Environment education as a process of life long learning
-Case study of a web based community

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Key Words

Web based learning (WBL), Life long learning, Collaborative Learning, Online Communities, Environment Education, Information Technology, Information Systems

Abstract

The interactive and networking capabilities of the Internet make it a good tool for web based lifelong learning. A community approach to looking at conservation problems fosters an ability to consider sustainability issues from the viewpoint of different stakeholders. The learning is not geared to result in immediate conservation action, but is expected to create environmentally sensitive individuals, as a result of voluntary lifelong learning.

Historical data from IndianWildlifeClub.com, a portal for nature and wildlife lovers, is analyzed to determine the efficacy of this medium in creating awareness about environment and nature.

The concept of life long learning is considered to be a major new direction for higher and distance learning institutes in the academic sphere. We present a practical case study where this concept is applied for an online community to become environmentally sensitive and aware.

1. Introduction

The "novelty" of the World Wide Web has worn off in developed countries and in many developing countries as well.   The Internet is being increasingly used and viewed as a tool. Harnessed correctly, the Internet can enliven debate and inspire ordinary people to reengage in their communities and support actions for sustainable development. Internet as a medium for environment education (EE) delivery has arrived. In our paper we discuss the role of "online communities" in environment education. Historical data from an online community in India is analyzed to determine the efficacy of this medium. A community approach to looking at conservation problems fosters an ability to consider sustainability issues from the viewpoint of different stakeholders. Education "happens" through sharing of information. A common claim about group settings is that they foster an effective combination of learning with understanding and are therefore likely to support conceptual change.

Education for sustainable development is increasingly seen as an important curriculum in schools and colleges. This dynamic subject with an ever-changing learning curve finds little space in continuing education and adult literacy campaigns in India. We believe that EE has to be a lifelong mission, as environment concerns pervade all activities in the adult world. We need to

broaden our concept of EE to include the general public- the adult population who are in charge of the planet right now.

2. Literature Review

Blended online education is most valued by adult learners- from universities, homemakers, and professionals- anyone with an internet connection and willing to be informed. Research shows that adults value course designs containing options, personalization, self-direction, variety and a learning community. The Androgogy model developed by Malcolm Knowles (Knowles 1980, 1984) stresses the need to know, immediacy of application, sharing of life experiences as a source of knowledge, independence and self-direction and ownership of their learning as hallmarks of adult learners. In recent research on communities of practice, both formal and informal, professional and social communities have been identified as additional important components of adult learning. (Wenger, 1998). Group settings foster an effective combination of learning with understanding and are therefore likely to support conceptual change. (Brown and Palinscar, 1989). The process by which experiences are shared through collective action and reflection both builds a community and defines it. Only recently have we begun to study the challenges as the opportunities provided by such processes.

The challenges are,

- Unwillingness to share, especially difficult and controversial aspects of one's work

- Tendency to follow the leader and arrive at a consensus by covering up intriguing layers of disagreement.

The opportunities are,

- Learning to see differences of opinion as a resource rather than a liability.

- Criticisms and disagreements as a source of learning and enrichment.

2.1 Environment Education in India

Compared to with the 1970s in India, when environmental awareness was non-existent, there is a heightened consciousness of environmental matters thanks to the work of Non Governmental Organizations (NGOs). " India cannot afford to keep on producing scientists, engineers, lawyers, administrators and businessmen who would view, as many of them do now, in the next ten to twenty years, pollution as a minor white collar crime, an irritant necessary towards economic development, and a value which can be subordinated to other immediate concerns of the society". (O.P Dwivedi et. al 1987). Formation eco-clubs in a large number of urban and semi urban schools at the instance of NGOs as well as Government initiatives is helping in bringing up a new generation which is environmentally more conscious than the previous generation. However, in higher education in India, environment education is still to find a place.

