Earthian Program - Through the lens of Work and Education

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Earthian is a sustainability education program for schools and colleges run by Wipro. For the purposes of this article, we will consider only the school programme going forward. Earthian, now in its fourth edition, is an annual program with two phases – in the first phase, teams of students (guided by teachers) participate in an activity-based learning program and ten schools that perform comparatively better are selected for an award; in the second phase, the Earthian team works together with the selected schools at the curricular and the school and classroom level to further sustainability education.

Sustainability education and the Earthian activitybased program

The term 'sustainability' in this context relates to the sustainability of human species on the planet earth. Though there are different interpretations about the idea of sustainability, for the purpose of this exercise, we can borrow the most common understanding (derived from Brundtland Commission Report, 1987) and define sustainability as 'meeting the needs of the present generation without compromising the ability of future generations to meet their own needs'. Our lives are increasingly dependent not only on resources and conditions in our immediate neighborhoods, but also in places far away from us. Besides, the various resources that make our lives tick are all connected to each other in an intricate web. In school, we learn these different aspects in different chapters or different subjects, often in isolation from each other. As a result, we often do not see how these fit together. This dependence of the local on the remote and the global, and this interconnected nature are two of the main reasons why sustainability becomes a complex topic. In addition, different stakeholders involved in complex social problems often have varying views on why they happen and how to resolve them. As we enter an era of increasing ecological and social disruptions and uncertainties, education could equip the child to understand the complexity of the problem, the interconnected nature of things, the multiple perspectives on its cause and effect and collaborate with others towards meaningful solutions. This is what sustainability education is all about. The activity-based program in Earthian 2013 was based on the theme of water. Water, a concrete reality in the daily life of the child, is a core sustainability concern, and the program tries to use this theme to provide a genuine experience, ideas and insights within sustainability. In this program, the students identify the different sources of water, measure and identify patterns of water usage and assess the quality of water, all in their school campus. They are encouraged to connect what they learn in the activities using questions like 'how is the quality of water related to the source?', 'how is water from different sources used?', 'is there a linkage between water and energy or water and biodiversity?' The core purpose of the above activities is for the students to learn to 'track the trail' and 'connect the dots'. These are two important ideas within sustainability. 'Track the trail' is to understand the flow of materials and energy (including waste) in anything that we use or do, be it water, food, agriculture, sanitation or satellite communication. The aspect of connecting the dots is about understanding the relationships across domains like water, energy, food etc and developing an integrated understanding of their relation to life, limits if any, cause and effect etc. This kind of learning is fundamental to sustainability education as sustainability can be truly aimed for only on the basis of a sound and comprehensive systemic understanding.

Some experiences and reflections from Earthian 2013

It is common knowledge that water is a scarce and precious resource essential for life. But how well do we 'know' water and how does this knowledge influence our actions of water in the area, correlate it with local biodiversity, the changing rainfall patterns or larger issues of climate change and energy and so on. Mapping the trail of water on campus, identifying sources, measuring usage identifying leakages and testing water quality helped students understand water more closely thereby generating fresh perspectives. For many, measuring the amount of water they used in the campus or in their homes was a revelation – their prior estimation and actual measured usage often differed significantly. The measurement helped them develop a real sense of quantities – how much water is used for drinking or cooking; how much water is consumed when a tap is left running or water keeps dripping through the day. They tested the quality of water and wondered why the water from one source was poorer in quality than another and went about finding ways to fix it. Some initiated campaigns in school to reduce water usage, some got the school authorities to fix the leakages. The water consciousness was so high that many said if they heard water dripping anywhere, they could not rest till the source was identified and turned off. For most children who participated, the experience seems to have produced some learning, action and/or behavioral change. It's not all positive stories alone. Some noticed that the water in their nearby pond is polluted and also that the sewage from their school is being emptied into the pond, but didn't seem to make the connection. In many cases, we saw that the syntheses of the activities or the expected interconnections were not made. In most cases, the complete spectrum of learning outcomes that the program intended was not achieved. These could be due to various reasons including deficiencies in the design and the lack of adequate support to teacher. But the above experiences show the learning potential that such an activity has if designed and executed well.

How does this connect to the curriculum?

