

***Constructing the Principal Technology Leadership Competency Indicators for Vocational High School in Taiwan***

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**Abstract**

The purpose of this study is to construct principal technology leadership competency indicators for vocational high school to raise the effectiveness of school administration and teaching. To achieve the purpose, the first is to interview with field expert and explore the technology leadership theorem model. The second, eighteen experts in technology leadership and the principal of vocational high school are recruited for participants in the Delphi technique questionnaires and construct principal technology leadership competency indicators. The third, questionnaire data was proceeded via Kolmogorov-Smirnov one sample test and Kruskal-Wallis one-way analysis of variance by ranks, to prove the consistency of opinion of all experts. Finally, six dimensions, (1)the leadership and vision, (2)the learning and teaching, (3)the productivity and professional practice, (4)the support, management, and operations, (5)the assessment and evaluation, and (6)the social legal and ethical issues, and thirty competency indicators of principal technology leadership for vocational high school in Taiwan were found.

Keywords: vocational high school, competency analysis, technology leadership

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## **1. Introduction**

Competency may mean the intellectual or physical ability to perform some task. A broader definition of this term, which is used in this context, includes attitudes as well as skills and knowledge. Thus, for example, Spencer and Spencer (1993) referred to such competencies as knowledge, skills, positive attitudes, personal values and self-motivation, which can be both observable and non-observable. Bailey (1997) have identified eight important themes for leaders who want to integrate technology effectively: change with developments in technology, budget and planning for technology, professional development of personnel involved in technology, technological infrastructure, technical support in the implementation of technology, learning and teaching with technology, a curriculum in which technology is integrated, and individuals who consider themselves to be technology leaders. Cakir (2012) showed that school administrators, who have the primary responsibility for technology integration in the schools, and computer teachers, who play an important role in the integration of technologies in the classroom, have a high degree of interest in and a positive attitude towards technology.

## **2. Function of competency analysis**

Competency analysis identifies the behaviors required for professionals to perform job-related tasks. Identified behaviors included motive, characteristic and skill; or knowledge of the fundamental characteristic. Specifically, competency refers to the employee performance required to work effectively, especially when adequately playing a role or undertaking a task. Thus, competency is not only an aggregation of knowledge, skills, and attitudes, but also a dynamic concept of putting theory into practice. More specifically, competency also refers to the ability to achieve an outcome in a specific situation (Chao et al., 2003). McClelland (1973) suggested the term competency as a criterion for judging successful performance. Competency frameworks have been applied in various settings - for example, for assessing company managers and employees, as training and recruitment tools (Rifkin et al., 1999). So (2006) characterized these as attempts to define the human resource needs of a knowledge-based and capitalist society.

## **3. Delphi technique**

The Delphi Technique is widely used and accepted for gathering data from respondents within their domain of expertise. The technique is designed as a group communication process for achieving a convergence of opinion on a specific real-world issue. The Delphi Process has been used in various fields of study, including program planning, needs assessment, policy determination and resource utilization, to develop a full range of alternatives, explore or expose underlying assumptions, as well as to correlate judgments in many disciplines. The Delphi Technique is well suited as a technique for consensus building by using a series of questionnaires delivered using multiple iterations to collect data from a panel of selected subjects.

Any staff member who assigned a rank derived by 10 or more points from the corresponding first Delphi median rank was requested to state the rationale for the dissenting opinion in the space below the problem. Concerning the appropriate

number of subjects for performing the Delphi Technique, researchers should use the minimally sufficient number of subjects and should verify the results by follow-up explorations. The number of experts used in a Delphi Technique is generally determined by the number required to constitute a representative pooling of judgments and the information processing capability of the research team. However, the literature reveals no consensus as to the optimal number of subjects required to perform the Delphi Technique. Researchers suggest that 10-15 subjects could be sufficient if the background of the Delphi Technique subjects is homogeneous (Delbecq et al., 1975).

## **4. Methodology**

### *4.1 Questionnaire design*

To fulfill research objectives, a questionnaire was designed to collect data in 6 domains: (1) leadership and vision, (2) learning and teaching, (3) productivity and professional practice, (4) support, management, and operations, (5) assessment and evaluation, and (6) social legal and ethical issues; and to collect 30 competency indicators of principal technology leadership for vocational high school. Each competency was rated by its importance to technology leadership in the principal technology leadership. A Likert Scale was used in this questionnaire. Members of the Delphi Group were asked to assess each competency according to the following 5-point scale: "5-very important", "4-more important", "3-somewhat important", "2-less important", and "1-least important" in their technology leadership.

### *4.2 Participants*

Eighteen experts in technology leadership and the principal of vocational high school are recruited for participants in the Delphi technique questionnaires and construct principal technology leadership competency indicators. Six of these had research experience in technology leadership. Six of these are the principal of vocational high school in Taiwan. Six of these are the director of vocational high school in Taiwan.

### *4.3 Instruments*

Questions were developed and verified with technology leadership field experts as to content validity. Thirsty questions for the Delphi Technique were examined. These mainly concerned the experts' experiences in technology leadership and their thoughts and experiences. The pilot version of this instrument was reviewed by technology leadership field experts and in the light of their feedback; revisions were made several times to all items considered confusing or ambiguous in order to establish consistency of wording and format.

### *4.4 Data analysis*

For the data analysis, descriptive analysis was adopted for mode (Mo), means (M), standard deviations (SD), the Z-value of the K-S Test, and Kruskal-Wallis one-way analysis of variance by ranks ( $\chi^2$ ).

## **5. Results**

The K-S test found that a value equal to 0.05 was statistically significant and that participants considered the items more important and consistent. In terms of the importance of principal technology leadership, the mean score for 30 working

competencies in six domains were above 4.17, which indicated that the Delphi group considered the competencies listed in the questionnaire to be "more important". The Kruskal-Wallis one-way analysis of variance by ranks ( $\chi^2$ ), to prove the consistency of opinion of all experts and the items that participant considered important.

## **6. Conclusions**

All 30 competency indicators that were ultimately identified revealed importance and consensus to be incorporated into a principal technology leadership. The analyses found that the consensus-building process did progress as anticipated and that it was successful in identifying and validating the principal technology leadership competency indicators demanded. The data analysis revealed decreased standard deviation and increased means, which are both indicative of an increase in consensus.

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