3. METHODOLOGY

After thorough review of literature, survey made on different level of peoples and on community awareness of climate change a theoretical framework was designed and a preliminary assessment was carried out as a case study. The main objective of the Interactive Multimedia framework is to bridge between awareness and action on climate change, which perfectly suits for disseminating climate change information and make all level of peoples and community to aware of climate change. A “public” is any segment of society that can be characterized by their needs for information, their motivations, and their information-seeking behaviors. The five priority publics are as follows:

1. People seeking authoritative information about climate science to help them discuss and decide on climate-related issues they face (i.e., decision-makers and policy leaders);
2. People seeking to find and use climate data for research and development work (i.e., researchers, modelers, and engineers in government, academia, and business);
3. People who want to know more about climate conditions and how climate science is done (i.e., the climate-interested public and students);
(4) People seeking resources to help them teach others about climate (formal and informal educators);

and

(5) People who report on climate in public media (i.e., broadcast meteorologists and journalists). However, it makes the farmers in different level by creating awareness among them. The framework is as outlined in the Figure 2 below.

**Figure 2.** Methodological framework for promoting education and public awareness on climate change
3.1 Individual Level: Educational framework

It is proposed through this paper that the educational framework for school children shall enhance better understanding at the budding stage of childhood. The first step in this direction should be incorporation of climate change curriculum as a part of the environment syllabus. This step would sensitize the student population to the issue of climate change and hence they can realise the importance. Moreover students are the future educators and the awareness thus spreads instantly.

The second strategy is to conduct online quiz on climate change where the youth especially school going children can challenge their climate intelligence quotient and develop an interest towards the subject.

The third strategy is to develop games and puzzles, where the children will be confronted with specific climate change scenarios with respect to certain sectors, under which they will have to think of a new adaptation or mitigation measure as a way to solve the game or the puzzle.

This exercise will definitely bring out a plethora of new ideas that even the finest of policy makers may not have a clue, since children think differently and at times bring about revolutions also.

3.2 Local Level: Awareness Framework

The awareness framework is targeted for the village illiterate people who have the least idea of climate change but who are the worst affected by its consequences like drought and other disasters. There are various technologies and methodologies proposed that are still in use in the districts of Tamil Nadu especially in Coimbatore and Erode, they are Village Knowledge Centers (VKC) and Village Resource Centers (VRC).

3.2.1 Village Knowledge Centers (VKC) and Village Resource Centers (VRC)

Both are the initiatives of M.S.Swaminathan Research Foundation (MSSRF). Village Resource Centers (VRCs) are located at the Block or District level managed by MSSRF where the subject experts such as Agriculture, Horticulture and Fisheries, Social Scientist and Computer Technical personnel provide Information, Knowledge and Linkage services to the Village Knowledge Centers (VKCs). This Hub-spokes model conceptualized and established by MSSRF in the States of Tamil Nadu, Pondicherry, Maharashtra, Odisha and Kerala are a decade and a half old which has been replicated by many National and International Organizations and the Government of India as Common Service Centers. All VRCs are linked through Broad Band connectivity for accessing information and knowledge in vernacular reposted in a centralized Knowledge Management System.

VKCs are established in a village through partnership with the Panchayat Raj Institutions majoritively. In a few villages it has been established in partnership with
Community Based Organization (CBOs) such as Temple Trust, Youth Club, and Parish Council etc. The Memorandum of Understanding (MoU) with the partner defines the responsibility that needs to be fulfilled by both the partner and the MSSRF.

VKCs disseminate information and knowledge as per the livelihoods of the community such as agriculture, fisheries and enterprises through both traditional and modern communication mode / technologies. The community owned VKCs are managed by the community represented by the CBO strategically called 'Boundary Partner' which provides rent-free building and meet the electricity cost. The Knowledge Workers (one male and one female) who volunteer to care and manage the VKC are nominated by the Boundary Partner. These Knowledge Workers are suitably honored for the time spent by them through an honorarium. The VKCs will have computers where static contents which are suitable to the region are reposted. These contents are made available to the 'users”, who visits VKC, by the Knowledge Worker. The other content dissemination modes are Notice Board in front of VKC where the Knowledge Worker writes dynamic contents such as Weather information and related advisory, Market prices and important News that are relevant to the village community. Public Address Systems are installed for announcing important information and disaster alerts which can be heard by the village people wherever they are working. The Mobile phone based knowledge dissemination programmes are voice messages, short text messages, thematic Weekly Phone-in programme, Audio-conferencing and Video-conferencing with the subject experts.

It is proposed that this agriculture based VKCs can be sensitised through capacity building programmes in regional language on climate change issues so that they in turn create awareness among their communities. Similarly all the Kisan Call Centres (KCCs) and E-Arik modules scattered across the State of Tamil Nadu can be identified and united through a climate change forum that can exclusively discuss climate change vagaries in day to day life.

3.3 Regional Level: Climate Change App in Regional Language: Tamil

It is proposed that there should be a technology initiative in the State of Tamil Nadu to bring about a smart phone android application which will be the Climate Change App in Tamil Language. This will foster easy communication from the Government or the policy makers to connect to the local people. In turn an interactive platform in-built within the app can provide an opportunity to talk to academicians, researchers and other agencies on queries related to climate change.

