



An e-Mentoring System for Practice Teachers in Vocational High Schools of Taiwan

¹Huai-En Mo and ^{2*}Yu-Fen Chen

¹Department of Industrial Education & Technology, National Changhua University of Education, Changhua, Taiwan/ No. 2, Shi-Da Road, Changhua City 500, Taiwan

^{2*}Department of Accounting and Information, Chihlee Institute of Technology, Taiwan

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***Corresponding Author**

Yu-Fen Chen

E-mail: bephd@mail.chihlee.edu.tw

Phone: 011-886-2-22576167 ext. 1677

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ABSTRACT

Background: Practice teachers play the roles of both a student and a teacher in the teacher preparation process. The experiences during practice teaching are a vital part to cultivate a qualified teacher (Mayer, 2002). Internet technology has overcome the limitation of time and space. As seen, remote mentoring through computer and internet has become an inevitable trend in practice teachers training in the future.

Aims: The purpose of the study is to develop an e-Mentoring System for student practice teachers in vocational high schools of Taiwan.

Sample: The research data, collected by interviewing and expert meeting, are referred as the basis and framework to construct the e-Mentoring system.

Method: The main research methods include literature review, interviewing, and expert meeting for achieving the research purposes.

Results: The needs for practice teachers' e-Mentoring system were classified into 5 categories (49 items), including teaching planning and execution, life and personal relationship for practice teachers, classroom management, experimental factory management, and professional knowledge. The major functions of the e-Mentoring system including message board, online forum, bulletin, and thoughts sharing site, displayed by the layout with 5 domains (13 items), Matching mentor/mentee, Communication, Community development/Knowledge sharing, Mentoring support, and Program/ Curriculum management.

Conclusion: The website designed by this study has completed preliminary structure, and has been tested to find out about the functionalities, user evaluation, and areas of improvement. Besides the above outcomes, the conclusions are obtained as follows:

1. Online mentoring through database inquiry, online discussion, and emails is a feasible strategy.
2. Using Internet to perform remote mentoring is efficient and effective.
3. The construction of the mentoring website is conducive to teacher preparation institutes, and can be promoted nationwide.
4. The mentoring website can gather long-term mentoring cases and various mentoring records systematically and continuously.

INTRODUCTION

The teachers training programs are available at higher education level and usually last four years in Taiwan (Ministry of Education, 2009). The Teacher Education Act was promulgated in 1994 and revised in July 2002 to meet the demand for quality teacher development (Yang et al., 2003).

Practice teachers play the roles of both a student and a teacher in the teacher preparation process. The experiences during practice teaching are a vital part to cultivate a qualified teacher (Mayer, 2002). During this time practice teachers begin to connect theory and practice; they must learn miscellaneous aspects of teachers' role, including preparing lessons, selecting appropriate teaching strategies, managing classrooms, knowing school resources and regulations, and getting along with colleagues. In fact, the status of a practice teacher remains a student and he (or she) must be guided by the advisor professors of teacher education institution or mentor teachers of probationary school.

With the rapid growth of technology, the flow of information is accelerated more quickly than what people ever expect. Many schools have experienced three phases of technology adoption since mid-1980s: the first phase is called the personal computer lab wave, the next is the online learning wave and the third is the digital classroom wave (Chan, 2010). The technology-driven learning environments have formed and influenced how we work and learn currently. Developments in telecommunications, in particular, have led to an explosion in online instruction. E-Mentoring is mentoring that is conducted by using discussion boards, chat and email, as the primary means of communication (retrieved from <http://en.wikipedia.org/wiki/E-mentoring>). However, in spite of the convenience from technology, some problems were raised while mentoring practice teachers.

