Faculty Instructional Developmenmt Via An Interactive Website

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Abstract

This faculty instructional development project developed an interactive platform to facilitate interaction between new faculty members and outstanding faculty members, between students and students, and between students and faculty members.This study proposes an online interactive platform for faculty development in engineering education and elucidates issues generated by the website. This work examined three outstanding National Central University instructors in the department of astronomy, atmospheric physics, and electric engineering. Data collection was via observation, individual interviews, and document analysis. Video camera and digital recorder were used to record the observations and interviews, and all interviews were transcribed. The study was a long-term project and was part of the result of 2007.

Analysis of data collected from the website revealed some subtle but important characteristics of these outstanding teaching faculty members in engineering professors. Moreover, these characteristics may exert a long term influence on both new faculty members and students. The website content included observations of actural classes for teaching analysis, which were presented with films and texts for faculty and student feedback, response, and discussion. Some of the issues raised by this process are discussed in this paper.

Key words: faculty professional development, interactive website, outstanding faculty on teaching

1. Introduction

Faculty development has been a focus of study in higher education for a long time (Sorcinelli, Austin, Eddy and Beach, 2006). Sorcinelli and colleagues identified five stages of professonal development in college faculty: the Age of the Scholar, the Age of the Teacher, the Age of the Developer, the Age of the Learner, and the Age of the Network. However, these stages are inapplicable to faculty in Taiwan universities,, especially for faculty professional development programs designed to enhace pedagogical expertise. Most faculty professional devlopment programs focus on enhancing research ability and professional knowledge, rather than use of instructional development. The focus on research rather than on teaching and learning has also been observed in the higher education system in the United States (Ernest Boyer, 1986, cited from Diamond, 2002; Grant & Murray, 1999).

To ensure that make faculty members have balanced roles in their institutions, the Ministry of Educaiton (MOE) in Taiwan has facilitated the establishment of "Teaching and Learning Development Center" in universities to award faculty memberswho demonstrate "teaching excellence" and to conduct insturctor devleopment programs. One of the popular professional development programs conduced in Twain islandwide is the sharing teaching experience with new faculty members. However, the effectiveness is questionable given the low number of attendes, the time limitation for sharing, and the depth of content in insturctor development program. To address this problem, this study proposes an interactive instrutional website to facilitate the enhacement of instructional expertise in faculty members. This study examines some issues associated with the online faculty instructional development.

3. Results and Discussion

3.1 Overview of the interactive website

The purposes of the interactive website were to document the teaching experiences of outstanding faculty, provide

an interactive channel for faculty members and outstanding faculty in teaching, and gather feedback from NCU students and faculty regarding the teaching practices of outstanding teaching faculty. Figure 1 displays the content of the website. The page presents an analysis of teaching methods used by outstanding teacher regarding instructional characteristics. Those interested can browse further.

The first column in Fig. 2 shows a video icon of the instruction provided by the participants', the second column shows name of the participant, third column shows name of the video, the fourth column shows brief description on films on the list, and fifth column shows teaching strategies used

The twenty-one instructional films on the website were browed 8033 times. Table 1 presents the detail data for the three professors. Instructor A had got the highest browsing rate, 7302 times. The major reason for large difference in browsing rate between instructors A (specialized in astronomy) and B (specialized in Atmospheric Physics), and between instructor A and C (specialized in Electric Engineering) is that the course taught by instructor A was a distance course offered to ten universities in Taiwan whereas instructor B and C were teaching traditional classroom courses.

Figure 1 Home page of the Website

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Figure 2 Video with Description

Table 1 The number of films and browsing rate of the website

tructors/Specialty	A Astronomy	B Atmospheric Physics	C Electric Engineering
Instructional Films	10	7	4

of the website browsed	7302	384	347
Toatl	8033		

3.2 Advantage of the website

3.2.1 Preserving and diffusing parts of teaching practice

The instrucitonal website revealed the important insights into the teaching pracitce of the faculty members who reveived award for outstanding teaching. Most programs for the development of faculty instructional methods in Taiwan are one-day or two-day workshops seminars designed to share experience. Long-term plans for benefiting from the teaching experience of experienced faculty are rare. One objective of the website is to encourage faculty to use the platform to share faculty teaching experiences in terms of their instructional beliefs, teaching practices and interaction with students. The platform is designed not for improvisation, but for collecting, analysing and systematically preserving faculty teaching experience. By classroom observations and by recording and analyzing videos, this study devloped twenty-one films for the website. That is, at least some of the teaching pratice were recorded and diffused by the website.

