

*Full Length Research Paper*

# Application of e-portfolio system to enhance teacher professional development

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**This study focuses on the meaning, applications and future development of e-teaching portfolios as an attempt to highlight the important role it plays in the “post-modern teaching practice mode”. For the purpose of enhancing teacher professional development, application of the teaching portfolio system in the post-modern teacher qualification training is proposed, and the teaching practice curriculum is discussed from both theoretical and practical perspectives to strengthen intern teachers’ development of professional growth, and to successfully assist them in becoming a qualified teacher with the required professional disposition, knowledge and skills. This study also provides concrete concepts and practical approaches for the post-modern teacher training course, placing emphasis on the development and training of intern teachers’ contingency response and ability of situation comprehension as well as the ability to combine and apply various theories with the intelligence of utilizing knowledge and skills so as to meet the demands of the modern society.**

**Key words:** Teaching portfolio, post-modernism, teacher professional development.

## INTRODUCTION

Many academic researchers and education reformers (Gaide, 2006; Kuhlthau, 1999; Lan and Sie, 2010) have sensed the imminence of post-modernism causing an overall impact on the modern day society, leading to its transformation. Post-modernism promotes a continuous renovation and insatiability, with the spirit of self breakthrough not confining to a form or pursuit of fixed results, and explores the possible, multiple paths of innovation. In the post-modern society, opposing to consensus and concentration and supporting the attributes of diversification and regionalization show signs of speed, diversification, complexity and instability; and with the acceleration in the speed of knowledge update, even the widespread uncertainty, value conflict and ambiguity are all considered normal. The meaning of “truth” and standards for “good” and “bad” are all being challenged and redefined. These have made what originally appeared to be a stable and orderly society becomes chaotic and uncertain, blurring the boundary between various issues with the causality and regularity gradually being replaced by contingency and probability. Not only is individual subjectivity presented, special needs

and uniqueness are accepted and also highly valued and recognized. Individuals are taking more frequent interactions and proactive construction with the external environment, exceeding the existing square limitations and infinite achievement potential from the major source of power.

Post-modernism also possesses the characteristics of “potentiality” and “vulnerability”. It emphasizes individual pursuits and self liberalization without being restricted by external factors, which in the course of only slight unawareness may develop into that of extreme individualism and self-indulgence, leading to separation from the society. Therefore, whether the post-modern individualism is developing potential growth or has become vulnerable and self-indulgent depends on individuals’ maturity and independent levels. This phenomenon has proven what post-modernism supporters often say:

*“The post-modernism comprises both opportunity and crisis”.*

The post-modern education further places emphasis on

giving respect to specialty and diversity, recognizing individuals' subjectivity and the idea that everybody is himself the master of knowledge innovation with the ability to construct his individual theory. Capability of being independent, individual and undertaking meaningful learning with others is thus the most important. Elliott (1993) proposed the hermeneutic perspective teacher training concept based on the characteristics of post-modern society and pointed out that professional teacher training is a scientific practice; post-modern teachers especially focus on the training of situation comprehension ability to allow themselves to make wise, rational judgments and decisions in the constantly changing, complicated, vague and unpredictable teaching environment.

The post-modern teacher training concept is an attempt to seek relatively higher-level theory and practice to enable future teachers to compromise with a variety of teaching theories and accept them as the basis for analysis, revision, self-questioning of practices and individual theory (Elliott, 1993; Wolf, 1994). It is also to allow for switching among various educational theories and combining individual experience to make it become part of the individual theory, and further carry out actual conduct in professional practices and showing post-modern teachers' intelligent practices.

