A STUDY ON TEACHING QUALITY OF TAIWAN GOVERNMENT TRAINING CIVIL SERVANTS WITH EDUCATIONAL TECHNOLOGY

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ABSTRACT
When economic globalization, informatization, and marketization are rapidly developing, the world is reaching the globally industrial society based on information technology. In such a fierce competition, human resource is gradually placed on the critical role. This study aims to 1.understand the present situation of Educational Technology and Teaching Quality, 2.discuss the correlations between Educational Technology and Teaching Quality, and 3.investigate the differences of Educational Technology and Teaching Quality among civil servants with various demographic variables. With the questionnaire of Educational Technology and Teaching Quality, civil servants in Taiwan are selected as the research subjects. Total 1,000 copies are distributed and 672 valid ones are retrieved, with the retrieval rate 67%. Suggestions are further proposed for the reference of governmental branches in Taiwan and future research.

INTRODUCTION

The power of a country is an index of the strength; while human resource development is the basis for establishing the power a country. In the early period, human resource was not emphasized until the emergence of human resource theory, when the economic function was focused. It was discovered as the major source of economic capability as well as a key factor in political development and social progress. Investment on educating people became beneficial. The cultivation of human capability was then stressed in the world that the reinforcement of education, training, employment information, health, and work conditions could help enhance productivity and facilitate economic growth. The concept of human resource development was therefore generated. When Civil Service Reform Commission re-examined the civil service system (in the USA) in 1989, it reported that trainings should be the priority in the government reform allowing the development of excellent public managers. Apparently, effective trainings were closely related to the success of reform. When civil servants received quality trainings, they were likely to acquire professional knowledge and capability, establish favorable services, and rapidly and appropriately deal with complicated public affairs (Hsiao, 2010). For this reason, this study selected civil servants as the research subjects and expected to understand and enhance the quality of civil servants.

Technology, on the other hand, is hastening the paths of human. In the 21st century with information explosion and rapid knowledge renewal, acquiring latest knowledge and message through technology has become one of the objectives for modern people. Since time and space were restricted in tradition learning models, people could hardly be satisfied with the pursuit of lifelong learning. In such a technology innovation era, the improvement of education, i.e. the innovation of Educational Technology, is regarded the only way to satisfy the learning desire of human. As a consequence, learners could promote learning interests, creative thinking, problem-solving, and communication skills by continuously innovating Educational Technology, expanding professional knowledge and enhancing teaching skills, designing courses with the application of information technology, and integrating into various subjects to enhance Teaching Quality.

LITERATURE REVIEW

1. Educational Technology

Jones (1999) regarded Educational Technology as two separate terms but with absolute correlations that it taught the reason of doing something. Users of Teaching Technology had to be aware of the basic theory and the applications so as to select a suitable tool (including the Internet, multimedia, digital technology) for each classroom. Users of Educational Technology should present basic knowledge and understanding of technology and make proper decisions, according to the systematized teaching design, to solve learners' problems in the learning process. Beattie (1999) mentioned the exchange of Teaching Technology and Educational Technology and believed that everyone appeared individual definition on the terms. From "learned things" to "the closely combination of behaviors and physical science", the used tools, the things done by the used tools, and how to do these things were covered in Educational Technology. In other words, Educational Technology emphasized effective integration and applications of teaching resources, individualized learning theories in learning processes, strategy-oriented teaching theories, and systematized rules for design (Chang & Chu, 1998).

The applications of Educational Technology could overcome the differences in time and space and provide students with distinct world views. For instance, students in Carnegie Mellon University applied video

conference, course management website, and e-mail to real-time interactions with students from other countries in Technology Enhanced Learning. In the Global Learning and Observations to Benefit the Environment, the Internet was utilized for collecting student data from different areas and presenting them on the website; besides, both e-mail and online chat room were used for exchange with scientists (Elder, 2003). Moor & Zazkis (2000) indicated that, when figures were used for instructions and further integrated into tests, students were likely to enhance the learning achievements, as figures provided more effective review and comments than texts did, comparing with traditional text narrative. Moor & Zazkis (2000) discovered that Educational Technology appeared positive effects on the learning attitude, self-concept, and the learning achievements of students. Wang (2000) classified the key factors in information technology into four dimensions, including Individual, Structure, Technology, and Environment, which were further applied to the variables of Educational Technology in this study.