We need to target the adult population of India, to make them environmentally conscious and aware. How do we achieve that considering the fact that this segment of society is no longer part of educational institutions? Among many possibilities, one that appeals a lot is a computer - mediated tool. With computers entering the educated person's world in increasing numbers coupled with the ongoing policies of the Indian Government to make internet cheaper and accessible to all, environment education through internet seems to be the way to go.

2.2 Online communities facilitate learning

The Internet is expected to be the *sine qua non* resource for knowledge acquisition and development for both adult and youth, surpassing books, traditional teaching practices   and television over the next 15 years. (Owston, 1997). In a report prepared by the Rand Corporation's Institute for Education and Training, McArthur and Lewis (1996) conclude that "internet and the hypermedia systems available on it will dramatically transform the processes and products of learning and teaching worldwide."
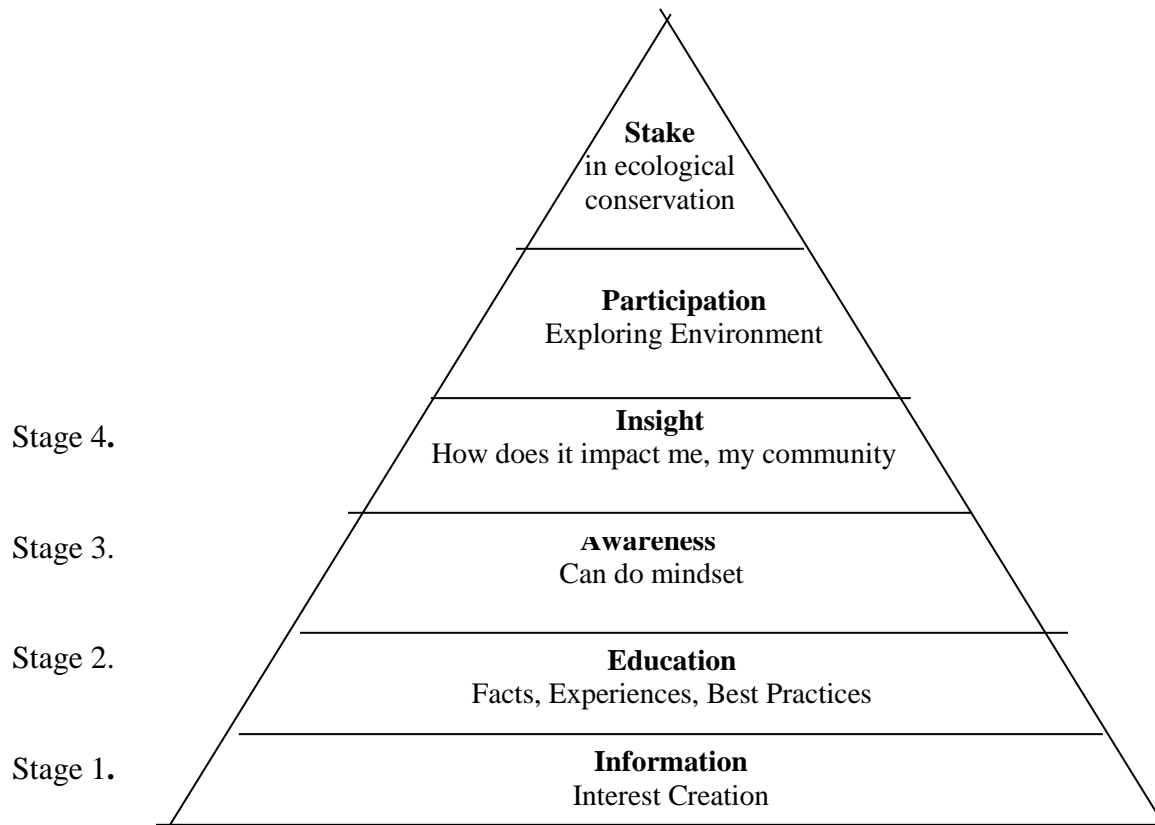
The true power of Internet is not in delivering information but in the two-way communication of knowledge. Uploading information on the Internet is only the first step. Getting people to access it and comment on it, debate on it and keep adding to the information database – that is where online education takes off. As environments in which to learn, hypermedia systems have potential for offering learners access to information in the context of modalities that can be highly interesting and readily understood.