Potentiality of teacher professional growth depends on individual teacher's commitment of development motivated by the teacher's willingness from within (Gulbahar and Tinmaz, 2006; Wolf, 1991). Therefore, the "teaching portfolio" instrument plays a crucial role in how to provide with complete context and information, based on individual teachers' subjectivity, from deep down to carry out self-questioning, transforming, or changing of original belief and behavior (Gulbahar and Tinmaz, 2006; Smolen and Newman, 1992; Wolf and Dietz, 1998). The implementation of the teaching portfolio, mainly through teachers' planning and creative process, systematically guides teachers to carry out self-reflection, to increase motivation and willingness for further professional growth, to gradually develop professional teaching judgment and behavior, and to emphasize the concept of the post-modern teacher training on "individuals' ability to proactively construct knowledge". In the recent years, the relationship between teaching portfolio and post-modern teaching practice mode has been considered important; however, despite the insufficient amount of domestic related research. This study shows how the post-modern teaching practice mode can assist an intern teacher, through the establishment and complete utilization of the teaching portfolio, in becoming a "teacher of practical wisdom" who possesses techniques of self-reflection and situation interpretation as well as comprehension skills, knowledge relearn and restructure ability; he can also meaningfully combine practical experience and professional theory and is capable of performing

dialectical argument.

## THE POST-MODERN TEACHING PRACTICE MODE

The philosophical concept of "post-modernism" brought about by Jean-Francois Lyotard in 1979 provides us with the exercise of the dual characteristics of creation and criticism to explore the basic spirits in Western culture and its various hidden complex problems together with series of significant social and cultural issues.

The post-modern education concept emphasizes the cultivation of students' adaptation, enforcement abilities, creativity, independent thinking and courage in facing and solving problems. This creates a significant impact on traditional teachers who are better at guiding students in progressing with studies, obtaining high marks and rote learning. This education concept threatens the survival skills and competitive advantages of traditional teachers, and forces them to learn a whole new concept and face even greater challenges in the post-modern society. As a result, post-modern teacher training cannot conform to the conventional value of structural and functional theory of "adapting to existing teachers' professional culture;" thus teacher training institutions no longer emphasize the forming of educational theories and teaching training process that over-focuses on the technical standards of the past professional training mode. In order to adapt to the rapidly changing society, teaching practices in policy, form and content must undergo a major reform so as to train teacher of practical wisdoms to meet the human resource needs of the post-modern education concept.

During the teacher training process, the curriculum planning (for second semester of Year 3 or Year 4 university education curriculum; Year 5 educational internship) for "teaching practices" provide valuable teaching and learning activities.

### Construction

Post-modernism supports the concept of "constructing individual ethics" and coincides with the viewpoints of the knowledge theory in constructionism which believes that "knowledge is created and constructed by the discretion of individuals" and "the gaining of knowledge is the result of continuous interactions between the individual and the external world;" these viewpoints recognize the independence and ability of individual teachers' knowledge construction (Figure 1).

### Management

Teachers may conduct individual knowledge systematic management on top of the individual knowledge and

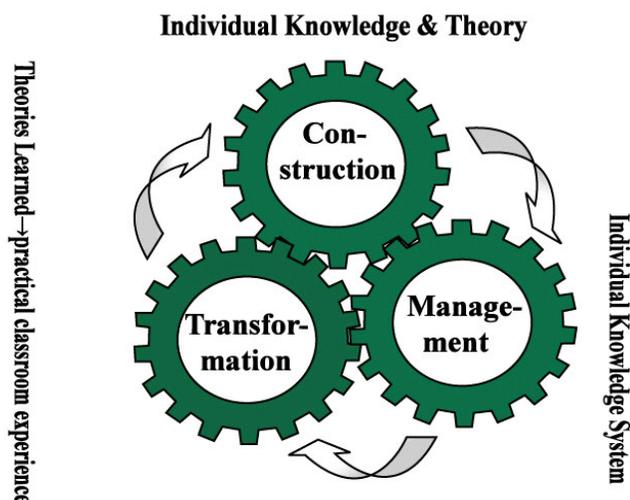


Figure 1. The post-modern teaching practice mode

theory construction. This portfolio management system contains the purpose and structure leading to continuous innovating and growing organisms (Figure 1).

### Transformation

During the process of teacher professional training, teaching practices act as a bridging course between the theoretical and practical courses. The purpose of the teaching practices is to assist intern teachers to gradually and successfully transform from “theoretical-focused” learning to “experience-focused” learning so that they are able to apply the educational theories learned in school to practical classroom experience, and become a competent professional teacher capable of combining theories and practices (Figure 1).

