ePortfolio: An ICT-based Assessment for a Complex Educational Environment of World Class University[1]

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Abstract

The rapid development of sciences and technologies directs higher education to enter a more complex educational environment, called world class university. One of the consequences of world class university is how to develop new modes of assessment which encourage and support students to be more confident, responsible and creative. ePortfolio is an ICT-based assessment that meet this challenge.

Keywords: world class university, ePortfolio, ICT-based assessment

A. Introduction

The rapid development of sciences and technologies has led us to a global era in which the people in the world are unified into a single society and function together. In global era, the world can be viewed as a borderless region in which barriers between national borders are removed (or at least reduced) in order to facilitate the distribution of goods, capital, services, labours, information, etc. The borderless region – as the main characteristic of global era – demands a high competitiveness and quality of human resources in order to survive and compete. Hence, the quality of human resources is the most important key to success in global era. It is obvious that education significantly contributes to the improvement of the quality of human resources in global era. Indonesian government categorizes the improvement of national education as one of the national (high) priorities. As mentioned in the Article 50 Section (3) of the National Education Act No. 20/2003, government through the Department of National Education establish

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International Standard School Program as one of the programs related to the improvement of national education. In higher education, world class universities are established and developed to meet the challenge to develop the quality of human resources.

The definition of world class university has been discussed since it was established. Frazer (1994) and Lang (2004) mentioned that a world class university has different definitions for different stakeholders:

- Government & taxpayers: a cost-benefit view (efficiency, productivity)
- Employers of grads: a qualification of graduates (effectiveness)
- Students and their parents: the quality of instruction
- Faculty and administrators: the quality of research (research university)

Despite the different definitions mentioned by Frazer and Lang, there is a common value of the definitions, namely quality. "Quality" as the key feature of world class university also emphasized by Niland (2000) and Altbach (2003). Niland mentioned that a world class university is built on reputation and perception and it requires outstanding performance in many events. In line with Niland, Altbach defined world class university as ranking among the foremost in the world; of an international "standard of excellence".

One of the most important issues in establishing world class university is how to assure the quality of the university, including: lecturers, students, the teaching and learning process, facilities, and researches and publications. Student is one of the core components on an education system; therefore developing appropriate assessment for student is very crucial for the quality of world class university. According to the definition of world class university defined by Frazer and Lang, government and employers demand efficiency, productivity and effectiveness of world class university. It is in line with the consequence of global era as mentioned before, namely the need for high competitiveness and quality of human resources. Consequently, the assessment used in a world class university does not merely assess the achievement of students, but also encourage and support students to be more confident and creative. Assessment also provides information for teacher about the effectiveness and obstacle of the teaching and learning process.

However, this article merely focuses the assessment for students' side. A major change in education has resulted from the influence of technology on what and how is taught. New challenges and opportunities for assessment have arisen with the increasing complexity of many modern educational environments. Information technologies are helping to remove some of the constraints that have limited assessment practice in the past. Assessment tasks no longer need be confined to paper-and-pencil formats.

B. World Class University

A university as higher education has three major roles, namely (1) excellence in education of their students; (2) research, development and dissemination of knowledge; and (3) community service as activities that contribute to the cultural, scientific, and society. The global era has directed higher education to enter a complex educational environment, called world class university. Currently, there is no single definition of world class university.

Altbach(2003) tried to define world class university by referring to dictionary, namely "world class as ranking among the foremost in the world; of an international standard of excellence". In line with Altbach, Niland (2000) mentioned that a world class university is built on reputation and perception and it requires outstanding performance in many events. On the other hand, Mohrman (2005) and Tridoyo Kusumastanto (2007) defined world class university by emphasizing on the key aspects and criteria of a world class university. Mohrman mentioned that a world class university must meet three aspects, namely: its faculties regularly publish researches in the top defining journals in their respective disciplines; the graduate student body is truly international in origin; and the graduates are employable anywhere in the world. Tridoyo Kusumastanto mentioned criteria for world class university, namely: minimum 40% of the lecturers have Ph.D qualification; in a year, each staff or lecturer of the university has to publish at least 2 papers in international journal(s); 40% of the student body are

postgraduate students; and the use of information and communication technology (ICT).

Levin & Jeong (2006) stated that a World Class University evaluation should consider four aspects, namely: (1) institutional characteristics that may affect quality; (2) instructional quality; (3) research quality; and (4) student quality. Especially for improving students' quality, Hanvey in Gaudelli (2003) asserted that in order for students to perform effectively in the global era that they stood to inherit, a reorientation of perspective was required. This orientation involves the following five dimensions:

– *Dimension 1*—Perspective Consciousness

This dimension asserts that a person's worldview is not universally shared and that others have worldviews that are profoundly different from one's own.

– *Dimension 2*—State of Planet Awareness

The state of planet awareness involves "getting into someone's head" and understanding their attitudes and behaviors from their perspective.

– *Dimension 3*—Cross-Cultural Awareness

Cross-cultural awareness related to the diversity of ideas and practices found in all of humanity.

– *Dimension 4*—Knowledge of a Global Dynamic

This dimension expresses the notion that the Earth is indeed an interconnected system.

– *Dimension 5*—Human Choices

Human choices suggests that problems confront individuals and societies that they have the power to act on.