Online communities face several challenges among which some are technological and some social. The technological component relates to the continuous development and improvement of tools that will allow participants to utilize them without a steep learning curve. Transparency in user interface design and human computer interaction is a critical component of successful integration of technological innovations within education and training settings and influence the adoption rate of such technologies. An important challenge in computer- mediated environments is to maintain both social organization and community spirit. A satisfying degree of transparency is achieved when technology does not interfere with the exchange of information and communication.

2.3 Maslow's Pyramid of Social Needs (Adapted)

Maslow's Pyramid of social needs is adapted in Figure I to form the basis for environmental/ecological learning. Subsequent discussions of our sample survey and the study of the portal spanning five years, all draw on this revised model of 'EE Pyramid' often. The model is used to give structure and purpose for the web-based lifelong learning.

Figure I- Pyramid for environmental/ecological awareness. (EE Pyramid)

Stage 4.

Stage 3.

Stage 2.

Stage 1.

Stake
in ecological
conservation

Participation
Exploring Environment

Insight
How does it impact me, my community

Awareness
Can do mindset

Education
Facts, Experiences, Best Practices

Information
Interest Creation

3. Methodology

Online communities target adult and youth population who are computer literate. At the outset, we need to determine that a gap exists in this population for creating environment/wildlife awareness. The teaching cum testing tool we adopt in our study is the "Quiz" format.

In our preliminary survey (2001) to find out the need to create awareness, we administered a brief questionnaire (Appendix I) to a geographically disperse, but educated sample of Indians from various walks of life. The sample included high school students too (about 30%). The subject of survey is the Asian Elephant well loved and widely known to all. The elephant is considered a keystone species, the 'body' of the forests. When Asian elephants disappear, we would have seen the last of our pristine forests, which are responsible for the ecological balance of the area. Hence we chose the elephant quiz as an instrument to measure awareness about conservation.

Results from a detailed quiz on elephants collected from over 300 respondents were analyzed to examine the possible commitment to conservation in this sample population.

This preliminary study has been the basis for creating seed content of the portal IndianWildlifeClub.com. More networking and interactive features have been introduced over the period of five years the portal has been in existence. In its current form, the portal caters to the first four levels of the 'EE Pyramid'.

4. Results and Analysis of the sample survey

4.1 Results

The sample group is drawn from various age groups as shown in the Table I below.

Table I- Study Area for elephant quiz

	Below 18	Between 19 & 30	Between 31 & 50	Above 50
Kerala	4	7	11	3
Chandigarh	139	3	8	1
Delhi	12	40	14	4
Mumbai	11	19	13	3
Online	2	16	15	5
Total respondents	168	85	61	16

There are a total of 330 respondents drawn from Delhi, Mumbai, Chandigarh, and Kerala as well as respondents who attempted the questionnaire online.

The sample population can be considered to be representing the educated cream of the nation since; they are drawn from the two metros and the two states of India with 100% literacy. The respondents online are members of the IndianWildlifeClub.com drawn from all over the world. Out of the total of 330 respondents, only 15 were non-Indians. Hence they have not been considered as a separate group for the purpose of analysis.

4.2 Analysis

Level of awareness is measured in four stages corresponding to Figure I.

Stage1: 0-2 correct answers- little or no awareness of wildlife

Stage 2: 3-4 correct answers- some awareness -Could be a segment willing to learn more

Stage 3: 5-6 correct answers- aware segment: Can be motivated to take more active roles

Stage 4: 7-10 correct answers - committed wildlife lovers-May be already active in their areas in spreading awareness -Can be networked to have a core group of committed conservationists.

