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INNOVATIONS OF "E-TEACHING TIES" ON LEARNER PERFORMANCE AND FACULTY DEVELOPMENT

Koichi Nakajima
Tezukayama University
7-1-1 Tezukayama, Nara-city, Nara, Japan
koichi2@tezukayama-u.ac.jp

ABSTRACT

In Japan we face the serious problem of students' declined learning performance and lack of intellectual motivation. Many universities have heavily invested in Information Technology (IT) such as e-Learning, e-Portfolio, mobile learning, social media, and cloud computing to motivate students and engage in more proactive learning. However, casual observation suggests that the use of IT remains limited and that its effect seems mixed as a solution to the problems. One of the reasons for its lack of clear effect is that we often ignore the issues associated with faculty development. That is, instructors need to be motivated and learn how to use IT effectively in their teaching before expecting students to perform better. The purpose of this paper is to provide practical solutions to the challenges in motivating both students and instructors by illustrating some instructor-centric technologies and to discussing their impacts on faculty development.

Keywords: TIES, Faculty Development, E-Teaching, E-Assessment

1. TIES AS AN E-TEACHING SYSTEM

1.1 What Is "E-Teaching"?

We think of e-Learning as a tool to improve each student's learning performance and motivation. Similarly, e-Learning pedagogical issues and instructional designs are discussed mainly from a student's perspective. That is, the concept of e-Learning is typically defined as training delivered on a PC and mobile devices with Internet connectivity to improve students' learning performance, and to support their self-motivation and self-directedness. Although this student-centric definition does not deny face-to-face or traditional lecture styles in the classroom, it fails to articulate

the role of instructors in terms of faculty development (FD), which aims to improve students' learning performance through the efficient and effective use of IT both inside and outside the classroom.

However, it is not easy to promote e-Learning in higher education from the instructor's perspectives. Instructors are not motivated to invest their time in enhancing their teaching because such efforts are not recognized for promotion or tenure as much as their research performance. Some instructors may feel intimidated by the prospect of trying to use ever-changing IT, while others may be irritated by machine troubles and slow Internet connection. Moreover, many instructors do not want to be held responsible for copyright infringement of using other people's content. Last but not least, student-centered e-learning functionalities or instructional designs are not directly relevant to the FD issues and related IT risk that instructors face.

Thus, it is necessary to develop a different conceptual framework and a system to support instructors to use IT as a prerequisite to successful e-Learning education. We call such a concept "e-Teaching", and define it as a system designed to improve instructors' teaching performance, their self-motivation and self-directedness. Given the definition, we point out that e-Teaching is not just a prerequisite to e-Learning, but can be a source of great innovation to promote FD and improve students' learning performance.

1.2 Growth of TIES Community

We have developed and managed a homegrown e-Teaching system called TIES since 1997 at Tezukayama University. The TIES project started as a grass-roots initiative among a few faculty members, who wanted to promote pedagogical innovation with the use of IT and emerging technologies. Since then, TIES has evolved based on the principles of (1) open and interuniversity collaboration, (2) content sharing, and (3) contribution to society.

The success of TIES as evidenced in Table 1 is rooted in our belief that we must support instructors first and the self-motivated instructors will improve their teaching skills and performance for the sake of students[1, 2].

As shown in Figure 1, the TIES system includes all basic e-Learning functions and integrated applications such as a Web conference system, an automatic lecture recording/updating system, a video editor for creating video quizzes and questionnaire onto the recorded video, lecture/content sharing and reassembling system, e-Portfolio and e-Assessment systems, mobile learning, student and faculty SNS, and an eLearning portal open to the public for lifelong and recurrent education [3, 4].

Table 1. Recent growth of the TIES community

Year	2006 Apr-Mar	2007 Apr-Mar	2008 Apr-Mar	2009 Apr-Mar	2010 Apr-Mar	2011 Apr-Mar
Institutional Users	51	66	73	74	78	83
Instructors	320	801	907	1021	1099	1272
Students	15099	32935	46667	51783	60065	70390
Lectures	548	817	1053	1345	1582	1810
Video Lectures	660	1879	3212	6181	8470	11133
Sharable Content	9861	15429	20801	27052	33258	39533
Lectures Open To The Public	134	186	228	254	258	267