In conclusion, a student teacher, intern teacher or incumbent teacher must possess the ability of constructing individual knowledge and theory, the ability to conduct effective management of individual knowledge system and apply the educational theories to practical experience in a meaningful way. The operation of this mode expands from an individual teacher to the peers, building on an uninterrupted professional growth process and continuous innovation and development of the living organic system.

## TEACHING PORTFOLIO AND POST-MODERN TEACHING PRACTICE MODE

Numerous documents (Gaide, 2006; Heath, 2005; Kuhlthau, 1999; Metz and Albernhe-Giordan, 2010; Newell et al., 2002; Rogers and Chow, 2000) have confirmed that

teaching portfolio is being widely applied by teacher training organizations for training newly-appointed teachers and for reference in teacher promotion evaluation. This application not only greatly benefits the training of inexperienced teachers but also acts as an effective tool for experienced teachers to self improve teaching quality and receive teaching performance evaluation. This study explores researches and analyzes relevant literature (Gulbahar and Tinmaz, 2006; James and Sheryl, 1996; Lan and Sie, 2010; Murray, 1997; Senne and Rikard, 2002) and concludes the results shown below.

### The meaning of e-teaching portfolios

The word “portfolio” is to undertake a purposeful and selective collection of personal works, not an aimless accumulation of all sorts of documents (Rogers and Chow, 2000) and it focuses on the understanding of the process of events to anticipate situational meaning and developmental context from documents or evidence in the portfolio (Newell et al., 2002). Self-awareness and self-evaluation of the learning and teaching performance are required with the aim of enhancing professional development, teachers proactively and selectively collect a variety of meaningful and valuable data from teaching activities, and through continuous self-reflection and peer dialogue process, they thoroughly comprehend and annotate the occurrence of education events, and subsequently form a purposeful and structured portfolio.

Post-modern teacher training organizations must instruct intern teachers to construct a teaching portfolio system for the purpose of professional development, and to develop this concept through a four phase professional growth cycle of “planning, teaching, evaluating, applying” proposed in 2001 by the California Teacher Certification Commission (Figure 2). Under this operating process mechanism, teachers can reflect upon the strengths and weaknesses of their teaching and really stage themselves in the educational field to manage students’ actual learning; furthermore, through enhancement of professional competence and confidence, the portfolio also contributes to development and growth of becoming a teacher of practical wisdom with self-reflection.

### Major contents of e-teaching portfolios

According to above definitions, a teaching portfolio includes the following major features.

- (a) Teachers as chief subjects: Individual teachers’ self consciousness about their professional growth needs in becoming a teacher of practical wisdom, and the self motivation to construct a teaching portfolio.
- (b) Purpose for professional growth needs: Teachers’ own

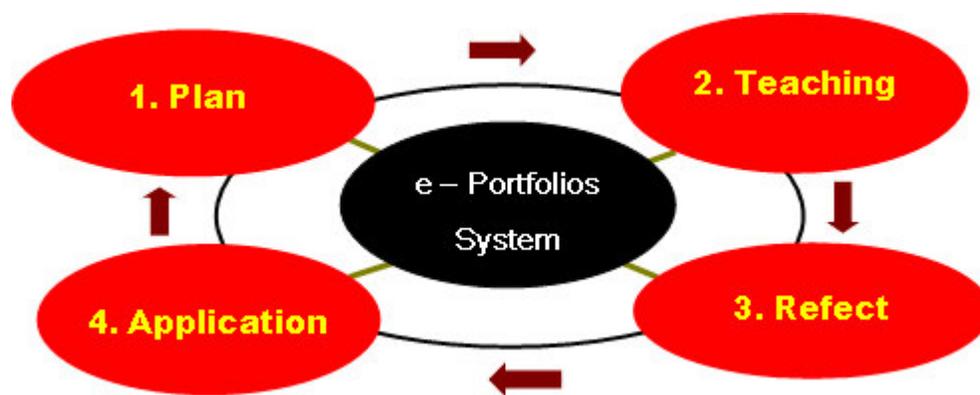


Figure 2. e - portfolios system to enhance teacher professional development.

expectation through teaching portfolio process to enhance professional knowledge and skills in facing the post-modern uncertain environment for the purpose of gaining competitive advantage.