The answers are analyzed to examine the possible commitment to conservation in this sample population. Responders with a minimum general knowledge about elephants are likely to be indifferent to conservation. Those with a more in depth knowledge are likely supporters. As educationists and awareness creators, our aim must be to increase the number of people to the third level of awareness where they will support and few will even commit their energies to conservation of elephants.

4.3 Summary of analyzed results

Table II- Marks scored for elephant quiz

Marks	Below 18	Between 19 & 30	Between 31 & 50	Above 50	Total respondents	Percentage of respondents
0 to 2	28	10	3	2	43	13
3 to 4	77	39	18	2	136	41
5 to 6	50	28	25	9	112	34
7 to 10	13	8	15	3	39	12
Total respondents	168	85	61	16	330	100

The majority of respondents were in the range of 3 to 4 correct answers i.e., - Some awareness - Could be a segment willing to learn more. Out of a total of 330 respondents 136 viz., 41% fell in this category. Of the total respondents, 112 got marks between 5 and 6, i.e., aware segment: Can be motivated to take more active roles. The respondents with little or no knowledge formed 13 % and those in the category of committed wildlife lovers formed 12 %.

Figure II – Graphical representation of marks scored in elephant quiz

Awareness quiz on elephants
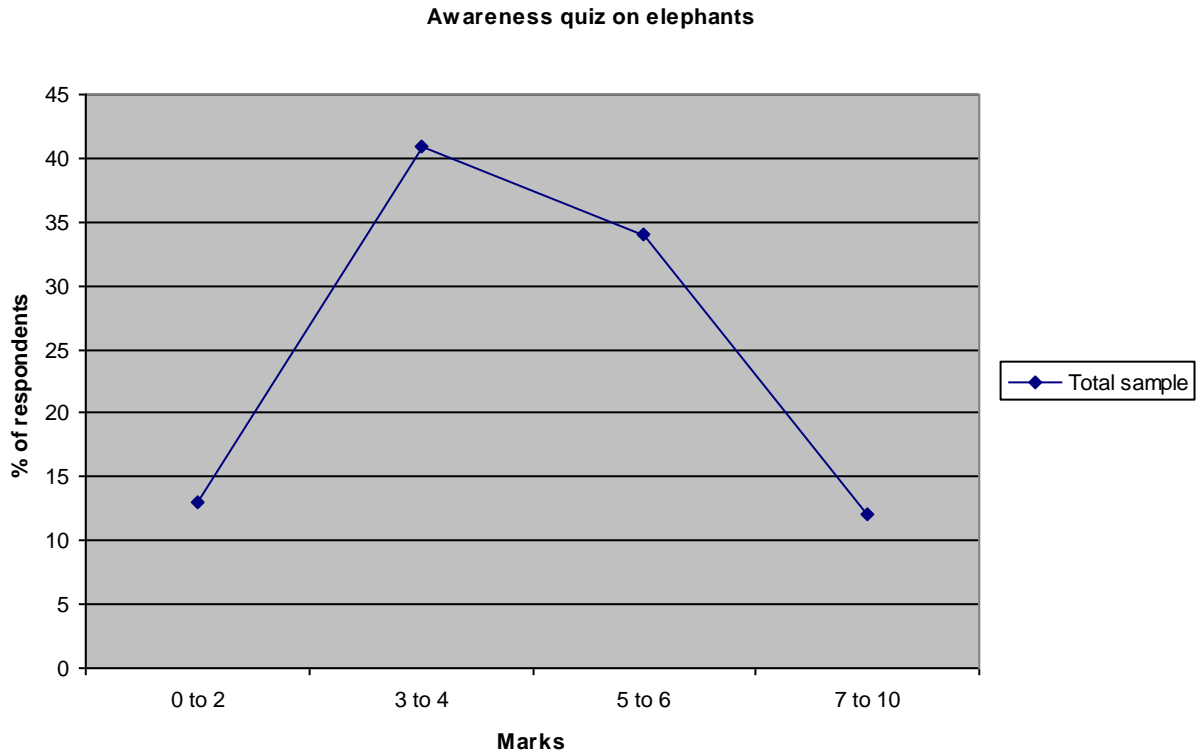
It is observed that 88% of the people surveyed have scored less than 7/10 in the Quiz. As per the 'EE pyramid' 88% need environment education, catering to various levels of awareness. The major question, which concerns us, "Is there need for more awareness campaigns to make the elephant conservation projects a success?" is answered in no unambiguous terms.