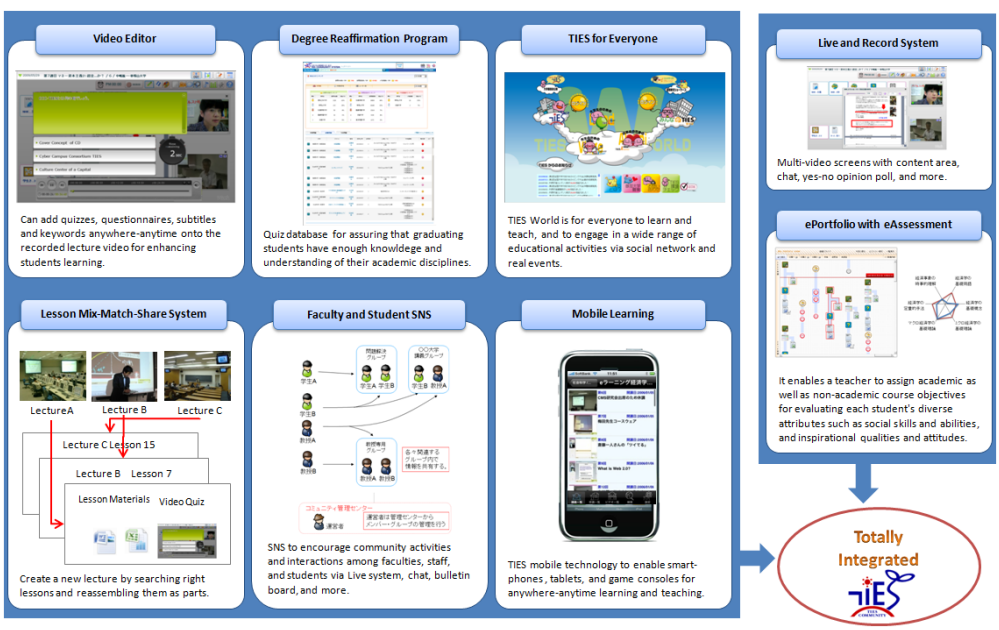

Figure 1. Functional modules of the TIES system

2. IMPACTS OF TIES ON FACULTY DEVELOPMENT

2.1 Quiz Video Editor

We have created many applications for TIES to improve teaching performance from FD perspectives. The first example is the video editor, which can create quizzes, and highlight keywords and comments directly on the lecture video (Figure 2). The video editor was initially intended to revitalize a large archive of recorded lecture videos, which we hoped students would use for review. Unfortunately, they were not motivated to spend time reviewing these videos even during the examination week. Thus, we had to change a system that "forces" students to view videos from beginning to end.

Our solution was to change the video editor to create quizzes and questionnaires that pop up throughout the video. Students do not know when they pop up, and cannot control a scroll bar to fast-forward to skip the video and answer the questions or questionnaire. This simple technology can prevent students from cheating while revitalizing the stock of video materials as valuable pedagogical resources.

This video editor has a remarkable impact on FD, since instructors must review their lectures. By watching themselves on video, many instructors observe a wide variety of problems associated with their teaching styles such as tone of voice and handwriting as well as instructional designs and time management. In fact, this system "forces" instructors to correct and improve their teaching styles before asking students to change their learning practices.

Figure 2. A quiz video editor to "force" students to learn

We plan to conduct future research on the effectiveness of this system from the FD perspectives as follows: First, while this video editing system enables an instructor to correct her teaching practice and improve skills, we must offer an efficient process to minimize her burden of time in reviewing

a whole video. Second, we need more innovative features that can significantly add value to the videos and enhance students' acceptance. Finally, we would like to connect the video with a variety of social media such as Facebook and YouTube.

2.2 E-Assessment System

Many universities in Japan are investing in an e-Portfolio system for students to record and store their school work and efforts associated with off-campus activities. Their rationale for the investment is that students can keep track of their academic progress and use it for career development and job hunting. However, just like a typical IT investment in higher education, we cannot confirm whether its intended benefits to students are clearly achieved.

In order to solve this problem, we have developed an integrated system of e-Portfolio and e-Assessment that requests an instructor to evaluate learning outcomes and level of student attainment from both academic and non-academic efforts and classroom performance. With the help of such an assessment, students are encouraged to review their intellectual growth, reflect on their personal and social attributes, and assess their strengths and limitations[5].

The use of the e-Assessment is also intended to help instructors clearly define course goals and describe in their syllabus what kind of abilities and skills they expect students to learn and acquire. Students in turn can search for and select a course with the specific assessment attributes that best satisfy their academic and non-academic needs and interests[6].

Figure 3 presents a snapshot of the e-Assessment, which creates a summary with a radar chart, and sends it to the e-Portfolio of each student. Students are asked to conduct a self-assessment and then receive an evaluation result from the instructor based on the three evaluation criteria: academic attributes, personal traits, and social skills. We also encourage students to use an e-Assessment wherever they can get evaluation, for example, from a person in charge of their internship and volunteer work as important learning evidence for their off-campus activities.

By evaluating students from a wide spectrum, instructors must pay a lot more attention to each student as an individual with vast potentials and abilities. Although it requires extra time from instructors, we have found that they can establish a closer relationship with their students, and influence their learning motivation more effectively.

