

# School Organizational Innovative Indicators For Technical Universities And Institutes

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## ABSTRACT

*This study aimed to construct the organizational innovation indicators of technical universities and institutes. This study held a group discussion and expert focus meeting and afterward, this study generalized seven facets of school organizational innovation: leadership innovation, administration innovation, student guidance and activity innovation, curriculum and instruction innovation, teacher professional development innovation, resource application innovation, and campus construction innovation. Then 25 criteria and 83 indices were developed.*

**Keywords:** Organizational Innovation, School Organizational Innovation, Technical Universities and Institutes

## INTRODUCTION

In recent years, due to such factors as population structural change, low birthrate and a growing senior demographic, the size of the school age population in Taiwan has fallen significantly. On the other hand, prompted by relevant government policies, institutes of higher education have either expanded their departments and programs or vied for upgrades. To illustrate, there were 41 technical universities and 37 technical institutes throughout Taiwan in 2009. Coupled with the fact that the government has opened the doors for academic institutions in Mainland China to solicit student enrollment in Taiwan, the supply in the domestic education market will far exceed the demand. As a result, schools are now faced with an unprecedented challenge (Yan and Chang, 2005). In the era of knowledge economy that aptly characterizes the 21<sup>st</sup> century, “innovation” has become the most crucial factor that determines the competitiveness of corporations. As such, in light of the super-competitive future, the only way for technical universities and institutes to stay competitive and survive in the market is through constant innovation.

The operation of school affairs may be broken down into four major components: strategy, teaching, research, and administrative support. The capacity for organizational innovation is an important indicator that affects schools’ performance in this same area. The purpose of school organizational innovation focuses on the improvement of school performance and the development of school features to achieve the goal of school education (Lee, 2005; Chang and Lin, 2004). As such, the improvement of school performance calls for appropriate thought processes, leadership models and engagement of practical administrations. Sergiovanni (1995) proposed that in order for schools to achieve educational reform, schools might be required to boost their efficacy through organizational learning to facilitate organizational innovation, which would, in turn, inspire teachers to take part in innovative education.

Presently, the organizational innovation theories adopted by schools are mostly derived from corporate organizational innovation theories. However, it is important to realize that school organizations and corporate organizations have different goals and needs; their organizational structure and organizational reform capacities are different; they have different organizational member relationships, different decision-making models, different internal/external factors, and so forth. The development of a set of innovation indicators suited for technical universities and institutes that would assist them in coping with the pressures of competition became one of the

motivations for this research. In addition, the current assessment of domestic technical universities and institutes is primarily focused on school administration and teaching performance without offering comprehensive review on school organizational innovation. The creation of a set of organizational innovation indicators for technical universities and institutes would no doubt assist these education institutions to boost their innovation and competitiveness.

Simply put, the goal of this research is to identify the innovation indicators for domestic technical universities and institutes as a reference for relevant organizations.

## **LITERATURE REVIEW**

### **Organizational Innovation**

Robbins (2001) believes that organizational innovation could be used to facilitate specific product, process or service that would, in turn, boost organizational performance and that innovation includes product innovation, production technology innovation, structural innovation, management system innovation, and so forth. Hodge et al (1996) suggested that organizational innovation is an alternative choice for an organization in its current situation and it may involve a systematic change of organizational system; input and output relationship; technological or conversion process; organizational structure or design, scheme of collaboration, organization personnel and their roles; and organizational culture and reforms of all aspects. In other words, organizational innovation involves structural changes in technology, objective, personnel and culture. Since the idea of innovation can be demonstrated in a variety of ways, it can therefore be divided into different types. Based on the types of innovation involved, Daft (1978) separated organizational innovation into administrative innovation (i.e., innovation of strategy and components of organizational structure) and technical innovation (i.e., innovation of product technology/process and product creativity). Daft's division of innovation became an important basis for innovation classification for scholars after his time. Hodge et al (1996) divided innovation based on extent into planned value-added innovation (maintenance of competitiveness through innovative products), radical innovation (to change organizational structure, personnel and organizational procedure through major reforms by the implementation or organizational strategies) and unplanned innovation (organizational innovation that was not planned in advance).