3.2.2 Transmiting the educational beliefs of the participants via Internet

The purpose of higher education is not only to transmit professional knowledge to students, but also to transmit positive experience and beliefs. This study found that all participants have similar dialogue in their classroom. For example, instructor A has been expressed his concern about students to make efforts to learn about two things when they are studying at university:

1. He or she can know himself or herself via learning and making friend.
2. Trying to cultivate some experiences of life that nobody can take away.

Many students responded to these expectations with touching expressions. One student responded:" Well, this is what excellence teacher do, according to the words mentioned [above]; I can feel deeply about Professor A's high expectations about us. This is the reason that I feel make sense to take general education course." Another student responded as:" These words are impressing to me; I want to do the things as what professor A encourages us. Even though I am a junior student, I still have two years to make effort to learn, to make friend, to cultivate my life experiences. It never too late if you take actions."

The student feedback or responses on the "discussion area" via Internet not only inspired instructor, but also encouraged the students. Other faculty members can be inspired by the interaction shown on Internet. This is the benefits of the interactive website.

3.2.3 Solving the problems encountered in face-to-face professional development program

Traditionally, a major constraint of face-to-face professional development programs for faculty are the low attendance and limted depth of the content. The website in this study not only showed parts the classrroom teaching methoeds used by the insturtors on video, it also showed their instructional characteristics in terms of educational belifs, interaction with studuents, and touching stories with stuents by text. Moreover, use of Intenet and information technology in this study enabled updates of video and text without the limitation of time. Whenever to add new instrucitonal films or texts to the website, the researcher was required to notify NCU faculty by e-mail. Doing so helped to increase the browsing rate of the website and provided opportunities for other NCU faculty to observe their teaching methods and beliefs.

3.2.4 Using student responses as data for meaningful course revisions

Student responses to the videos on the website are another benefit; data collected from students are valuable for course revision. Wellsburg (2006) also suggested that faculty use student-learning data to make meaningful course revisions and enhance academic interaction. On the website, the videos and pages were viewed more than 8000 times. More than 170 students responded to the videos. Some student responses expressed gratitude for the teacher's instruction;

those responses can also be viewed encouragement to teachers in the website videos. For instance, a teacher emphasized that reflection and communication with others are very important. Furthermore, a teacher pointed out that:

> *Most of us cannot just live alone. When we seek an ideal, we have to interactive and communicate with others. A sound life should both include sensibility and rationality.*

One of the students in the discussion areas responded as follows:

> *The professor described the content shown above. Every time, the professor helped us identify the direction and topics for our group to present. I think it is very helpful for us to discuss the content with the professor before presenting in class. I am very thankful that the professor shared and facilitated group discussion in the classroom and for his assistance after class.*

Based on such a response, a faculty member can understand a student's perception regarding the manner in which he taught in the classroom and after class. The text feedback is useful for course improvement.

3.3 Common charateristic of the participants

3.3.1 Concern about power of influence

Faculty in research universities usually allocate their energy to researc rather than to teaching. However, all participants in this study believed that a teacher can play a role that influnces students in many dimensions such as by cultivating student attitued about life, active learning behavior. In other words, outstanding teachers demonstrate the willingness to devote their time to teaching and to interacting with students, not just focus on research and publication. The outstanding teachers interviewed in this study expected their courses to inspire studnets for thier career choice, value development and meaning construction.

3.3.2 Integrating information technology into teaching and learning

All participants were proficient users of information technology, and all had personal websites. One of the landmark courses of professor A, Understanding the Stars, is conducted by distance learning over ten Taiwanese universities. Professor C uses a tablet PC in the classroom and believes that information technology simplifies his course preparation and organization. Figure 4 and 5 show example of how professor C to uses software and hardware in his classroom teaching. Professor C presented "red line" for further interpretation to the content in teaching (Fig. 3). Further, professor C used PowerPoint and tablet PC to illustrate the diagram, with line, marks; concepts that were writing down on tablet PC during his teaching and discussion (Fig. 4). Professor C also pointed out "using tablet PC in teaching can enhance their discussion effectiveness among teachers and students." The researchers also observed that using a tablet PC can help instructors in engineering courses to illustrate figure, chart, and circuit diagrams.