Considering the complexity of world class university reflected from its definitions and aspects, assessment is one of the key elements of world class university. The assessment used and developed in a world class university must cover the aspects and dimensions of world class university. Information and communication technology should be considered as important aspects for developing new mode of assessment for world class university.

C. Assessment for World Class University as a Complex Educational Environment

Assessment serves as tool for Strength, Weakness, Opportunity and Treatment (SWOT) analysis. Assessment is a tool providing information about the strength of the teaching and learning process. In the educational environment, strength means the advantage of methods used in the teaching and learning process. Strength could also mean as achievement of students, as the product of teaching and learning process. Assessment also serves as tool to analyze the weakness of the teaching and learning process which leads to low achievement of students. Based on the strength and weakness of teaching and learning process reflected and analyzed from the assessment, appropriate remedial modes can be developed as treatment for students' difficulty in the learning process.

Students will learn more if instruction and assessment are integrally related. According to Pellegrino, Chudowsky & Glaser (2001), every assessment, regardless of its purpose, rests on three pillars: a model of how students represent knowledge and develop competence in the subject domain, tasks or situations that allow one to observe students' performance, and an interpretation method for drawing inferences from the performance evidence thus obtained. In the context of large-scale assessment, the interpretation method is usually a statistical model that characterizes expected data patterns, given varying levels of student competence. In less formal classroom assessment, the interpretation is often made by the teacher using an intuitive or qualitative rather than formal statistical model. Pellegrino, Chudowsky & Glaser also mentioned three foundational elements, comprising what is referred to in this report as the "assessment triangle," underlie all assessments. These three elements—cognition, observation, and interpretation—must be explicitly connected and designed as a coordinated whole. If not, the meaningfulness of inferences drawn from the assessment will be compromised.

As mentioned by Mohrman, the graduates of a world class university have to be employable anywhere in the world. Consequently, there have been increasing demands for developing independent lifelong learners (Spencer and Jordan in Cordelia & Karen, 2006) with the skills and attitudes appropriate for assessment, appraisal and professional revalidation. The need to develop and support independent lifelong learners accelerate the need of formative self assessment and personal development planning (PDP) as a further challenge. A major change in education has resulted from the influence of technology on what and how is taught. New challenges and opportunities for assessment have arisen with the increasing complexity of many modern educational environments. Information and communication technology should be considered as important aspects for developing new mode of assessment for world class university. It meets the challenge of world class university mentioned by Niland and Tridoyo Kusumastanto, namely world class university have to use information and communication technology (ICT). Information technologies are helping to remove some of the constraints that have limited assessment practice in the past. Assessment tasks no longer need be confined to paper-and-pencil formats, and the entire burden of classroom assessment no longer need fall on the teacher. At the same time, technology will not in and of itself improve educational assessment. Improved methods of assessment require a design process that connects the three elements of the assessment triangle - cognition, observation, and interpretation - to ensure that the theory of cognition, the observations, and the interpretation process work together. There exist many examples of technology tools and applications that enhance the linkages among cognition, observation, and interpretation. By enriching task environments through the use of multimedia and interactivity, it is possible to assess a much wider array of cognitive competencies than has been feasible.

One of the ICT-based assessments being developed is ePortfolio. University of Newcastle has been developing ePortfolio primarily for formative assessment and for self-assessment purposes since 2003. Furthermore, the use of electronic portfolios may potentially reduce the

tension between formative and summative processes. The ePortfolios applied an innovative design to integrate closely with online curricula and virtual learning environments. They provide a means for providing evidence of the achievement of learning outcomes, and give the learner a personalized view of their accumulating summative assessment results. ePortfolio approach may have an impact on learning pedagogy and assessment: for example, the technology allows learners to share all or parts of their ePortfolio content with lecturers and peers, who are then able to add formative feedback. The ability of students and lecturers to access ePortfolios over the internet from a wide range of different locations is also a key advantage in supporting the recording and evidencing of achievements for formative assessment in complex educational environments.

ePortfolio is a 'learner-centric' assessment because ePortfolio is owned by the student, who can choose which parts of their portfolio they wish to allow others access to. As the owner of the ePortfolio, students may build up a private collection of evidence and reflection from which they select the parts to be put forward for summative assessment. A key advantage to this approach is a prevention of the need to replicate effort and duplicating data. Another potential advantage of the use of ePortfolios is the electronic transfer of data between systems. The technical specifications to support a 'lifelong-learning record' are now coming to realisation. This may encourage the inclusion of prior learning and extracurricular activities as evidence of the achievement of learning outcomes and competencies. During their studies ePortfolios can give the learner a personalized view of their accumulating summative assessment results. After graduation, students can build on their existing portfolio and skills profile, rather than starting with a blank sheet again.

D. Conclusion

World class university is a new more complex educational environment which uses information and communication technology as important features. ICT is not merely used for the teaching and learning

activities, but can also be occupied for assessment. A significant contribution of technology has been to the design of systems for implementing sophisticated classroom-based formative assessment practices. ICT-based assessment should be developed to support individual instruction by extracting key features of learners' responses, analyzing patterns of correct and incorrect reasoning, and providing informative feedback to both student and teacher.

ePortfolio is a 'learner-centric' assessment because ePortfolio is owned by the student, who can choose which parts of their portfolio they wish to allow others access to. This characteristic of ePortfolio can improve students' qualities including creativity and responsibility which are very important aspects of human resources in global era.

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