That brings us to the next question. How do we get a generation used to fast cars? and loud music get interested in these gentle creatures, which need protection? The interactive, community based and personalized learning capabilities of the medium makes Internet an ideal candidate for spreading awareness. The urban and metro population who are growing away from nature can be targeted through the Internet. As the Internet penetration is growing by the day, more and more people are expected to depend on the web for information and networking.

5. IndianWildlifeClub.com (IWC.com)

IndianWildlifeClub.com took shape in the year 2001 from the belief that

- There is an imperative need to adapt the latest technologies to spread the message of conservation and environment education.

- That environment can be healthy only when the common man is convinced and involved.

- Field trips to watch wildlife need to be promoted in the best interest of conservation

- While conservationists are doing a fine job in India, this work is often not known/appreciated outside wildlife organizations/NGOs

- Unlike other science streams, wildlife and environmental science depend on the attitude of the common man to protect the very subjects scientists are studying.

There is no demography for IWC members. However, the India centric content tends to result in more than 80% of the registered users being of Indian origin. The mission is to create a high impact, sustainable organization with the potential to create lasting social change beyond our immediate communities.

5.1 Brief Overview of the website

While we have many organizations doing field research on environment & wildlife in India who also bring out number of print publications for creating awareness, it mostly reaches their membership only. Internet based organizations like eNature.com; Nationalparks.com etc are yet to develop in India.

IWC.com was set up to host an interactive community who shares resources to inform, influence and motivate the members to be more environmentally aware. The portal has, over the years endeavored to cater to the needs of the first four stages of the 'EE pyramid'.

Stage1: little or no awareness of wildlife

Seed content and structure created by the founder and a selected team to cater to this group

Wildscapes Photo gallery introduced

Stage 2: some awareness -Could be a segment willing to learn more

Membership registration introduced and networking enabled through the website and yahoo forum

Monthly E-zines and Quiz introduced

Wildbytes video store and 'Film Corner" introduced

Stage 3: aware segment: Can be motivated to take more active roles

Content for the zine created by volunteers and invited experts from among the registered members

Online chat moderated by experts introduced

Offline photo exhibitions of empanelled photographers

Stage 4:   committed wildlife lovers

Weblog introduced to encourage members to express "News and Views"

All content on the portal made searchable by clicking on an "Advanced Search" button

Eco-tour Board of empanelled tour operators to facilitate eco-travel

Online publication of scholarly articles encouraged in "Club Chapters".

The Internet penetration in India is limited to a percentage of 9% of urban India. But the access is expected to grow rapidly in the coming years. Even with this increase it is only the educated and technically savvy Indian who is likely to log on to IWC.com.   It is this cream of the population which takes most of the decisions concerning forests, wildlife and environment in this country. Creating sensitivity about environment in this community can thus have far reaching effects for conservation and environment, if it can transform the outlook of the individual in a lifelong learning process.

6. Historical Analysis of quiz data from IWC.com

Historical data from the website IWC.com is analyzed to determine the efficacy of this medium in creating awareness about environment and nature. Our diagnostic study detailed in paragraph 5&6, identified a gap of 88% who need awareness programs. We proceed to analyze the online responses to the fifty different quiz programs we hosted on the portal over a period of 50 months, to see if our diagnostic study is supported by the online population.

As mentioned elsewhere, IWC.com has been conducting a monthly quiz program on subjects of topical importance, which can be attempted by all club members. A look at the responses we received over 28 months supports our belief in the efficacy of online programs like quiz as an educational tool.