Sources of water, rainfall, groundwater, topography and mapping (Geography), water contamination, testing and filtration (Chemistry), calculation of water harvesting potential, estimation techniques (Mathematics) are some of the concepts and skills related to the activities described above. An interested teacher can connect the dots further and introduce the children to social and historical usage of water in the area, correlate it with local biodiversity, the changing rainfall patterns or larger issues of climate change and energy and so on. None of these are concepts newly introduced by Earthian as they are already present in the curriculum. What is interesting perhaps is the way

the programme requires students to bring these concepts together and apply them in the context of something real and concrete in their surroundings like water. The integration of these concepts under a common theme increases the understanding of the concepts and their interconnectedness. The documentation and reading and writing involved in completing the submission also provides an opportunity for the children to use language to communicate what they have learned through the activities they did. In addition, working in groups with other children and the teacher also makes learning and doing more enjoyable and effortless for children and develops capabilities such as planning, organizing, teamwork, observing, recording, and documenting. Thus, through a series of connected activities designed to provide holistic understanding of water in the school campus, Earthian furthers the learning of the concepts and other objectives within the curriculum.

Productive work as pedagogy

Work and education is usually associated with employment and vocational education. Productive work is often seen as something that furthers production (of goods and services) and vocational or work education as acquiring knowledge and skills that provide employment. However, productive work can also be seen more broadly as any practical, hands-on activity with social utility. When seen this way, one can see that there are links between the ideas of work and education and the activity-based learning approach that Earthian has used. The activities in Earthian are designed to bring about an experiential understanding of the local context on an important domain like water. They generate awareness about the needs and the gaps around water, its interconnections with other domains and help build some skills that may be useful to address the needs and gaps. This promotes learning and interest around a topic that is socially relevant. The essential idea behind the design of the Earthian activity is that of experiential learning or learning by doing. This is also the underlying principle of 'work and education'. The experience of actually doing tasks helps internalize learning and makes the impact deeper and long lasting in a way that only experiential learning can. Thus one can say that Earthian tries to bring about a mix of knowledge, skills and values acquisition through productive work. This connects well with the motto of 'work and education' – that of bringing the head, heart and hands together and making learning more integrated. In textbooks and classrooms, we often compartmentalise knowledge into disciplines and teach these in isolation from one another and assess learning through pen and paper examinations. But life is integrated and goes beyond the disciplines and it is in applying to life that knowledge becomes real. Such grounded and contextual learning activities, we feel, will help children develop the ability to integrate what they learn in different disciplines and apply it to life. We would like to emphasise that this kind of teaching-learning does not negate the need for textbooks and other resource materials or the need to learn disciplines. Such activity-based learning complements and concretizes the knowledge and understanding acquired from textbooks and disciplines.

Looking ahead

If a simple set of activities on water can have a positive impact on children's learning, it seems reasonable to assume that expanding the scope and scale of such a learning process would be hugely beneficial to many more areas of learning. Such project- based integrated activities would make learning more grounded, contextual and real for our children, and thus more effective, by promoting allround development of knowledge and skills, it also provides ample opportunities for the teacher for Continuous and Comprehensive Evaluation (CCE). In fact, the time set aside for CCE could be effectively used for such project -based learning activities. Facilitating such a learning activity in class does put an additional demand on the teacher. The teacher will need to make a shift from going only 'by the book' and identify projects and experiences that can provide integrated learning for her students. The teacher would also need to help the children plan and execute the project, help them find effective ways of doing the tasks and ensure that the concepts and skills to be learned are indeed assimilated and practiced by the children. Thus, the teacher is a critical partner in making such a program a success. In Earthian, the teacher is supported in this process through resource materials such as the water activity booklet and the resource book. Earthian plans, in the coming years, to develop more activity based programmes on water and other themes. As part of its second phase, the Earthian programme also works with selected schools to build teacher capacity to deepen this kind of pedagogy. We hope to spread and share the learning arising from these experiences with schools, teachers, the education system and the larger education community. The National Curricular Framework (NCF) 2005 already encapsulates such ideas. In fact, Earthian derives its inspiration from, among other things, the habitat and learning position paper of NCF 2005. We are also confident that there are many teachers and schools and initiatives where such ideas are already being practised. However, for these ideas to be integrated into the education system, there is need for widespread systemic reform in the areas of in-service and pre-service teacher education, textbooks and other teaching and learning materials and authentic CCE. These should aim to provide more space and opportunities for integrated activity-based teaching-learning in schools. This will make learning more integral, contextual and enjoyable for the teachers and the learners. The authors are grateful for the contribution of their colleagues, Abhijit Zacharia and Arathi Hanumanthappa, in writing this article.

Shaheen Shasa and Sreekanth Sreedharan

Sreekanth and Shaheen are part of Wipro Applying Thought in Schools, Wipro's social initiative in education. They are part of the core team which designs and runs Earthian, Wipro's sustainability education program for schools and colleges. They may be contacted at sreekanth.sreedharan@wipro.com and shaheen.shasa@yahoo.com