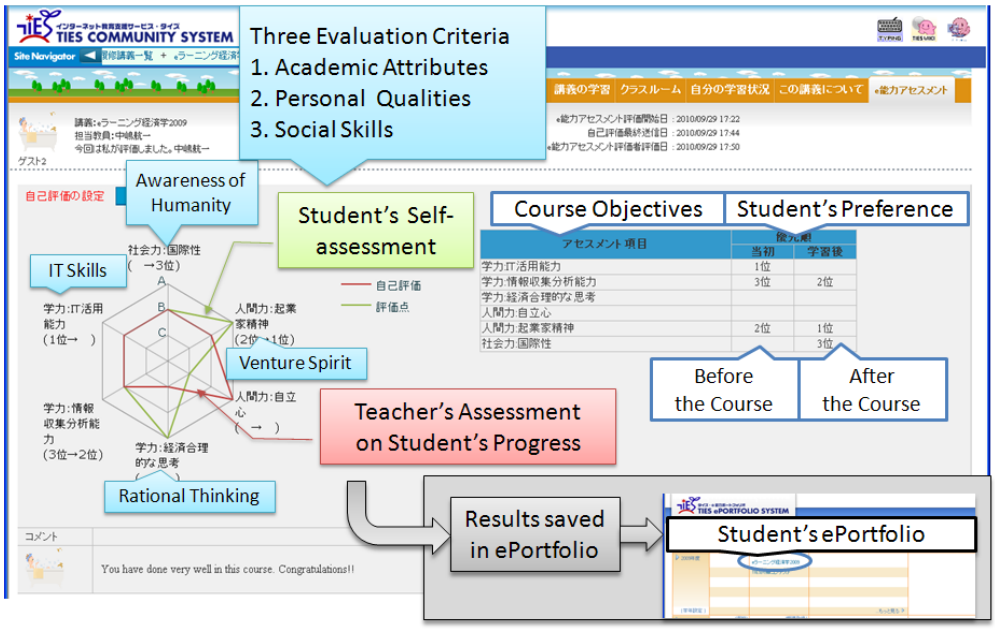

Figure 3. TIES e-assessment

3. CONCLUSIONS

In the face of declining student enrollment and tighter budgets, many Japanese universities are looking for more value in IT investment than what a student-centric eLearning system can provide[7]. University administrators are increasingly skeptical of the benefits of the IT investment and demand more clear improvement of students' learning performance.

In this paper, we point out that the instructor-centric e-Teaching concept is a prerequisite to a successful IT investment, and present two examples to illustrate how the FD perspectives affect the outcome of the technical systems and applications. The quiz video editor application motivates instructors to correct and improve their teaching styles, thereby improving students' learning performance. The e-Assessment system helps instructors establish a better relationship with students and influence students' learning motivation more effectively.

Our future research will aim to develop a more comprehensive assessment management system that connects instructors with students beyond the conventional unilateral relationship. We also plan to analyze which attributes and skills affect each student's personal development and intellectual progress. Furthermore, we would like to offer an efficient

process to minimize the instructor's time reviewing and assessing students in a large class.

Finally, we will examine how to motivate instructors to take advantage of emerging technologies to accommodate society's demand for higher education in a globally connected world. This is because universities face the challenges of rapid IT innovation and emerging technologies combined with global capitalism. While virtually every segment of the Japanese economy has accepted IT for improving productivity, college professors in Japan are slow to admit this shift in the technological paradigm and to implement it in their teaching practices. Thus, we would like to identify global issues and meet society's new and different expectations for higher education.

4. REFERENCES

[1] K. Nakajima, TIES as an eTeaching System and Faculty Development Technology. *Paper presented at the International Conference on National Institute of Multimedia Education*, Chiba, Japan, October 17, 2007.

[2] K. Nakajima, TIES as a Web 2.1 eteaching system. *Tezukayama Journal of Business and Economics*, 18, p187-197, 2008

[3] K. Nakajima, and M. Hori, How to integrate mobile technologies with an elearning system. *Paper presented at the 2nd IEEE International Conference on Computer Science and Information Technology (ICCSIT 2009)*, Beijing, China, August 8-11, 2009.

[4] K. Nakajima, Mobile internet technology for a new style of learning and teaching. *Paper presented at the 2010 International Conference on e-Learning, e-Business, Enterprise Information Systems, & e-Government (EEE 2010)*, Las Vegas, Nevada, United States of America, July 12-15, 2010.

[5] F. Marton, and R. Saljo, On qualitative differences in learning: Outcome and process. *British Journal of Educational Psychology*, 46(1), p4-11, 1976. http://dx.doi.org/10.1111/j.2044-8279.1976.tb02980.x.

[6] R.M. Felder, and L.K. Silverman, Learning and teaching styles in engineering education. *Engineering Education*, 78(7), p674-681, 1988.

[7] JISC InfoNet, Exploring tangible benefits of e-learning: Does investment yield interest? Retrieved on September 10, 2011, from http://www.jisc.ac.uk/media/documents/publications/bptangiblebenefitsv1.pdf.