論文 / 著書情報
Article / Book Information

論題(和文)	
Title(English)	New Paradigm Solutions for Implementing Higher Education Reforms towards a Flexible Global Knowledge Exchange
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出典(和文)	, , , pp. 957-958
Citation(English)	, , , pp. 957-958
発行日 / Pub. date	2015, 9
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New Paradigm Solutions for Implementing Higher Education Reforms towards a Flexible Global Knowledge Exchange: Reviewing a Case Study in Japan

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Abstract This paper describes the need for reforms in higher education from a global perspective with particular reference to the higher education system in Japan. The main focus of the paper is about the curriculum development of a set of new courses for engineering students at the Tokyo Institute of Technology. This will prepare them for seamless transition into the newly reformed curriculum that will be implemented from April 2016. This study also considers the necessity for appropriate faculty development programs that need to operate in conjunction with preparing the students for the upcoming reforms. The authors introduce and overview innovative approaches towards course design for active learning and preparing students for life long learning. This educational policy is in tune with the changing educational paradigm and needs of the emerging global agenda for sustainable development goals as proffered by UNESCO.

Keyword Higher Education, Self-organised learning, EPortfolio, Lifelong Learning, Open Curriculum Design, Educational Reforms, Sustainable education, Assessment for Learning.

1. Introduction to Higher Education Reforms

Reforms in higher education demand a significant shift from the transmission to transformative learning model (Figure 1).

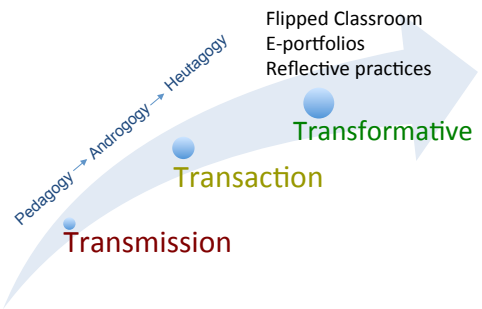

Figure 1: Model of Transformative Learning

Continuing HE practice of mass lectures comprising of didactic face-to-face instruction in an industrial revolution style of training needs to transform to a more individual and personalized learner-centred environment [1]. The challenge of achieving such an educational reform requires a major rethink and cultural shift in HE systems, in particular pedagogical practice supported by an appropriate Faculty Development programme supported by leadership from the top of the tertiary sector, government and industry. This also requires a paradigm shift in open curriculum design and delivery as well as major educational reforms to the existing evaluation and assessment system, i.e. moves towards customized formative assessment practice.

2. Paradigm Shift towards Curriculum Design: A Case Study

The Tokyo Institute of Technology (Titech) Education Reforms (URL pdf Ref) to be introduced from April 2016 include the merger of undergraduate and graduate schools for the seamless mobility of students through flexible progression facilities including a reformed credit transfer system. At the same time all graduate studies are to be offered in English for greater global knowledge exchange serving both higher education and industry alike. The preparation towards the implementation of all the envisaged educational changes is ongoing for all sectors of the institution. In the current study authors will

focus on the newly developed flexible courses introduced at Titech to undergraduate engineering students in English and the parallel faculty development program initiative required. The five recently validated courses are as follows:

1. Online Learning and Developing eportfolios
2. English Communication for Technical Students
3. Systems Thinking Using ICT Tools
4. Education for Sustainable Development (ESD) Research Projects
5. Introduction to e-resources and the digital library

The main emphasis is towards learner-centred learning facilitated through interactive blended courses focusing on flexible and learning-knowledge technologies. This will allow students to be lifelong learners with self-organized learning [2] and developing reflective learning eportfolios. Assessment will consist of students presentation [3] of their evidence based eportfolios demonstrating soft skill acquisition, e.g. personal communication and collaborative skills. The challenge is to invoke a new assessment regime that shifts the paradigm from assessment of learning (behavioral) towards Assessment for Learning (AfL) that is suited to a more contructivist knowledge building goal. The authors understand that such authentic assessment approaches including self and peer evaluation systems that are fully synchronised with Titech's goal of implementing achievement-based assessment reform and preparing students for lifelong learning. AfL also requires formative learning tasks that support both learner-centred individual and collaborative learning activities. However, all these curriculum achievements cannot be implemented in a vacuum. Attention needs to be given towards supporting both students and faculty towards such a changed learning environment.

3. Implications and Recommendations

These prototype courses will test the nature of eportfolios as a meaningful universal continuous learning and assessment tool operating across all fields of learning. The expectation is that students will continue to develop their eportfolios as they progress from year to year and record their learning journey in and outside of the formative education system encompassing industrial, community and overseas experiences. In conclusion we offer the following recommendations for higher education and industry:

1. To accept the need for developing learner-centred and customized learning environment that is also an inclusive education policy for students of all abilities and backgrounds.
2. The need to integrate interactive learning-knowledge technologies to achieve learner-centred educational reforms.
3. The need to reform curricula towards a more flexible, transferable and progressive learning structure with much greater choice for learners to identify relevant pathways.
4. Progressive forms of AfL at all levels of the education and training system and an appropriate system of facilitation and support – peers, seniors, teachers, coaches, etc.
5. Learner-centred evaluation and reflective learning tools including the eportfolio for lifelong sustainable education and personal improvement.

4. References

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