(c) Structured contents: Teachers possess the ability to construct personal ethics to interpret the meaning of their teaching situation and compile a purposeful teaching portfolio.

(d) Self-reflection and dialogue process: Post-modern teachers must be able to demonstrate criticism and self-reflection, communicate with peers, show confidence in self performance, appreciate individual differences, undertake group cooperation and negotiation, and have continuous learning potentials.

From a constructivist's viewpoint on teacher training, a teaching portfolio is proactively constructed by teachers individually, as it possesses high degree of individual, continuous, uncertain, contextual and reconstructing characteristics. A teaching portfolio may also have the occurrence of similarities among differences and distinction among similarities; it completely provides teachers with application tools for self-reflection, real life experience, individual perception, action, and knowledge management.

### The application of e-teaching portfolios in post-modern teacher training

In order to achieve the anticipated results of e-teaching portfolios during the teacher training process, the key factors lie in the portfolio structure and content. Through careful thinking, planning and designing, teachers may undertake systematic, constructive and purposeful collection and conclusion of data, from which to obtain wisdom from experience (Metz and Albernhe-Giordan, 2010). Undertaking the integration between theories

learnt in school and the practical experience gained from teaching, reflection and transformation on practical experience are conducted through argument and verification process so that relevant experience can be promoted into the content of personal theory. This study analyzes the following important facets in e-teaching portfolios to show teacher's practical wisdom.

(a) Self description: Intern teachers systematically re-embrace reaction and event experiences with rational thinking scope through self exploration and analysis. This assists individuals in realizing a lot of valuable recognition that would otherwise be missed out due to former habits, or become instinct behavioural reactions that again undergo rational questioning and arranging. Self description includes brief self introduction, educational beliefs, teaching philosophy and professional backgrounds.

(2) Curriculum design and teaching: A teacher's ideal perception forms the teacher's viewpoint of the curriculum (curriculum of mind), one that need not be consistent with the formal curriculum prescribed by the school. In the overall curriculum transformation process it, has a crucial and influential standing. This largely reflects a teacher's interpretation to "valuable learning activities" and arrangement of "meaningful learning activities". It also reflects the teacher's individual education philosophy, curriculum belief and teaching recognition. Therefore, curriculum design and teaching offers activities such as curriculum planning, module design and teaching implementation.

(3) Class management: For intern teachers, classroom operation and consultation of student problems are very difficult, and common rule controls are especially the "nightmares" of intern teachers. Education internship provides intern teachers with excellent opportunities of actual classroom management experience, from which they may gain the confidence needed to become effective teachers (Rogers and Chow, 2000). Examples of classroom operation are classroom operation planning,

common rule management strategies, teacher and students' interactions, and parents and teacher relationship operations.

(4) Teaching observation: Campus teaching demonstration, peer observation or experts' personal guidance and observation of teaching provide intern teachers with excellent opportunities to observe other teachers' classes and assess their own. This helps in developing an observation habit for improvement, as well as reflection for intern teachers in the systematic practice education. Examples of activities involved in a teaching observation are class observation and mutual feedback from peers.

(5) Learning assessment: Performance during learning process is often more important than the learning results; that is, through the formation of assessment, the key learning points are grasped and reinforced. The adoption of mutual feedback among peers not only trains the ability to appreciate peer performance, but also provides the opportunity to reflect upon one's own teaching. The reflection outcomes show that teaching results and performances are also used by teachers to correct the process of their teaching mode. It offers intern teachers an opportunity to verify whether the real life situation matches their theory and provides feedback for growth experience and teaching process. Learning assessment includes assessment planning, assessment process implementation and applications of assessment outcomes.

