

Principles of Integration of Sustainability Science in Educational Practice

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'The volume of education has increased ..., so do pollution, exhaustion of resources, and the dangers of ecological catastrophe. If still more education is to save us, it would have to be education of a different kind: an education that takes us into the depth of things' (Schumacher, written 1974, published 1997).

The context

A casual conversation with a team of students and news on alarmingly high rate of surgical deliveries in state of Kerala on the very day the author was thinking for a paper for this gathering incited this paper. In the first instance, post graduate and doctoral students failed to tell the steps in preparing pressed rice, a very common snack with afternoon tea in common households in Kerala. This made the author wonder how far the existing system of education has led the younger generation away from the living realities around. In the second instance, news paper reports suggested that in eleven of the fourteen districts in the state, the rate of caesarean operations is beyond the prescribed limits of Government of Kerala, averaging 40 percent (Health policy, 2013,) and touching ninety percent even in a number of government hospitals. Is our generation losing the basic biological capabilities that ensure the sustenance of the humanity on earth? Sadly, both the instances are from the most literate and educationally developed state in India. Is schooling and beyond regressing natural biological abilities of human beings for survival?

Sustainability science as a process of integration

The above instances remind us that sustainable future requires educational models that go beyond teaching codified facts. Sustainability science, an amalgamation of pure, applied and social sciences, is aggregate of the solutions to the challenges that continued human survival and sustainable world. An education that revolves around these disciplines will help preserve the living and non-living systems. It will protect our environment from further degradation, it will help conserve the knowledge, skills and values that will save humanity from further harm, keep generations alert to the essentials for maintaining the chain of life, alert every member on the need for protecting and caring for the global system that save everyone from harm. Though sustainability has broad appeal everyone has own way of defining it. Codes of sustainable life depend upon idiosyncratic judgments. This emerging discipline is defined by the problems it addresses rather than the disciplines it employs (Harvard University's Center for International Development, 2013). Hence curricular discussions on sustainability science have to deliberate on the methods and approaches of education that will support development of individuals who will further sustainable knowledge, skills, abilities and values around them. This requires education to turn into a process of integration of life in its varied dimensions. The definition of an integrating education, like the sustainability science, cannot escape value judgements. A really integrating education is as broad as life; one that develops individuals who learn to adapt to their environment on continual basis throughout the life; an education that help see all the life in unison, one that help see one's life as a part of other human and

non-human beings. Such an education equips the individual for sustaining life as a whole. The method of that education is through life. In essence, sustainability education, an education that equips the individual and societies to live in sustainable way, is life education, a living and responsive education.

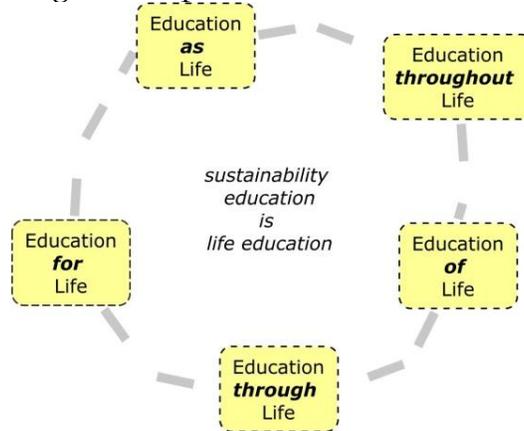


Figure1: Scope of Education That Integrates Sustainability Sciences

Challenge of Integration Pro Sustainability for Educational Practitioners

Irrespective of the philosophical leanings, education in practice separates life and its elements. Our educational (and teaching-learning) system isolates its various levels, multiple subjects/disciplines, numerous ideas and concepts that are imparted in classrooms from one another. Irrespective of the theorized principles, educational practice encourages to make separation among theory/practice, science/ technology, local / global, individual/social, science/ social science, past/present, history/science, ecology/society and the like. We do extend this practice in classifying the levels of teaching and categorizing of objectives of teaching too. There are fragmentation all around – between and among in contents, aims, methods, evaluation, teachers, grades or standards, stages, disciplines, and allotment of time to learn as periods/ classes. This practice of breaking down the system makes it unsustainable. Degeneration results from fragmenting the natural wholes and treating the fragments in isolation from the whole. On the contrary, an integrating education has to facilitate the mental habit of making connections among all aspects of life in its environment. For the sake of brevity, the aspects of education that teachers can consider for integration and normative elements of educational system like aims, methods, content, and evaluation that is compatible with the sustainable education are depicted in figure 2.