Internet technology has overcome the limitation of time and space, and allows for quick search of information. E-mail has been proven to strengthen mentoring relationships since the late 1980's (Bull et al., 1989). Afterwards, many researches are conducted to prove that emails are useful and supportable for beginning teachers and practice teachers, respectively (Brintnall, 2002; Roddy, 1999). Other studies found that the adoption of discussion boards is a meaningful method of supporting beginning teachers (Babinski et al., 2001; Edens, 2000). Practice teachers and mentors can communicate with each other conveniently and straightway through e-mails (Schön, 1983). For teacher education institutes, application of information technology can reduce expenditures and travel time that advisor professors spent on mentoring across different locations in the country. As seen, remote mentoring through computer and internet has become an inevitable trend in practice teachers training in the future.

The aim of this study was to construct framework and develop the contents of e-Mentoring system for practice teachers in vocational high schools in Taiwan. First of all, a comprehensive need of practice teachers' e-Mentoring system must be analyzed to determine the major functions of the system. Furthermore, the results were used to construct the model of the e-Mentoring system.

METHODOLOGY

The main research methods include literature review, interviewing, and expert meeting for achieving the research purposes. The contents and items acquired during the research process are utilized to design the website of remote mentoring system for practice teachers in vocational high schools in Taiwan. The website also plays a role as a comprehensive database, which can serve as reference or for discussion by

practice teachers.

A. Analysis the needs for practice teachers' e-Mentoring system

In recent years more and more e-Mentoring system are used in teaching (Edens, 2000; Roddy, 1999). Using e-Mentoring system to help practice teachers to improve teaching ability has made remarkable achievement. Internet has broken the constraints of time and space in education and provided more personalized interaction (Schön, 1983). Practice teachers can learn or interact with experts and advisor professors in different place even in different city or country through the e-Mentoring system.

Analysis the needs for practice teachers' e-Mentoring system was adopted as the basis to develop the e-Mentoring system. First, a semi-structural interviewing questionnaire was drafted by the researchers and audited by 5 practice teachers from vocational high schools and 5 mentors from teacher preparation institutes. Then, 20 practice teachers were interviewed to confirm and finalize the major functions of the practice teachers' e-Mentoring system.

B. Constructing the model of the e-Mentoring system

Based on the results above, the researchers designed and constructed the basic model of the practice teachers' e-Mentoring system to make it operate smoothly.

RESULTS AND DISCUSSIONS

A. The analysis for the needs of practice teachers' e-Mentoring system

Table I shows the final needs concluded through literature review and expert interviewing. The needs for practice teachers' e-Mentoring system were classified into 5 categories (49 items), including teaching planning and execution (5 items), life and personal relationship for practice teachers (6 items), classroom management (8 items), experimental factory management (7 items), and professional knowledge (23 items).

Table I: The Needs for Practice Teachers' E-Mentoring System

I. Teaching planning and execution	II. Life and personal relationship for practice teachers
1. Teaching activity design	1. Recreational activity
2. Instructional media manufacture	2. Gender relationship
3. Teaching material manufacture	3. In-serve teacher education
4. Teaching method and technique	4. Career planning
5. Courses design	5. Time management
	6. Interpersonal communication skills
III. Classroom management	IV. Experimental factory management
1. Classroom management strategies	1. Experimental factory planning and design
2. Teacher-student communication	2. Experimental factory safety and health
3. Teacher-student interaction	3. Equipment maintain and management
4. Students life counseling	4. Material management
5. Students learning counseling	5. Personal management
6. Students career counseling	6. Accident prevents
7. Classroom data management	7. Emergency handle
8. Classroom crisis management	
V. Professional knowledge	
1. Campus network planning	13. Absorption air conditioning
2. Home Page design	14. Renewable energy
3. Computerized administrative works	15. Gray control
4. Internet technology and application	16. Fuzzy control
5. Maintenance of online classroom	17. PID control
6. Internet resources access	18. Digital control
7. Database design and management	19. Neural network
8. Using new software suites	20. Single-chip control
9. Solar energy technology	21. Adaptive control
10. Photovoltaic energy technology	22. Programmable logic controller
11. Cogeneration	23. Programmable logic device
12. Adsorption air conditioning	

B. The major functions of the practice teachers' e-Mentoring system

In order to make the practice teachers' e-Mentoring system work indeed, researchers merged 5 categories of needs into one part of the system. The major functions of the practice teachers' e-Mentoring system included message board, online forum, bulletin, and thoughts sharing site.