(6) Reflection and application: Intern teachers' reflection ability involves the systematic description and reflection on problems found in professional theories learnt, from teaching experience or school scene to immediately verify theories and real life experience, or to undertake transformation and integration to further realize individual theory and clarify self value and belief. If one is able to separate reflective content from original logical thinking, scope and levels of thinking will gradually expand with self-reflection. This facet involves all reflective notes taken in the teaching activity process and experience gained from mutual interactions with peers.

In the teaching practice mode of post-modern education concept, a teacher's learning and growing process involves three phases:

- (1) Pre-job teacher.
- (2) Intern teacher.
- (3) Incumbent teacher.

Every phase requires the construction of individual knowledge and theory, effective personal knowledge management system and the ability to apply educational theory to practical classroom experience. A meaningful combination of theories and practices is needed with further experience in the educational field management of actual education context. It is a continuous cycle of grow-

ing process — construction → management → transformation — with the goal of developing into a teacher of practical wisdom.

## THE IMPLEMENTATION OF E-TEACHING PORTFOLIOS

(1) At the planning phase, teachers must set clear teaching objectives, taking into consideration students' learning backgrounds and abilities, and at the same time collecting a variety of data for a teaching plan.

(2) At the teaching phase, teachers must conduct their teaching in accordance with the objectives, and make prompt teaching decisions according to the actual situation.

(3) At the reflection phase, the teacher will proceed the teaching plan and presents outcomes along with students' learning progress and teacher's self teaching process to identify strengths and weaknesses.

(4) At the application phase, teachers should consider the practical experience gained from the above various phases and apply them in future teaching practice so as to ensure student learning and attainment.

Based on the implementation of the teaching portfolio of the post-modern teaching practice mode, the planning → teaching → reflection → application phases are a spiral process of continuous, professional growth (Figure 3). This process emphasizes the teachers' contingency response and ability of situation comprehension as well as flexible integration and application of various theories, practical knowledge and skills in order to meet the demands of the post-modern society.

## DIGITALIZATION OF E-TEACHING PORTFOLIOS

Nowadays, teachers seem to more or less experience challenges and even threats from the new information technology transformation in the post-modern society, an impact never experienced by any teachers in the past generations. The arrival of the "internet age" brings about the new form of information transmission spilling over many areas, including interpersonal communication, work and life styles, and academic learning environments. Teachers experience the huge impact of transformational change from the conventional hand-written board instructions and paper-and-pencil techniques to the new learning revolution with digital technology. Kuhlthau (1999) pointed out that today's information explosive environment has made the use of textbooks in teaching and learning appears obsolete and inappropriate. In an attempt to help students always be fully prepared to face the diverse, changing society outside the school wall, teachers must learn to process the digitalized data for the

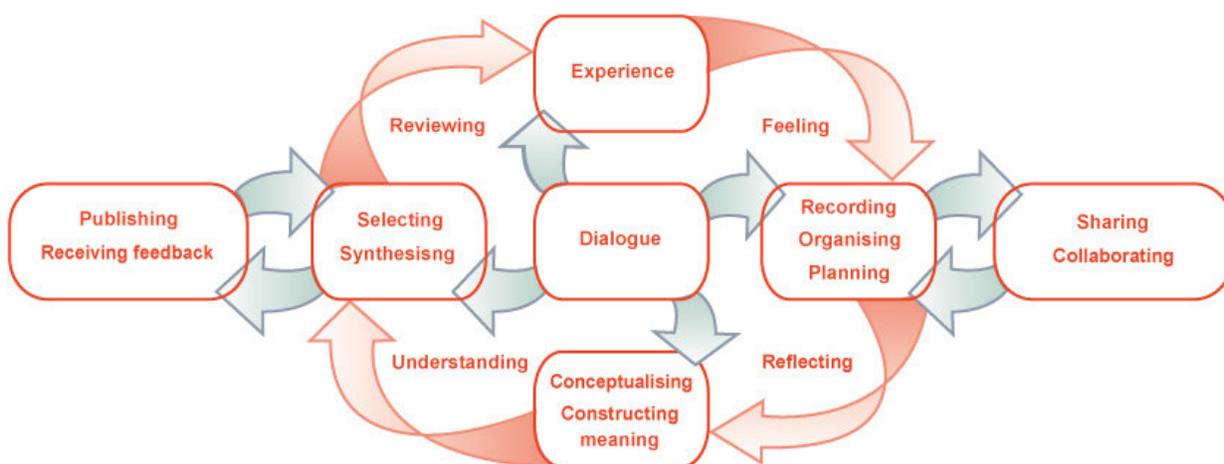


Figure 3. The framework of e-teaching portfolios.