3.4 National Level: National Climate Change Week

At a global it could be fair enough to propose to the Ministry of Environment, Forests and Climate Change that some particular day could be fixed to commemorate it as the “National Climate Change Day” or “National Week on Climate Change” where people at different walks of life can show their interest in climate change.
issues. Since no such climate day or climate week is celebrated it’s a good way to educate people by means of celebrating such events globally.

4. RESULTS

4.1 Individual Level: Educational framework

It has been emphasized by authors that efforts needs to be taken to influence the fundamental behaviour towards climate change issues or any issues for that matter via early education, effective interventions later in life, and pervasive modelling of certain behavioural norms, to set new or change existing social norms, portray less consumption-oriented, energy-intensive lifestyles, promote new values and ideals around family size and reproduction, and lay a foundation for broad acceptance of policy interventions (Moser 2010). Further it is perceived that there is a role for science education (formal and professional) to promote under-standing of the scientific process, including the inherent uncertainty (Lorenzoni et al., 2007). Bibbings (2004b) also suggests a role for media awareness education, specifically developing skills to think critically about media content and advertising. Therefore it is noted that education should involve not only climate change information but also about communicating climate change. While the developed world consensus is towards public education (Moser and Dilling, 2009), in the developing countries like India it is mandatory to initially sensitise climate change issues to all stakeholders and we propose that education at the early stage would sensitise the world at a later stage.

The Tamil Nadu State Climate Change Cell (www.tnsccc.in) formed under the Department of Environment, Government of Tamil Nadu has a dedicated website. Under the kids corner we propose to conduct online quiz. Such initiative has been already taken up by the ENVIS centre at Department of Environment, Government of Tamil Nadu (http://www.tnenvis.nic.in/ViewGeneralLatestNews.aspx?id=1790&Year=2015). Some of the other examples for online quiz are

- http://climate.nasa.gov/climate_resources/16/ etc.
- 117.218.121.227/envisnew

Similarly quiz programmes and puzzle games shall be made part of science exhibitions

4.2 Local Level: Awareness Framework

The village level awareness framework for climate change issues shall be integrated into the existing VKC modules as shown in figure 3.
There are a total of 385 blocks in Tamil Nadu in all the 32 districts put together and if all the blocks are integrated and lined through the VKC as mentioned in figure 3, with the inclusion of climate change information flow, then it will be easier to respond to climate change challenges using the existing resources rather thereby avoiding mal-adaptation.

### 4.4 Regional Level and National Level: Climate Change App in Regional Language: Tamil

The NASA’s Earth Now App, Images of Change app and the offset educational game for kids. Similar to the NASA’s initiative along with the vision of Digital-India initiative, this climate change app should also be made effective at the earliest through Information Technology companies. A mobile app in the regional level will be effective for communicating with the larger population and especially the working group who are always mobile and thus spread the message easily. However the modalities to propose such Day or week for climate change is a policy related
issue and may be questioned by others who do not realise the real context of climate change.

To address these Climate change challenges, various regulatory mechanisms, fiscal incentives, investments in infrastructure and other measures are being developed. However, underlying many of these challenges is a lack of awareness and understanding of environmental issues, and especially among children at the primary level. Until now there have been few initiatives to raise awareness and understanding of climate change issues, and to get them to participate in preserving the environment.

Who will benefit?

**Children** of grades 1-5 will have improved environmental awareness, understanding and abilities. This way they will be important actors in safeguarding their environment, but also act as catalysts for behaviour change in their communities.

**Teachers** will be trained to improve their teaching methodology by using active learning methods in which children have an opportunity to focus on topics of interest, to apply knowledge and develop skills, and to take action. They also will be able to identify learning objectives, including not only knowledge but the development of life skills, and to monitor individual progress.

**Schools** will have more opportunities to use active learning methods as a tool to achieve better results for their students. Also schools will have a chance to be real partner and contributor in community life.

**Communities** will be encouraged to support children’s actions for the protection of their environment. This will contribute also to increase their awareness on environmental issues and take the appropriate measures to clean up, protect and preserve their neighbourhoods.

**People of different** levels (both in literate and illiterate levels)

Who are the partners?

- Ministry
- Stake holders
- Civil society
- Individuals

What are the expected results?

The project plans as outcomes that in primary classes (that is, approximately 15 per cent): children work to develop an integrated series of
environmental competencies; in a teaching-learning environment which promotes active learning; where community institutions are open to child environmental action.

In figures, this means that:

- at least 80 per cent of the children in the targeted classes will have mastered the climate competencies of the curriculum; have positive attitudes towards the environment; and have acted to improve the environment in the school, home and community;
- Schools are able to define their climate change objectives;
- Teachers in primary schools trained and supported to implement the climate change studies in their curriculum;
- Schools become „Child-to-Climate change“ schools, that pursue minimum climate change goals with the support and help of the community;

5. CONCLUSION

It is observed that Climate Change issues are challenged by multilevel barriers. There is an alarming gap between awareness and action on climate change. To bridge this gap, a holistic framework is required that operates at all levels of target group. Through this paper we have presented a case study for Tamil Nadu and propose a framework as to what can be done at each level of communication. Though this study lacks concrete measures, it put forths an idea and a way forward for taking action that is expected to be incorporated through various policy and voluntary initiatives. This paper thus highlights the role of Interactive Multimedia Framework for disseminating climate change information right from the individual level targeted groups like school children, community level illiterate people, regional level population like a State and National level initiatives to spread the message of climate change vulnerabilities and ways to adapt to or mitigate climate change.

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