World Academy of Science, Engineering and Technology
International Journal of Mathematical and Computational Sciences
Vol:14, No:12, 2020

Bridging the Gap: Living Machine in Educational Nature Preserve Center

Authors : Zakeia Benmoussa

Abstract : Pressure on freshwater systems comes from removing too much water to grow crops; contamination from economic activities, land use practices, and human waste. The paper will be focusing on how water management can influence the design, implementation, and impacts of the ecological principles of biomimicry as sustainable methods in recycling wastewater. At Texas State, United States of America, in particular the lower area of the Trinity River refuge, there is a true example of the diversity to be found in that area, whether when exploring the lands or the waterways. However, as the Trinity River supplies water to the state’s residents, the lower part of the river at Liberty County presents several problem of wastewater discharge in the river. Therefore, conservation efforts are particularly important in the Trinity River basin. Clearly, alternative ways must be considered in order to conserve water to meet future demands. As a result, there should be another system provided rather than the conventional water treatment. Mimicking ecosystem's technologies out of context is not enough, but if we incorporate plants into building architecture, in addition to their beauty, they can filter waste, absorb excess water, and purify air. By providing an architectural proposal center, a living system can be explored through several methods that influence natural resources on the micro-scale in order to impact sustainability on the macro-scale. The center consists of an ecological program of Plant and Water Biomimicry study which becomes a living organism that purifies the river water in a natural way through architecture. Consequently, a rich beautiful nature could be used as an educational destination, observation and adventure, as well as providing unpolluted fresh water to the major cities of Texas. As a result, these facts raise a couple of questions: Why is conservation so rarely practiced by those who must extract a living from the land? Are we sufficiently enlightened to realize that we must now challenge that dogma? Do architects respond to the environment and reflect on it in the correct way through their public projects? The method adopted in this paper consists of general research into careful study of the system of the living machine, in how to integrate it at architectural level, and finally, the consolidation of the all the conclusions formed into design proposal. To summarise, this paper attempts to provide a sustainable alternative perspective in bridging physical and mental interaction with biodiversity to enhance nature by using architecture.

Keywords : Biodiversity, Design with Nature, Sustainable architecture, Waste water treatment.
Conference Title : ICSRD 2020 : International Conference on Scientific Research and Development
Conference Location : Chicago, United States
Conference Dates : December 12-13, 2020