electronic portfolio through information technology. This serves to assist teachers in demonstrating their professional teaching with a wider range of artefacts, and also helps them enable their students to learn effectively through the use of computer and information network systems. Therefore, in face of the post-modern information competitive environment, if incumbent teachers wish to stay competitive and intern teachers hope to be recognized in the future education field, it is important that they possess sufficient knowledge and skills in applying information technology in their teaching profession.

With the intention of becoming a competent teacher in the post-modern society, teaching should not only consist of the professional act, but should involve a professional state of being a complete devotion. The subject of education is students, “beings” with potential; hence, a teacher can not just be a skilled “preacher”, but ought to take the role of a wise “mentor” who helps others attain achievements as well as accomplish oneself through the act of “delivering knowledge, providing profession, solving confusion.” Therefore, when managing digital e-teaching portfolios, teachers should make use of digital technology by adding multimedia artefacts such as audio, video, and other teaching aids of media files.

The following, based on the instructional modes of “teaching internship,” details key elements and relevant specific relevant measures that intern teachers should contemplate when using digital teaching portfolio.

## KEY ELEMENTS IN PRODUCING DIGITAL E-TEACHING PORTFOLIOS

### Portfolio processing approach

Converting the non-electronic data and files into digital forms and employing multimedia means to collect and

organize the digital teaching portfolio.

### Digitalized data type

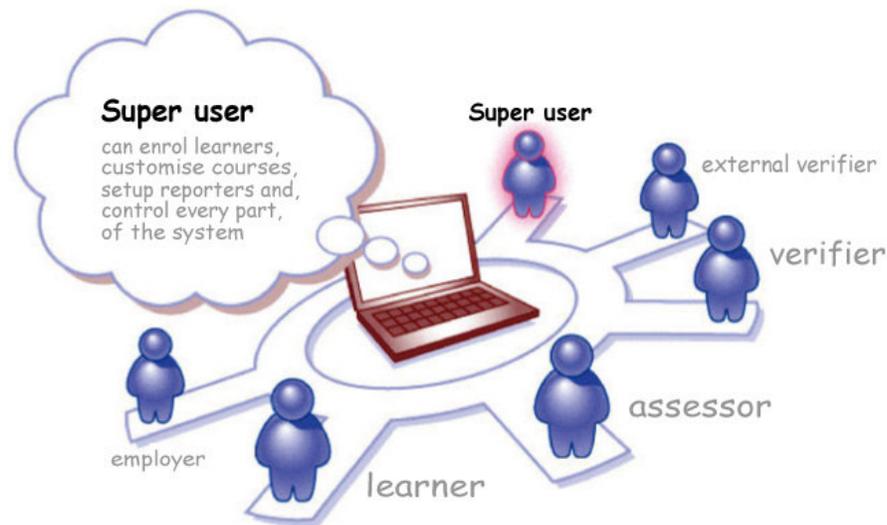
Classified into digital word data, digital graph data and digital animation data, these data can be integrated with a computer to compile e-teaching portfolios; through the spiral process of development, a draft is continuously revised with professional growth until it reaches optimization.

### Pattern presented

With the use of data base and hypertext documents, the computer report system and web-site pattern are used to clearly present teachers’ progressive process in “planning, teaching, evaluating, applying.” They may further break through the single-presentation format to adopt a purposeful, systematic and constructive style so as to present diversification in graphs, tables, audio-visual, and animation portfolio contents with combination of multimedia hyperlinks to present a lively teaching portfolio.