A significant number of scholars favored the definition of "organizational innovation" through diversified perspectives due to their belief that researchers in the past dwelled too heavily on the aspect of "technical innovation" for corporations and, as a result, overlooked "administrative innovation". Technical innovation refers to the improvement of product/service/procedure or the creation of new products, while administrative innovation involves the innovation of organizational structure and management procedures. Technical innovation also encompasses the implementation of organizational affairs through tools, such as new equipment, methods and concepts. In contrast, administrative innovation involves the management of organizational affairs through the application of new strategies, new systems, new solutions and new services (Lee, 2005). In other words, technical innovation is related to the technologies pertaining to product, service and manufacturing process and is directly related to the basic operations of organizations as it covers product or manufacturing process innovation. On the other hand, administrative innovation pertains to organizational structure and management procedures. Scholars have proposed that "organizational innovation" covers the perspectives of "technical innovation" (including product, process and equipment) and "administrative innovation" (including system, policy, solution and service) from all aspects; and as such, the majority of scholars in the relevant fields of research have defined "organizational innovation" as "the adoption of a new concept or behavior that could include new product, new service, new technology or a new management practice that is relatively new for an organization" (Chuang, 2005; Daft & Becker, 1978; Damanpour 1991; Hage & Aiken, 1970; Zammuto & O'Connor, 1992; Lee, 2005).

### **School organizational innovation**

The most important role that schools play is to provide new learning and stimulation for students in order to cultivate new values. By managing schools according to organizational innovation indicators, teachers may deliver better learning effectiveness for students and inspire them in terms of teaching. On the other hand, students would also acquire professional skills and creativity. In other words, innovative management of schools would accentuate

schools' unique characteristics for students and schools alike. In their research, Daft and Becker (1978) found that school innovation could be separated into educational innovation and administrative innovation, which manifest as education/course innovation and administrative management innovation, respectively. The former is implemented by teachers (usually in a bottom-up fashion); the degree of teachers' professional competence is directly proportional to the likelihood of course/education innovation by teachers. As such, course and education innovation would become the necessary component for the improvement of education efficacy. The latter is implemented by administrative personnel (in a top-down fashion) (Yen and Chang, 2005), who shape school organizational innovation through administrative management.

The dimensions of school organizational innovation vary according to the perspectives taken by researchers. For example, Huang (2003) divided school innovation into six dimensions: organizational management, HR management, marketing management, customer relationship management, financial management and R&D management. Pu (2003) delineated school innovation into five major dimensions: administrative management innovation, course teaching innovation, teacher sharing innovation, external relationship innovation and IT innovation. Wu (2004) believes that innovative management comprises eight elements; namely, concept innovation, technical innovation, product innovation, service innovation, procedure innovation, event innovation, environmental innovation and feature innovation. Lee (2005) identified educational behavior innovation, equipment resource innovation, organizational atmosphere innovation and administrative operation innovation to be the four dimensions of researches on school organizational innovation. In other words, schools should provide new teaching equipment and adopt new administrative operations to create the atmosphere for innovation that would facilitate educational and organizational innovation. In addition, it would also guide teachers to apply innovative teaching methods and tools in their instructions to ultimately boost school performance.

## **METHOD**

This study aims to provide the frameworks of innovation indicators for technical universities and institutes from previous literatures in order for the research team to construct the innovative dimensions, items and reference guidelines for technical universities and institutes based on the aforementioned framework.