A total of 600 responses were received during 28 months, the average monthly attempts being between 20 and 25. (The program allows one attempt only per member). During the period of about nine months when we had announced prizes for all correct answers, the responses went up to between 25 and 30. 60 % of the responses were from members aged between 18 and 30. 26% came from members aged between 30 and 50. Out of the total 600 responses, 30% scored above 7 out of 10. A look at the table below (Table III) reveals that in 15 cases the percentage of respondents scoring above 7/10 was less than 30%, while in 12 cases the percentage of high scorers was above 30%.

Table III- Marks scored for quiz programs of IWC.com

Quiz Title	No. of Attempts	% Scoring 7/10 and above
Quiz on elephants-Part II	16	25
Quiz on elephants-Part III	26	15
Quiz on elephants-Part IV	24	13
Quiz on Large Mammals	19	16
Quiz on Reptiles	23	48
Quiz on Coral Reefs	15	33
Quiz on Trees	11	36
Quiz on leopards	26	15
Quiz on Pheasants	19	42
Quiz on Deer and Antelopes	28	57
Quiz on Frogs and Toads	29	10
Quiz on Parks Sanctuaries of India	26	39
Quiz on Threatened fauna of India	26	27
Quiz on elephant poaching	23	9
Quiz on tiger poaching	20	45
Quiz on wetlands	25	24
Quiz on Asiatic Lions	17	47
Quiz on Sea Turtles	19	47
Quiz on Captive Elephants	20	5
Quiz on Non human primates	24	83
Quiz on Wildlife Films made in India	15	33
Quiz on rainforests	20	20
Quiz on history of National Parks of India	12	8
Quiz on Bird Sanctuaries of India	19	63
Quiz on Cranes and Storks	14	14
Quiz on Wildlife poaching	20	25
Quiz on Coastal Regulation Zone (CRZ) in India	23	17

6.1 Discussion and interpretation of results

The percentage of high scorers, that is those who scored more than 7/10, averaged at 30%. This percentage is higher than the figure of 12% in our offline exercise using the quiz on elephants. There is a rationale behind this higher percentage. Though the website is open to all with an Internet connection, the quiz can be attempted only by registered members (free membership). Those who become members of IndianWildlifeClub.com are **already motivated** to learn/ are interested in learning about wildlife. The members who attempt the quiz are normally the highly interested/motivated individuals. This explains the fact that the scores obtained by online respondents are higher than those from the offline random sample who attempted the elephant quiz. Among the individuals who attempt the online quiz programs of IWC.com, the motivation

to improve their knowledge remains high, as we see many members attempting the quiz on a regular basis.

Members who kept coming back to attempt the quiz month on month for at least five months (not necessarily consecutive) were 31.

Results of the above "field experiment" suggest the potential for environment education through online communities. Online contests and incentives for correct answers will bring online participation in quiz programs to much higher levels. Strategic marketing efforts can bring in more of the least aware segment into the learning network.

6.2 **Responses to Interactive Features**

IWC.com has an interactive arm in the form of a yahoo club, which has also been online since 2001. Online open forums like yahoo clubs are more popular when moderation is kept minimum. As a result, distinguishing professionally contributed information is not always possible.