### Internet teaching trend

Web-based teaching shakes off the time and space limitations in traditional classroom teaching, leading to more flexible information processing and communication. Distant teaching has gradually developed through web sites, through which students mainly obtain course outlines, teaching schedules and data base, participate in online discussions to hand in assignments, and even conduct tests to receive credits. The future network of distant teaching features real time classes enabling



**Figure 4.** Key elements in producing digital e-teaching portfolios.

teachers and students to have face-to-face communication. The omniscient attribute of the existence of internet drives home the message to intern teachers: the application of internet resources to their teaching is crucial, and the use of digital e-teaching portfolios can be most effective to enhance professional development in becoming a competitive teacher of practical wisdom (Figure 4).

## **SPECIFIC RELEVANT MEASURES**

### **Establishing reference standards**

Although a teaching portfolio does not take on a fixed format, teachers may, according to individual needs and constructing purposes, select and modify the content of teaching portfolio so as to enable them to demonstrate their abilities to meet internship objectives and standards

### **Overall network implementation on campus**

Teaching portfolio may merely take on a three-ring binder or folder style, or it may be inclusive of digital medium. In addition, a teacher's personal website is also a component of the teaching portfolio. On a campus with a non-barrier, wireless-network environment, teachers have at least the access of a network-connected computer.

### **Enhancing teachers' computer skills**

Computer plays a key role in the construction of a

teaching portfolio; thus every teacher must possess basic computer skills; only by such requirement will the construction of digital e-teaching portfolios be realized.

### **Encouragement for forming computer teaching R and D teams**

The cooperative learning style formed during the teacher training phase can be applied in strengthening computer-network instructions. A reflection plan to meet specific requirements serves as reference for computer -network teaching mode while establishment of a work station with interactive platform facilitates the construction of digital e-teaching portfolios.

### **Improving the technical and educational support of information system**

The computer network often suffers from hardware crashes, network connection difficulties and false information conditions, causing malfunction and blockage to network resources for teaching. Consequently, the provision of sound teaching network stations and information maintenance with updates to computer professional personnel is an urgent task.

### **Establishing incentive schemes**

Teachers who make efforts in constructing e-teaching portfolios to reflect upon and enhance their teaching should be awarded so that their contribution may be

recognized and more teachers will be inspired to join the teaching portfolio construction group.

## CONCLUSIONS

Opportunity as well as crisis exists in the post-modern society. From the hermeneutic viewpoint, teacher professional training is a field of practical science. As to teachers' professional development, teaching internship is an effective management in constructing individual knowledge and theory and organizing personal knowledge system. It may boost the application of educational theory to practical experience and allow an important process of meaningful combination of theory and practices.

The teaching portfolio system for the purpose of teacher professional development is mainly for providing guidance to intern teachers through peer cooperation and to increase the joy of partnership growth, mutual discussion and sharing. Aimed at a professional level, through the continuous process of "planning, teaching, evaluating, applying", teachers may systematically, purposively and structurally contemplate the educational objectives, design teaching activities, implement effective teaching, observe teaching process, evaluate both the teaching process and students' learning results, and apply to future teaching activities the narrow gained through reflection. Each phase offers countless valuable data, from which wisdom and practical teaching experience are gained; the fundamental purpose for professional growth. Teacher professional development starts with the pre-service education phase and forwards from there to the incumbent education phase through the system of a continuous process. Only in the pre-service education phase and internship training phase could teachers establish a foundation to start off a long-term professional development.

School education should be inclusive of intern teachers' preparation for their current and future life. In face of the post-modernism concept and knowledge economy stream, improvement of computer teaching skills (including network learning) have become an urgent requirement. The up-to-date computer teaching development takes the following key features:

1. Able to detect individual learner's response mode during learning process and therefore provide accordingly a prescribed teaching process.
2. Able to record contents of teaching, amount of teaching, learning time, results and performance for the entire learning progress.

These functions have created deep impacts on the traditional teaching mode. Consequently, in the post-modern teaching training phase, improvements should focus on strengthening network teaching application skills and gaining relevant knowledge and abilities to design

and practice digitalized teaching portfolio, which are some of the crucial prerequisites required to become a teacher of practical wisdom.

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