The message board can provide all practice teachers with messaging function by quick reply to postings, counting the number of replies, and supporting HTML tags during postings. For example, if a practice teacher finds out about some information on teaching practice, he/she can notify other practice teachers through the message board. For counselors, they can make announcements to all practice teachers on the bulletin, or leave messages to a specific group or person.

Online forum can be used with message board and bulletin to announce topic discussion at a specific time to all practice teachers, and provide a platform for online discussion or mentoring, in order to achieve remote mentoring. This website uses advanced programs, which operate at a higher speed than CGI programs, thus enhancing the effectiveness of real-time mentoring.

The bulletin posts announcements to all practice teachers, such as notifying online discussion time and topics, or related laws and regulation on mentoring. This website uses Java to design the dynamic bulletin. As most browsers support Java, this bulletin has no compatibility problem. The dynamic presentation on the front page can attract visitors to read.

Thoughts sharing site provides a platform for practice teachers to post their thoughts on teaching practice, or post questions for discussion. Counselors can learn from practice teachers' practicing situations or needs and provide further mentoring or evaluation. On the other hand, practice teachers can understand about others' practicing experiences or problems and exchange thoughts, in order to grow together.

Table II shows the major domains of the practice teachers' e-Mentoring system. The major domains for practice teachers' e-Mentoring system were described as Matching mentor/mentee (3 items), Communication (2 items), Community development/Knowledge sharing (4 items), Mentoring support (2 items), and Program/ Curriculum management (2 items).

Table II: The Major Domains of the Practice Teachers' E-Mentoring System

I. Matching mentor/mentee	II. Communication
1. Database search	1. e-mail
2. Online profile comparison	2. Web post
3. e-mail or other tools	
III. Community development/ Knowledge sharing	IV. Mentoring support
1. Sharing through coordinators	1. Evaluation report
2. Just in time learning/sharing	2. Activity checking
3. e-forum	
4. Advice board	
V. Program/ Curriculum management	
1. Program management	
2. Curriculum Management	

C. Constructing the model of the e-Mentoring system

Based on system analysis and planning, researchers design and construct the basic architecture of the e-Mentoring system, which could link to intern issues database, professional journals websites, online discussion and message board.

In Fig. I, the model of the e-Mentoring system was shown. Two main parts were built to help

communicate in time under the system, one for practice teachers and the other for practice teachers and mentors. Practice teachers can use the databases linked to the system to acquire the necessary knowledge during intern period. On the other hand, the mentors can guide the practice teachers effectively through the system.