2. Teaching Quality

Wu (2001) indicated that, when total quality management was applied to education, education was regarded as a service to satisfy the demands of students, parents, and the society, who were considered as consumers or clients. Being a kind of service industry, quality would be emphasized that the concept of quality control was applied to education institutions for Teaching Quality. In terms of the applicability of Teaching Quality, Jao & Cheng (1997) considered that Teaching Quality would relatively change with educational objectives and requirements for education in the era. Wilson (1988) regarded Teaching Quality as providing the most suitable curriculum from planning, instruction, to evaluation for students with various backgrounds. Teaching Quality was the teaching performance which gave considerations to both subjective feelings of students and objective achievements of teaching goals. Under different time and educational purposes, the contents of Teaching Quality would be changed (Kuo, 2000). In regard to the consistency of Teaching Quality, it was the difference between teaching plans and actual teaching (Lin, 1994), tended to discuss the essence or the efficacy of teaching and further evaluate the superiority or the effectiveness (Jao & Cheng, 1997), and aimed to examine the consistency of the development and the index of teaching activities in order to establish the performance accountability system (Tien & Huang, 2002).

Pan (2002) defined Teaching Quality as (1) the standard of teaching quality being defined by the requirements of clients, (2) the emphasis and the satisfaction of teachers and students with the learning activities and the working environment, in present and fixed teaching system, being the critical index for the definition of Teaching Quality that the results should be reflected to improvements, and (3) the promotion of Teaching Quality being the responsibility of people related to learning activities, including teachers, students, administrators, and supervisors. Teaching Quality was considered as the integration of the educational system and the functions of schools and teachers, the generation of efficient learning through evaluations, and the achievement of the set educational objectives in order to reach the objective course goals and subjective student demands in the process of planned teaching activities.

Wu (1999) concluded effective teaching behaviors of teachers, in *Study of School Effectiveness*, as (1) paying attention to students' acquisition of basic capability, (2) presenting high expectation on students, (3) being able to communicate with students over unit objectives, (4) systematically presenting the unit outline and mastering in the topic, (5) examining the understanding of students anytime, and (6) properly providing students with practice and feedback and often monitoring the progress of students. Tang (2002) also pointed out three factors in effective teaching, namely (1) Teaching skills, including drawing plans, teaching goals and methods, managing students and time resource, evaluation, assignation of homework, and high expectation, (2) Professional traits of teachers, containing thinking (analytic and conceptual thinking), planning and expectation (continuous progress, active data collection), interactions with others (team motive, effects, and understanding others), leadership (flexible requirements, establishing students responsibility, stimulating learning interests), and professionalism (challenge, support, confidence, creation, trust, and respecting others), and (3) Learning atmosphere, such as creating effective learning environment (clearing setting objectives and standard, establishing orderly, fair, secure, and supportive atmosphere, providing students with participation opportunities, appealing learning interests). Regarding Teaching Quality, Chiang (2000) based on SERVQUAL Scale, proposed by Parasuraman, Zeithaml & Berry, and developed the evaluation dimensions for Teaching Quality, including (1)Teaching Facilities, (2)Teaching Capabilities, and (3)Care for Students, which were further utilized for the variables of Teaching Quality in this study.

3. Studies on correlations between Educational Technology and Teaching Quality

Chen (2007) defined Teaching Quality as the feelings or attitudes toward learning activities that, when learners appeared pleasant feelings or active attitude, they were satisfied with Teaching Quality; or, they were dissatisfied when revealing unpleasant feelings or passive attitude. In this case, the innovation of Educational Technology

showed significantly positive correlations with Teaching Quality. Abraugh (2000) considered that learners utilized individual feelings or attitude in the learning process of Educational Technology as the judgment of Teaching Quality. Consequently, Educational Technology appeared outstanding effects on Teaching Quality. Nevertheless, Teaching Quality was the satisfaction of student demands in the learning process that the level and the methods of requirements would change with individual differences and the learning environment. However, teachers could enhance the satisfactions of students with innovative Educational Technology. The innovation of Educational Technology therefore displayed remarkably positive effects on Teaching Quality (Kuo, Kao & Huang, 2007).

According to the above domestic and international points of view, the following hypotheses were further proposed in this study.

H1: Educational Technology shows notably positive correlations with Teaching Facilities in Teaching Quality.

H2: Educational Technology presents remarkably positive correlations with Teaching Capabilities in Teaching Quality.

H3: Educational Technology displays significantly positive correlations with Care for Students in Teaching Quality.

H4: The correlations between Educational Technology and Teaching Quality appear outstanding differences on gender.

H5: The correlations between Educational Technology and Teaching Quality show notably differences on age.