A properly edited e- magazine with articles contributed by members who are compensated for contribution, is however a valuable resource for IWC. It is possible to monitor the activity on the portal in terms of searching, page views, downloads and postings to assess the interest generated by the website in registered users and casual visitors. However, web page hits on the portal can be an indicative measure of the effectiveness of the new features in general. In our analysis we have used the number of messages posted by group members in yahoo forum to denote activity in the yahoo club. The number of hits in a specific month over five years has been studied to denote activity on the portal.
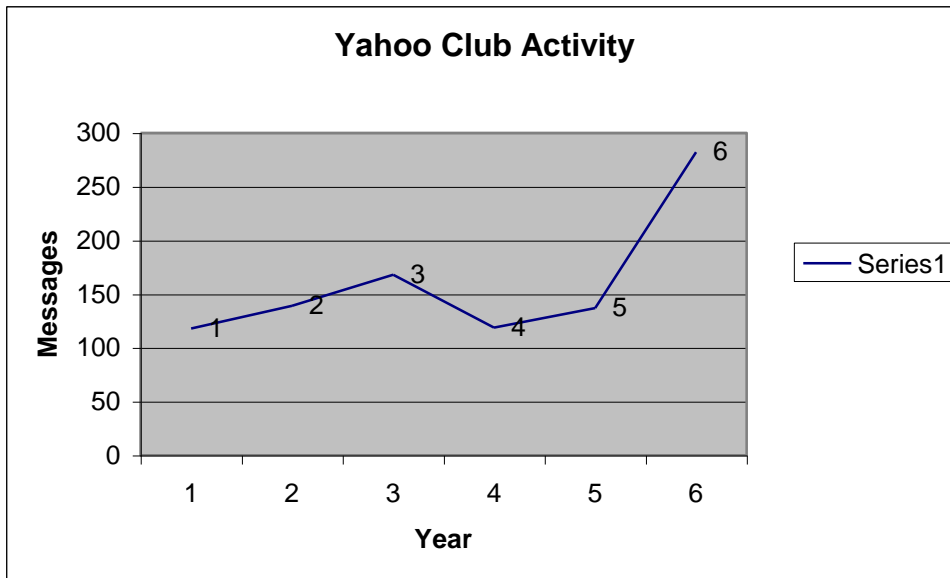
6.2.1   Activity Yahoo Club and IWC Portal

Table IV- Message posts over five years

Year	No. of messages on the Club
2001	118
2002	139
2003	168
2004	119
2005	137
2006 till August	282

Table V Webpage hits over five years

Year	Web page hits for the month
Dec 2001	6447
Dec 2002	55017
Nov 2003	56521
Dec 2004	45942
Dec 2005	86253
August 2006	94223

Figure III –Yahoo Club Activity

Figure IV- IWC portal activity
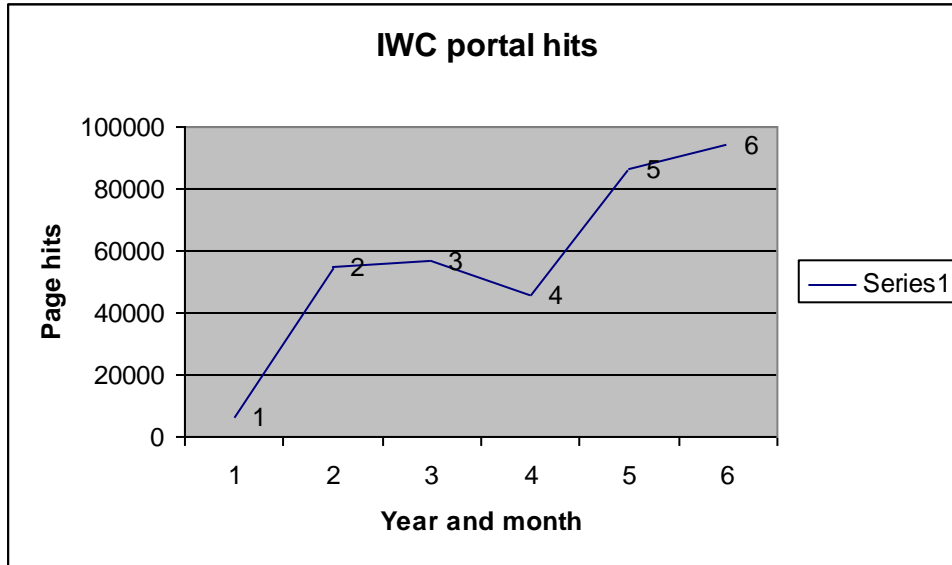
The above graphs have two marked growth features. The first major growth in activity is between 2001 and 2002; second is from 2004 to 2006. The initial spurt in activity in the portal corresponds to introduction of quiz programs and monthly e-zine during the year 2002-2003. The second spurt in number of hits and activity in yahoo club coincide with the introduction of online chats, web logs and advanced search facility on archives in 2005-2006.