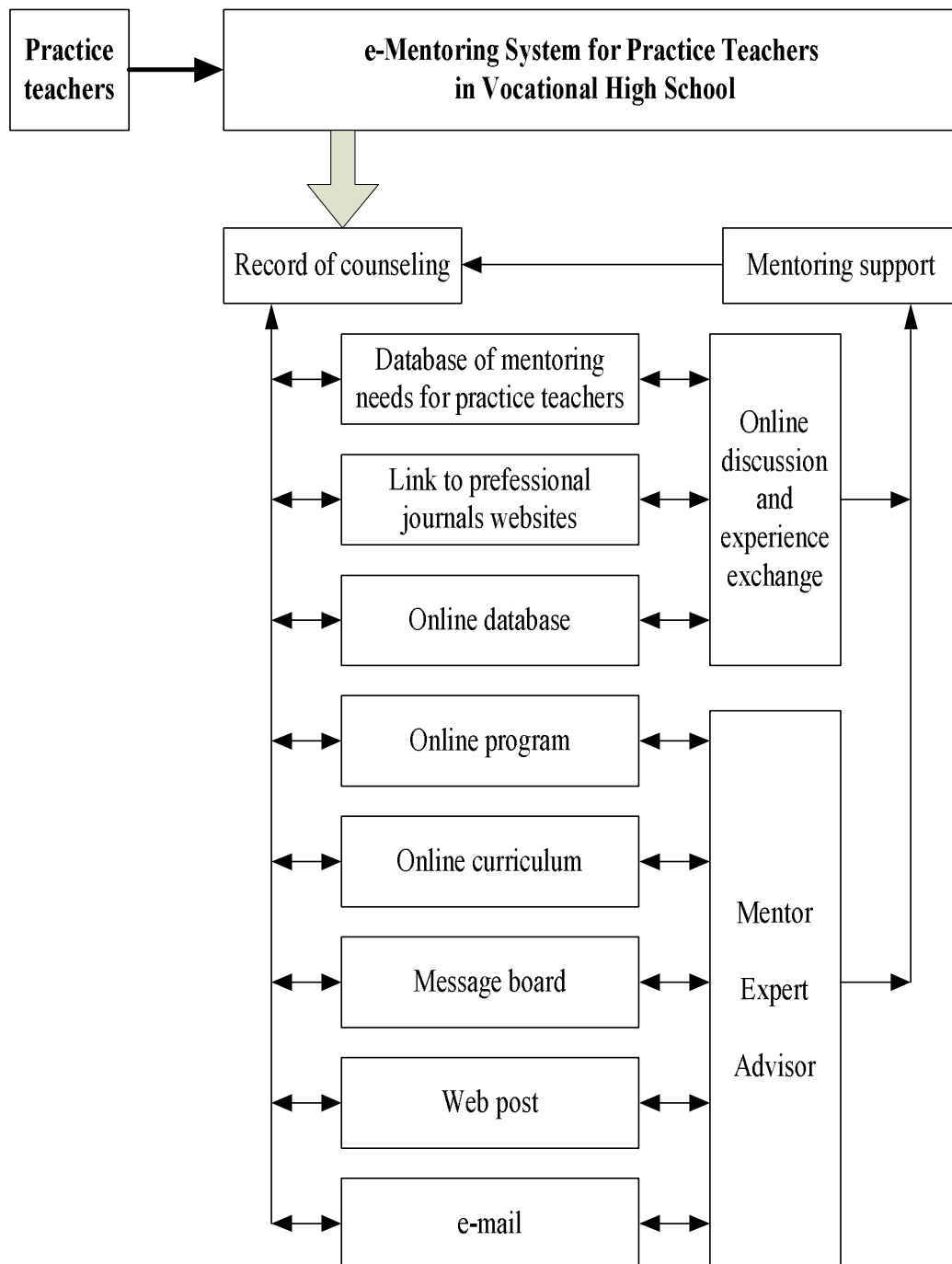


Fig. 1: The framework of the e-Mentoring system

Limitations and Conclusions

Since the website only provides basic functions and the database is not built completely, there are limited users and the precise load is still unknown. Researchers suggested that considering the user loadings of

website is needed to operate the e-Mentoring system smoothly.

Due to the limitations of computer equipment for practice teachers, and the incomplete information provided by this website, there are very few users. To address this problem, this study suggested that training

could be provided while the student teachers still enrolled in universities so as to equip practice teachers with the ability to use this website. Researchers suggested that adopting appropriate strategies to attract more users is necessary in the future.

Due to limitations of computer equipment and tight class schedules of practice teachers, not all practice teachers can go online during the designated time. Researchers suggested the arrangement of appropriate time and space for practice teachers to conduct online discussion.

The scope of professional knowledge is wide, and the database cannot cover all contents. Hence, this research team adds the hyperlinks of professional communities to supplement the deficiency. Researchers suggested amplifying the scope of professional knowledge is necessary in the future.

CONCLUSIONS

The website designed by this study has completed preliminary structure, and has been tested to find out about the functionalities, user evaluation, and areas of improvement. Besides the above outcomes, the conclusions are obtained as follows:

1. Online mentoring through database inquiry, online discussion, and emails is a feasible strategy.
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