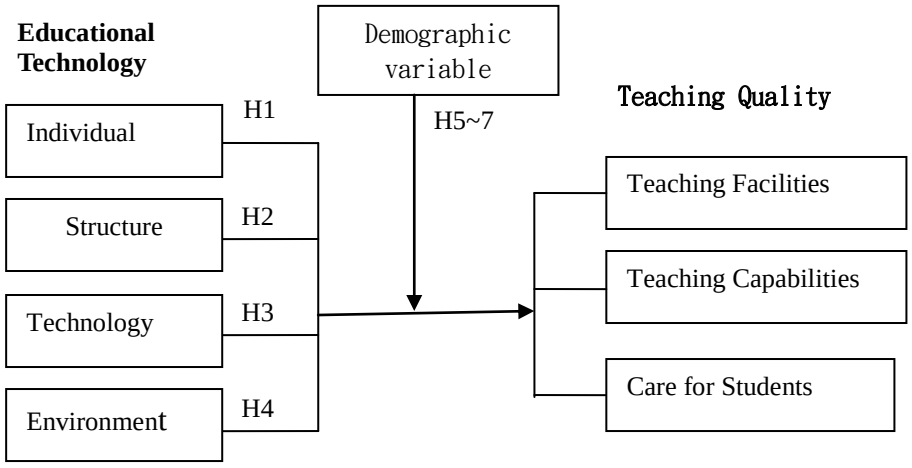
H6: The correlations between Educational Technology and Teaching Quality present significant differences on grade level.

H7: The correlations between Educational Technology and Teaching Quality reveal remarkable differences on disposable income.

RESEARCH METHOD

1. Research framework

Having organized the literatures on Educational Technology and Teaching Quality, the research framework was proposed to discuss the correlations between Educational Technology and Teaching Quality.



2. Research subjects and sampling

With civil servants in Taiwan as the research subjects, convenience sampling was applied to the questionnaire survey. Total 1000 copies were distributed and 672 valid ones were retrieved, with the retrieval rate 67%.

ANALYSES AND DISCUSSIONS

1. Factor Analysis of Educational Technology

The Educational Technology scale was based on the dimensions and the questionnaire proposed by Wang (2000). With Factor Analysis, the Cronbach α reliability of the four dimensions showed 0.87(Individual), 0.82(Structure), 0.89(Technology), and 0.92(Environment). The questionnaires were further proceeded Principal Component Factor Analysis and oblique rotation that the explained variance appeared 84.762%.

2. Correlation Analysis of Educational Technology and Teaching Facilities in Teaching Quality

With Multiple Regression Analysis to test H1, the analysis results, Table 1, presented the significant effects of Individual (t=1.776, p<0.05), Structure (t=2.024, p<0.01), Technology (t=1.762, p<0.05), and Environment (β=1.449, p<0.05) on Teaching Facilities that H1 was agreed.

Table 1: Multiple Regression Analysis of Educational Technology toward Teaching Facilities in Teaching Quality

Predictor	Unstandardized coefficient		Standardized coefficient	t
	β estimate	Standard error	β distribution	
Individual	0.614	0.085	0.152	1.776*
Structure	1.256	0.173	0.242	2.042**
Technology	1.583	0.059	0.337	1.762*
Environment	1.187	0.117	0.269	1.449*

Note: * stands for p<0.05, ** for p<0.01

3. Correlation Analysis of Educational Technology and Teaching Capabilities in Teaching Quality

With Multiple Regression Analysis to test H2, the analysis results, Table 2, showed the remarkable effects of Individual (t=1.526, p<0.05), Structure (t=1.421, p<0.05), Technology (t=2.537, p<0.01), and Environment (β=2.019, p<0.01) on Teaching Capabilities that H2 was agreed.

Table 2: Multiple Regression Analysis of Educational Technology toward Teaching Capabilities in Teaching Quality

Predictor	Unstandardized coefficient		Standardized coefficient	t
	β estimate	Standard error	β distribution	
Individual	1.382	0.174	0.233	1.526*
Structure	1.426	0.138	0.152	1.421*
Technology	2.351	0.252	0.353	2.537**
Environment	1.967	0.181	0.244	2.019**

Note: * stands for p<0.05, ** for p<0.01

4. Correlation Analysis of Educational Technology and Care for Students in Teaching Quality

With Multiple Regression Analysis to test H3, the analysis results, Table 3, revealed the outstanding effects of Individual (t=1.774, p<0.05), Structure (t=1.802, p<0.05), Technology (t=2.376, p<0.01), and Environment (β=2.573, p<0.01) on Care for Students that H3 was agreed.