Based on the initial structure proposed by the research team, the study provides supplementary descriptions on the dimensions before organizing an expert focus group. The group have invited two CEOs from the business sector, two government officials in the area of education administration agencies, four scholars specializing in school organizational innovation, and five senior researchers in the fields of vocational education (a total of 13 experts and scholars) to take part in the meeting. They have discussed the rudimentary framework presented by the research team and make relevant adjustments to the framework to derive the final results.

## **RESULTS**

With extensive discussions by the research team and participants at the expert focus group, the former's study has concluded seven major dimensions for technical institutes and universities organizational innovation (Hsiao et al., 2009); namely, leadership innovation, administrative operation innovation, student counseling and activity innovation, curriculum and instruction innovation, teacher's expertise development innovation, resource application innovation and campus construction innovation, and 25 items for these dimensions. This study is further to report detail definition for these dimensions and to develop 83 indicators for technical universities and institutes.

Leadership innovation refers to the practice of school operators making themselves examples in the adoption of innovative ideologies to utilize concepts, such as knowledge management, knowledge innovation and total quality control, through the promotion of learning oriented organization. University presidents and supervisors could assemble a special task force to promote relevant innovative measures and invite relevant members to take part in the decision-making process. By actively encouraging employees to provide creative input, school operators would be able to competently lead their administrative and teaching teams to strengthen their administrative efficiency and quality while elevating the school's organizational service performance to implement relevant plans for campus administration. Leadership innovation encompasses three items: vision, campus administration development and participatory decision-making. The three items entail eight indicators.

Administrative operation innovation refers to the promotion of innovative measures in terms of concept, technology, service and procedures. It emphasizes encouraging everyone on campus to take part in the process of knowledge and experience sharing to shape an ideal and innovative organizational culture. Administrative operation innovation encompasses four items: organizational culture innovation, administrative measures, work rationalization and service quality. These four items entail 16 indicators.

Student counseling and activity innovation refers to the capacity of relevant school departments to host innovative in-school and interschool learning programs and counseling activities. Results of these activities must be innovative and ensure effective development of diversified talents for students while shaping the school’s unique values and culture. Student counseling and activity innovation encompasses three items: competitive events, innovative club activities and life counseling. These three items entail nine indicators.

Curriculum and instruction innovation refers to the application of innovative concepts and technologies in syllabus design and teaching activities. It enables the creation of curriculum and teaching activities that facilitate the fostering of creativity for students. Through the sharing of innovative teaching experience by teachers, more relevant information would become available. The application of platform technology provides consultation for teachers to achieve mutual support among the teaching staff. Curriculum and teaching innovation encompasses five items: curriculum innovation, teaching material innovation, teaching innovation, diversified assessment and cross-domain learning. These five items entail 16 indicators.

Teacher’s expertise development innovation refers to a school’s innovative measures and results in encouraging teachers to acquire professional qualifications or take part in active researches and professional studies with innovative measures and results. Teacher’s expertise development innovation encompasses four items: professional studies, action research, and innovative teacher appointment and teacher development. These four items entail 13 indicators.

Resource application innovation refers to the organization of events, such as interschool exchange, campus venue rental and local community services, to foster a school’s relationship with the society. It may also involve the introduction of resources from the society, local communities, parents and alumni to campus administration so as to improve the efficacy of operations for organizations, such as the PTA, Alumni Association, and so forth. In addition, it may also manifest as the establishment of an incentive scheme to encourage innovative R&D and better operational performance to aggressively secure resources from the business sector for innovative measures. Resource application innovation encompasses four items: technical qualifications and employment or industry-academia collaboration (in the form of practicum), external resource (i.e., from community, alumni, businesses) application and innovative accomplishments (including patents). These four items entail 14 indicators.

Campus construction innovation refers to the planning of campus space/software and hardware facilities in order to facilitate innovative operation for schools. It also involves the construction of quality campus space to enhance the aesthetics of the teaching environment and, while ensuring the actual planning, it would conform to humanistic development in order to create an environment that would inspire creative ideas. Campus construction innovation encompasses two items: innovative campus creation and educational facilities. These two items entail seven indicators as shown in Table1.

