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INFUSION OF SUSTAINABILITY SCIENCE INTO THE CURRICULUM

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ABSTRACT

Education for sustainability is driven by a broad understanding of education and learning that includes people of all ages and backgrounds and at all stages of life and takes place within all possible learning spaces, formal and informal, in schools, workplaces, homes and communities. Sustainability Education is intended to provide learning, training, and practical experience, in both formal and non-formal settings, that fosters personal development, community involvement, and action for change in our human and natural world. Sustainability science demands a realignment of existing academic disciplines. Whereas academia has moved inexorably towards the fields of in-depth specialization, sustainability science seeks comprehensive, integrated solutions to complex problems. It is therefore requires a restructuring of education and research that spans multiple disciplines. There are various advantages of infusing the sustainability of science into the curriculum. To infuse the same the various methods are discussed, which helps us to revamp the curriculum which is required to structure the curriculum according the needs and challenges of the learning society.This paper reflects about the infusion of sustainability science in the curriculum.

KEY WORDS: Sustainable Education, Sustainable science, Methods.

INTRODUCTION:

Education for sustainability is driven by a broad understanding of education and learning that includes people of all ages and backgrounds and at all stages of life and takes place within all possible learning spaces, formal and informal, in schools, workplaces, homes and communities. Sustainability science is an emerging field of research that seeks to promote sustainable futures by developing a better understanding of the complex interactions between human and natural systems. The need for a science of sustainability is demonstrated by long-standing difficulties in promoting sustainable development—broadly defined as the practice of enhancing human well-being whilst preserving fragile ecological systems. The concept of "sustainability" as a policy goal has influenced the official policy agendas of governance institutions at multiple scales, and yet there is no broad consensus on the best way to meet this challenge. A strategy to achieve the seemingly conflicting goals of sustainability and development must be grounded in a better understanding of the relationships between coupled social and ecological systems. The central purpose of sustainability science is to use rigorous scientific methods to better understand these relationships, but with the underlying normative purpose of promoting a sustainable future. Sustainability science is the understanding, the complexity of the interaction between society and environment/human and nature/nature and society. It is mode of science which is integrative and relevant addressing common themes.

Sustainability science is a new academic discipline emerging in response to threatened sustainability of the global environment. The purpose of this discipline is to help build a sustainable society by developing solutions to climate change, resource exhaustion, ecological destruction, and other environmental crises that threaten humanity.

Sustainability science demands a realignment of existing academic disciplines. Whereas academia has moved inexorably toward fields of in-depth specialization, sustainability science seeks comprehensive, integrated solutions to complex problems. It is therefore requires a restructuring of education and research that spans multiple disciplines.

Sustainability science is "an approach to facilitate the design, implementation, and evaluation of practical interventions that promote sustainability in particular places and contexts; and to improve linkages between relevant research and innovation communities on the one hand, and relevant policy, private sector and management communities on the other".

NEED OF INTEGRATING SUSTAINABILITY SCIENCE INTO THE CURRICULUM

1. Curriculum is a living thing; while concepts endure, practice changes quickly.
2. Practice leads the development of theory, with some of the best theory being taught by practitioners to academics.
3. Because curriculum evolves quickly the curriculum development process needs to institutionalize reflection, or it will not happen.
4. Because sustainability is synonymous with viability, resilience and endurance it shares the value base of the long term plan and so can be mainstreamed into curriculum at a fundamental level.

The curriculum areas should provide the basis for learning and the development of skills across a broad range of contexts as they offer opportunities for citizenship, sustainable development, enterprise, creativity and cultural aspects taken together, their outcomes and experiences should represent our expectations for general education for all young people before they embark on greater specialization. It will be open to schools to organize the outcomes and experiences differently (for example, designing challenging interdisciplinary projects), taking account of local circumstances, to plan for progression, breadth and depth of learning. Outcomes and experiences might also be grouped differently for different stages of learning, such as early learning, or for young people with additional support needs.

