Abstract

This paper is part of a bigger research with three cycles of reflective studies to identify essential attributes in validating transdisciplinary models to manage innovation processes, skills training and human resource development through ‘Learning Science/Mathematics Together’ in a borderless world [LeSMaT(Borderless)] using technology. During the pilot phase or first cycle, the innovation processes of Knowledge, Thinking, Incubation, Inspiration and Development are reported involving secondary learners participating in Problem-based Learning using Scaffolded Instruction (PBL-SI) approaches. These are supported by POSITIVE monitoring/evaluation rubric to guide them involving Planning with Objective/ organisation, Skills development, Information/ resource procurement, Training/ transferring skills, Involvement/ incorporating Pedagogical-Content-Knowledge (PCK), emphasising Values/attitudes/ motivation and Evaluation/exchange/enrichment/ exposure. The lessons learnt from the pilot phase anchored on
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sociocultural/constructivist framework were adapted in the second phase to facilitate LeSMaT(Borderless) using various sustainable blended learning platforms for managing knowledge, innovation processes as well as developing thinking, technology and life (work/survival/entrepreneurial) skills. In the subsequent phase, case exemplars are reported with highlights on recently implemented Smart PLS in-service skills training workshop to validate research instruments/models that promote scenario-based Education for Sustainable Living (ESL). Implications and future direction of research are also deliberated.

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**Index Terms**

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