**Table 1: The Organizational Innovation Dimensions, Items and Indicators of Technical Universities and Institutes**

<b>Dimensions</b>	<b>Items</b>	<b>Indicators</b>
Leadership Innovation	Vision	President’s capacity to adopt strategic thinking to portray the vision for campus administration development.
		The uniqueness, prospects and sustainability of the school’s vision for development.
	Campus Administration Development	President’s capacity to propose innovative ideas and inspire innovative awareness in his/her team.
		President’s ability to integrate colleagues’ innovative ideas and incorporate those input in school administration.
		President’s capacity to provide incentives for teachers and students to come up with innovative ideas.

Table 1 continued

Dimensions	Items	Indicators
	Participatory Decision-Making	<p>President/dean's capacity to become the role model in the promotion of innovative administration for the school.</p> <p>The emphasis on having the teaching staff and students to take part in the administrative decision making process in campus administration.</p> <p>President's capacity to accept different innovative ideas and opposition.</p>
Administrative Operation Innovation	Organizational Culture Innovation	Staff's ability to understand and accept the vision and objectives for innovation.
		Staff's capacity to support one another and assist the development of campus administration.
		Staff's capacity to understand and assist the school to develop and achieve its vision.
	Administrative Measures	The establishment of scheme that encourages the teaching staff to review and improve the existing administrative process.
		Staff's capacity to transcend the limitations of organizational hierarchy at the appropriate occasion and venue to take appropriate action.
		Active adoption of new policies that could improve existing organizational performance to ensure sustained campus management.
		Achieving innovative results in the improvement of administrative processes.
		Assembly of dedicated taskforce to promote innovative measures.
		School's capacity to formulate innovative student enrollment solicitation strategies.
		Innovative measures for international collaboration.
	Work Rationalization	School's capability to engage in active improvement or simplification of existing work processes.
		School's innovative achievements in terms of administrative process improvement.
	Service Quality	Administrative unit's capacity to provide immediate response to teacher/student's inquiries or suggestions.
		Administrative unit's capacity to provide services that would satisfy the teaching staff and students.
		Administrative unit has various service sops in printed form and is constantly working on their improvements.
The administrative unit's capacity to be innovative in its service.		
Student Counseling and Activity Innovation	Competitive Events	The establishment of procedures that govern the organization of innovative performance/exhibition for students.
		Annual organization of problem-solving or creative competitive events for students.
		Students' participation in national/international innovation related competitions.
	Innovative Club Activities	The establishment of procedures that govern students' participation in various innovative club activities.
		The school's efforts in encouraging students to set up innovative clubs.
		Students' club activities demonstrate innovative results.
	Life Counseling	The creativity of life counseling measures for students.
		Innovative measures for the after-school counseling system.
Curriculum and Instruction Innovation	Curriculum Innovation	Teachers' capacity to integrate or offer courses pertaining innovation or creativity for students according to the needs of relevant sectors.
		Teachers' willingness to work together to develop courses with unique features.
	Teaching Material Innovation	The establishment of procedures governing the reward for teachers who make use or share creative teaching materials they have developed.
		Teachers' capacity to creatively gather, edit and develop teaching materials.
	Instruction Innovation	School's emphasis on the integration between creative thinking with teaching contents.
		The establishment of procedures governing the incentives to encourage teachers to take part in innovative teaching.
		Teachers' capacity to use diversified teaching methods to facilitate learning.
		Teachers' capacity to offer exemplary instructions of innovation that would facilitate learning for students.
		The establishment of a platform for the sharing of results and experience in innovative education.
		The implementation of unique learning assistance measures.
		The innovativeness of learning assistance results.
	Diversified Assessment	Teachers' capacity to conduct diversified teaching assessment.
		The innovativeness of diversified teaching assessment.