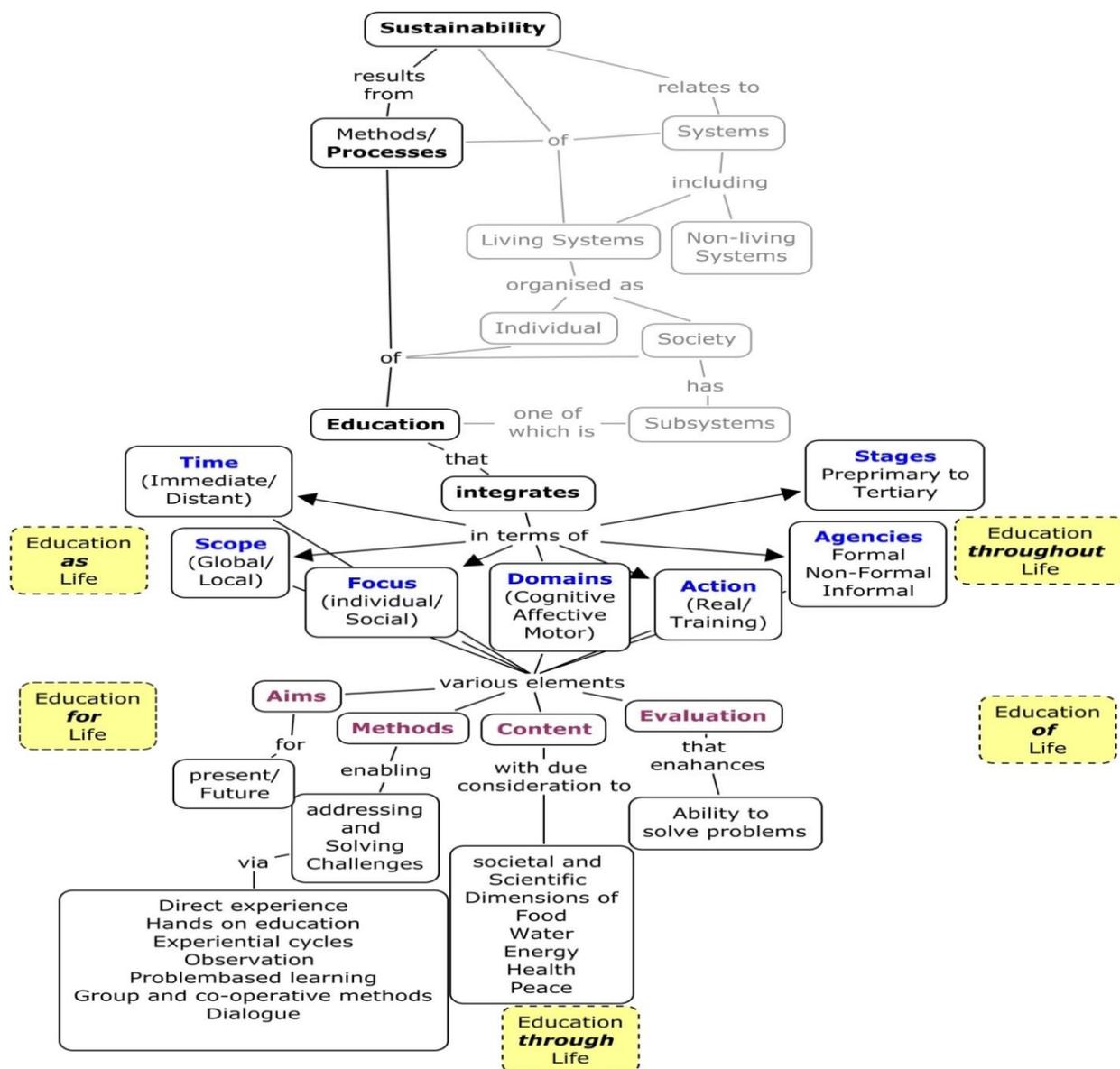


Figure 2: Aspects and Elements for Consideration in Developing a Sufficiently Integrative Education for Sustainable Life

The system of education that incorporates all the aspects may be a figment of imagination in any foreseeable future. However, the value of such broad and inclusive definition of integration for sustainability is in encouraging all concerned to reflect on, remember, understand and practice any one or more of the implications that ensues from it, like:

- Bringing school as close to life as possible
- Bringing learning to places and events closest to the student’s own community such that learners gain ‘real life’ learning opportunities in meaningful and culturally appropriate contexts
- Facilitating on a daily basis the mental habit of making connections among all aspects of life

- Integrating declarative, procedural, metacognitive and epistemic knowledge in every educative effort to enable learners to gain better sustainable education.
- Designing professional development programmes for teachers that will equip them to cross the traditional disciplinary boundaries
- Building future teachers with multiple disciplinary perspectives having experience and knowledge across a range of disciplines

Summing up

Author agrees that in the present scheme of things educational practitioners are concerned more with practical problems which force them to break down the integrated life into shorter, achievable disciplines, stages, classes, and lessons. However, it needs no further professional preparation, than a little more committed energy, to see that the integrative principle lauded in this article is amply demonstrated in educational theory in various terminologies like hemisphericity of brain, progressive differentiation and integrative reconciliation (Ausubel), multiple intelligences, inductive and deductive thinking, or analysis and synthesis (Bloom), analytical and creative intelligences (Sternberg). These, along with other theoretical manifestations like learning and thinking styles, help integrate curricular content and processes one another as well as with life and environment of the learner on the other.

Reference

HarvardUniversity's Center for International Development

<http://www.hks.harvard.edu/centers/mrcbg/programs/sustsci/about-us>