The overall framework needs to provide a coherent approach to progression for skills which are developed through the various curriculum areas. As part of the review we will consider how to best achieve more coherent approaches to the development of sustainable development through literacy, numeracy and other skills across the curriculum.

METHODS

This process involves a wide range of methods and tools to address affective, spiritual, manual, and physical needs as well as cognitive skills and creative inquiry. (Sterling, 2001) Learners are thus empowered to develop their own learning priorities, to construct their own meaning, and, through application and dialogue, subject it to the scrutiny of their teachers, peers, and the community. This is the kind of learning that emerges where the freedom to choose one's future is assured and where structures exist that support such self- determination. The following are the

methods that can be followed to transmit the knowledge and create awareness about sustainability science.

a. **ANALYTIC METHODS** -analytic methods mainly look at the nature of sustainable development, employing among other approaches the theory of complexity

b. **PARTICIPATIVE METHODS** - non-scientists such as policy-makers, representatives from the business world, social organizations and citizens also play an active role.

c. **MANAGERIAL METHODS** - are used to investigate the policy aspects and the controllability of sustainable transitions.

• Other dimension of the methods:

- **From supply to demand-driven**
- **From technocratic to participative**
- **From objective to subjective**
- **From predictive to exploratory**
- **From certain to uncertain**

Through these methods, sustainability science, therefore, seeks real world solutions **by breaking down artificial and outdated disciplinary gaps between the natural and social sciences through the creation of new knowledge and its practical application to decision making with local values and norms retained**

Sustainability of science can be infused into the curriculum as it is the developmental process that fully engages learners in the process of their own learning and asks participants to take responsibility for their success, future possibilities, and the survivability of human society and culture.

Learners thus must be encouraged to take their knowledge, assumptions, and skills out into the larger world and test their efficacy in the only medium that matters: the reality of everyday life and our capacity to change systems, institutions, and influence others. The most essential qualifications are openness, curiosity, flexibility, a critical mind, and the willingness to be influenced by others and the opportunities that present themselves to us. (Sterling, 2001)

We have a motivated and well-trained workforce which is being asked to embrace a shift away from prescription about the detail of the curriculum and towards more responsibility for professional judgment and creativity within broader parameters. Sustainability in the curriculum (sustainability learning) involves teaching/learning about environmental sustainability but it can also involve developing/acquiring an awareness of sustainability issues through secondary unit materials. Either of these paths can lead to a personal and lifelong commitment to contributing positively to society and to the environment.

CONCLUSION

Hence in order to prepare young people to meet the challenges of the future, we will rely more on individual teachers' commitment to refreshing and updating their own professional skills and knowledge. There will be implications both for initial teacher education and continuing professional development. Aspects are likely to include developing understanding of new models of the curriculum and using new guidance, updating subject and thematic knowledge, new approaches to learning and teaching, and leadership at all levels. Teacher education Institutions, education authorities, school managers and individual teachers will all have roles to play in taking this forward to meet the challenges of the learning society.

REFERENCES:

1. Mezirow, Jack et al (2000). Learning as Transformation. San Francisco, CA: Jossey-Bass.
2. Sterling, Stephen (2001). Sustainable Education. Devon, England: Green Books
3. Edwards, K. E. (2012). Moving beyond green: Sustainable development toward healthy environments, social justice, and strong economies. New Directions for Student Services,2012(137), 19-28. doi:10.1002/ss.2001
4. Elkington, J. (1997). Cannibals with Forks: The Triple Bottom Line of 21st Century Business. Oxford, U.K.: Capstone Press.
5. Erickson, Christina. (2012). Student sustainability educators: A guide to creating and maintaining an eco-rep program on your campus. Merrifield, V.A.: National Wildlife Federation.
6. Kerr, K. G., & Hart-Steffes, J. S. (2012). Sustainability, student affairs, and students. New Directions for Student Services, 2012(137), 7-17. doi:10.1002/ss.2001
7. Timpson, W. M., Dunbar, B., Kimmel, G., Bruyere, B., Newman, P. & Mizia, H. (2006). 147 Practical Tips for Teaching Sustainability. Madison, W.I.: Atwood Publishing.