Table 3: Multiple Regression Analysis of Educational Technology toward Care for Students in Teaching Quality

Predictor	Unstandardized coefficient		Standardized coefficient	t
	β estimate	Standard error	β distribution	
Individual	1.337	0.155	0.176	1.774*
Structure	1.526	0.212	0.238	1.802*
Technology	2.088	0.247	0.366	2.376**
Environment	2.170	0.306	0.402	2.572**

Note: * stands for p<0.05, ** for p<0.01

5. Interference of demographic variables

(1) Effects of gender on the relations between Educational Technology and Teaching Quality

With Analysis of Variance, Table 4, gender appeared notable differences between Individual, Structure and Teaching Facilities; between Structure, Technology and Teaching Capabilities; and between Individual, Technology and Care for Students that H4 was partially agreed.

Table 4: Effects of gender on the relations between Educational Technology and Teaching Quality

	Teaching Facilities	Structure Frequency	Care for Students
Individual	Significant	Not significant	Significant
Structure	Significant	Significant	Not significant
Technology	Not significant	Significant	Significant
Environment	Not significant	Not significant	Not significant
Hypothesis test	H4 partially agreed		

(2) Effects of age on the relations between Educational Technology and Teaching Quality
With Analysis of Variance, Table 5, age revealed remarkable differences between Individual, Structure, Environment and Teaching Facilities; between Individual, Technology and Teaching Capabilities; and between Individual and Care for Students that H5 was partially agreed.

Table 5: Effects of age on the relations between Educational Technology and Teaching Quality

	Teaching Facilities	Structure Frequency	Care for Students
Individual	Significant	Significant	Significant
Structure	Significant	Not significant	Not significant
Technology	Not significant	Significant	Not significant
Environment	Significant	Not significant	Not significant
Hypothesis test	H5 partially agreed		

(3) Effects of grade level on the relations between Educational Technology and Teaching Quality
With Analysis of Variance, Table 6, grade level displayed significant differences between Individual and Teaching Facilities; between Structure and Teaching Capabilities; and between Individual, Structure and Care for Students that H6 was partially agreed.

Table 6: Effects of grade level on the relations between Educational Technology and Teaching Quality

	Teaching Facilities	Structure Frequency	Care for Students
Individual	Significant	Not significant	Significant
Structure	Not significant	Significant	Significant
Technology	Not significant	Not significant	Not significant
Environment	Not significant	Not significant	Not significant
Hypothesis test	H6 partially agreed		

(4) Effects of disposable income on the relations between Educational Technology and Teaching Quality
With Analysis of Variance, Table 7, disposable income showed remarkable differences between Technology and Teaching Facilities; between Individual, Structure, Environment and Teaching Capabilities; and between Individual, Technology and Care for Students that H7 was partially agreed.

Table 7: Effects of disposable income on the relations between Educational Technology and Teaching Quality

	Teaching Facilities	Structure Frequency	Care for Students
Individual	Not significant	Significant	Significant
Structure	Not significant	Significant	Not significant
Technology	Significant	Not significant	Significant
Environment	Not significant	Significant	Not significant
Hypothesis test	H7 partially agreed		

CONCLUSIONS AND SUGGESTIONS

According to the outcomes, Educational Technology appeared significant effects on Teaching Quality. Aiming at promoting Teaching Quality of civil servants with Educational Technology, the following suggestions are further proposed. It is suggested to cooperate with enterprises to establish an open teaching platform for talents cultivation. Such a platform could cultivate practice capability and innovation capability of civil servants through the practical trainings in enterprises so that civil servants could receive actual experiences, not simply the theories. It is similar to schools largely promoting the collaborative talent cultivation plan between industry and

academia. In the practical courses, the training contents could be changed to e-files by abundant network resources that the documents or the video files could be posted on the teaching platform for civil servants to learn anytime and anywhere. Moreover, excellent employees could be selected to be the project assistants who are trained to exchange and learn with technicians in enterprises and teachers in schools through the network platform, to participate in research and development, and to coordinate work in various sections so that civil servants could acquire trainings on technological knowledge, interpersonal relationship, and communication ability. It aims to promote the active participation of civil servants who could acquire actual benefits and experiences for practical applications, to enhance the participation of civil servants in various cooperative projects, and to have middle-aged and young civil servants become the main power. The overall Teaching Quality therefore could be promoted by Educational Technology.

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