Figure 3 The Application of Powerpoint

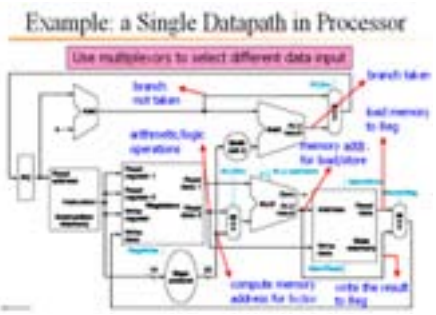
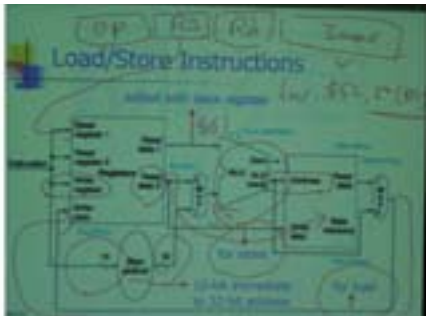


Figure 4 The Application of Tablet PC



3.4 Issues associated with the website

The purpose of this study is to provide an interctive instrucitonal website for faculty instructional professional devel-

opment. However, This study identified several issues as follows:

3.4.1 Does the interaction really occur?

Using the website to enhance the interaction between the faculty members in teaching outstanding and other faculty members was the major goal of this study. However, analytial results of this study indicate that the website fail to achieved this goal. Interaction occured between the faculty and students, but not between the participants and other faculty members. Most faculty simply browsed the films and informative text. However, few provided comments in the discussion area. Very few faculty encouraged the researcher by e-mail rather than in the discssuon areas of the website. Thus, this study revealed little interaction between faculty members. The phenomenon is discussed further in the following section.

3.4.2 University culture affects time allocation of faculty members on instructional professional development

Schein classified (1992) culture into three levels: artifacts, espoused values, and basic underlying assumptions. Artifacts include visible organizational structures and processes, which are difficult to decipher. Espoused values include strategies, goals, and philosophies, and thus include espoused justifications for shared values and beliefs. Finally, basic underlying assumptions include unconscious, taken-for-granted beliefs, perceptions, thoughts, and feelings, which are the ultimate source of values and action.

At NCU, a reseacher-oriented university, most facuty members have been shaped to view research and publication as their priority tasks. In recnt years, university officails have attempted to persuade faculty members to devote more time and energy to teaching. However, changing the perceptions of faculty members regarding the appropriate allocation of time to teaching or to instructional professional development is extremely difficult. In other words, the value of "academic development is the most importance" seems deeply embeded on the university culture. This cultural phenomenon also explains why faculty members rarely gave feedback or comments on the aforementioned instructional website.

4. Conclusion

The researcher in this study expected to enhance the instructional development of faculty members through an interactive instructional website to eliminate the need for face-to-face communication, and to overcome time and space constraints. The major contribution of the instructional website of this study is to document the teaching experience of outstanding faculty and to present their educational beliefs and ideals. The reseacher expected the content of the instructional website to illuminate other faculty members. However, in this study, few faculty members allocated time and energy to instructional development. Assuming the culture of the reseach university is to prioritize research, what strategies can encourage them to devote their energy and time to improve their teaching expertise? Thus, the following suggestions are proposed in terms of the find of this study.

4.1 To establish a consultant team for enhancing the effectiveness of teaching and learning

Oustanding faculty is an important university assets. Alhough the website in this study did not achieve the goal of increasing interaction among the outstanding faculty and other faculty members, the content of the website preserves their teaching exprience. If the unversity effectively utilizes the expertise and experience of the outstanding faculty to establish a cousultant team, both online and classroom instruction could be enhanced. By doing so, the website might paly a more active role in providing a platform for faculty members to engage in dialogue with each other, particularly when a professor seeks advice from more experienced faculty. Furthermore, the proposed consultant team can provide a face-to-face service in terms of necessity or request of other faculty members. Restated, by online and face-to-face, the consultant team can provide substantial help from outstanding faculty on teaching.

4.2 To reshape the teaching culture in research universities

An organization with strong ambitions to make sustantial organizational changes should first reshape its culture. In

this study, all participants, who were instructors in the fields of science and engineering, emphasized that a teacher should not only value the transmssion of professional knowledge, but should also to consider the importance of cultivating positive student attitued towad learning and constructing a meaningful life. The characteristic of the participants resemble what Bain (2004) defined as the "excellence of outstanding teacher." That is, teachers "achieved remarkable success in helping their students learn in ways that made a sustained, substantial, and positive influence on how those students think, act, and feel" (p. 5). In other word, the website can be used as a platform for faculty members to understand how outstanding teachers think and act. It might change the perception of faculty members regarding the meaning and value of teaching, and it might also encourage faculty members to devote more time and energy on teaching.

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