The IWC web log was introduced in August 2005 and over a period of one year attracted 34 postings from Club members as against 65 postings by the portal founder. The online chats (on a fixed date every month for one hour) attract an average of four to five members in the chat room.

The majority of members of the community portal are "passive recipients of information". During the period under study (2001-2006) the registered user base of the portal reached 3500.

As more and more internet users begin to look beyond messaging activity on the web, the portal is expected to see more members contributing to creation of content-by 'blogging', participating in chat programs and also actively using the advanced search options to make use of archived content.

7. Future Research Directions

This paper presents a pilot study in the realm of lifelong environment education. The case study of IndianWildlifeClub.com presents a live online community engaged in environmental learning. Social software technologies used in networking portals can be effectively adapted for learning

and education- especially in cases where the learning tools support and encourage individuals to learn together while 'retaining individual control over their time, space, presence, activity, identity and relationship' (Anderson 2005).

Vertical integration of the portal can address the needs of the top of the 'EE pyramid' by incorporating eco-travel and by taking up grass root level projects.

Such online communities can see vertical development in terms of making available online distance learning modules, product stores, eco-tour portals and research/symposia forums as well. The vertical development of the portal will ensure the commercial sustainability of the model.

8. Conclusion

Web-based delivery tools can be widely used to provide a stimulating environment for creating awareness about nature and environment. Various features of these tools like e-magazines, web-log, online chat, interactive contests and searchable archives can be used to promote dialogue between community members, thus enhancing collaborative learning in the form of peer-assisted learning or peer-led learning. While we attempt to measure the active learning using the above tools, the real contribution of a community based environment education portal is in the area of "passive learning". Engaging in an online discussion or attempting an online quiz is no doubt most beneficial to the participants. The percentage of "online lurkers" (Ha, 2001) are the passive learners who also benefit enormously. The third category treat the online medium just like the print medium, which means they go through the online magazines and the published correct answers of the quiz as well as the published chat transcripts carefully- gaining in knowledge the conventional way.

Future research must identify factors that will promote online collaborative learning among Internet friendly Indians. We believe that the percentage of this population (of internet users) is not very significant, but, they represent the educated, active and concerned population of this country who are the present and future managers of India's wildlife and environment. Information about ecological issues delivered through the online medium can accelerate the process of creating a community who realize their stake in ecological conservation. This online education about nature, wildlife and environment is voluntary and lifelong as communitiy members interact with each other online.

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Quiz on Elephants.

Correct answer is shown in bold letters.

1. Asian elephants have a life span of --------------- years.

O 30-40 years   **O 60-70 years**   O 80-90 years

2. Asian elephants were widely tamed more than ------------- ago.

   O 1000 years   O 2000 years   **O 4000 years**

3. The forest department used the method of ------------to catch wild elephants in India.

   O Kumki   **O Khedda**   O Khotal

4. The lustrous white dentin called ivory are actually------------------ of elephants.

   O upper molars   **O upper incisors**   O horns

5. Elephant families are-------------------------

   O patriarchal   **O matriarchal**   O neither of these.

6. Elephant babies are carried by their mothers for---------------months.

   O 9 months   O 5 months   **O 22 months**

7. 'If the tiger is the spirit of the jungle, the elephant is its body' Who wrote these words?

   O Katharine Payne   O Dereck Joubert   **O Raman Sukumar**

8. To ensure long term survival of elephants, in addition to forests, forest--------------are to be protected.

   O paths   O fauna   **O corridors**

9. The species closest to elephants are,

   O rhinos   O hippos   **O dugongs**

10. The national animal of India is the ---------------------

   O elephant   **O tiger**   O lion

{Below 18 years}{Between 19 and 30}{Between 31 and 50 }{Above 50 years}