Table 1 continued

Dimensions	Items	Indicators			
	Cross-Domain Learning	The adoption of innovative learning systems by the school. The offering of cross-domain syllabus by the school The innovativeness of students' cross-domain learning results.			
Teacher's Expertise Development Innovation	Professional Studies	Encouraging colleagues to take part in innovative learning activities. Teachers' capacity to actively take part in various innovative learning activities or studies. Teachers' willingness to share their results of innovative learning.			
		Action Research	The establishment of procedures governing teachers' engagement in active researches. Teachers' capacity to implement innovative teaching ideas as concrete actions in their teaching. Teachers' capacity to create innovative teaching materials.		
			Innovative Teacher Appointment	The establishment of innovative talent recruit scheme. The introduction of human resources from the business sector to assist in innovative education. The establishment of procedures governing the rewards for outstanding teachers.	
	Teacher Development			The establishment of innovative procedures that would encourage teachers to pursue further professional development. Teachers' capacity to actively acquire relevant qualifications for their teaching career. The effectiveness of works published by teachers. Teachers' capacity to actively engage in technical R&D tasks.	
		Resource Application Innovation		Technical Qualifications and Employment	The establishment of innovative procedures that would encourage students to acquire technical qualifications. Innovative collaboration with the business sector to offer assistance to students in acquiring qualifications. The implementation of innovative measures to help students in the job-seeking process. The implementation of innovative measures to improve the effectiveness of learning and employment for students.
			Industry-Academia Collaboration		Teachers' capacity to actively engage in industry-academia collaboration. The innovativeness of practicum for students and teachers or scheme of industry-academia collaboration. The acknowledgement of student/teachers' involvement in industry-academia collaboration from the industry.
	External Resource				The formation of strategic alliance with the industry to promote innovative operation related activities for schools. Success in securing budget and resources from other external sources. School's capacity to implement various fund-raising strategies to ensure the injection of social resources. The introduction of community resources to assist the school in promoting various innovative activities. The inclination of alumni to participate in the school's innovative operation related activities.
					Innovative Accomplishments
			Campus Construction Innovation	Innovative Campus Creation	
					Educational Facilities

## CONCLUSION

Due to the impact of the low birthrate and the growing senior demographic in Taiwan, schools are facing unprecedented challenges, and the only way for schools to stay competitive and survive in the market is through constant innovation. As such, the facilitation of school organizational innovation has become an important issue for technical universities and institutes today. After the expert's seminar, the study derived seven major dimensions for technical universities and institutes organizational innovation; namely, leadership innovation, administrative operation innovation, student counseling and activity innovation, curriculum and instruction innovation, teacher's expertise development innovation, resource application innovation, and campus construction innovation, with 25 items, such as vision and campus administration development, and 83 indicators, such as president's capacity to adopt strategic thinking to portray the vision for campus administration development.

Results of this research should serve as a useful reference for technical universities and institutes for self assessment of organizational innovation and a tool to elevate school organizational innovation performance.

## RECOMMENDATION

Based on the aforementioned results, the following recommendations were proposed. First, technical universities and institutes may use the school organizational innovation indicators presented in this study to review the areas that they still need to improve upon in order to enhance their organizational innovation performance. Second, the research has derived school organizational innovation indicators for technical universities and institutes, and researchers who are interested in the subject matter may conduct questionnaires to measure the status of organizational innovation for technical universities and institutes in Taiwan. Third, the research only seeks to provide a preliminary conclusion. Future researchers may conduct interviews at various technical universities and institutes in Taiwan based on the results of the research to see if the indicators require further improvement. Fourth, the research only presents the dimensions, items and indicators for organizational innovation without dwelling on the correlation between these indicators. Future researchers may choose to examine the relative importance of these indicators to determine their impact on technical institute and university's organizational innovation. Finally, the research has chosen only technical universities and institutes as the subjects. Future researchers may choose to conduct similar researches for junior colleges and vocational high schools and compare the results with this study to establish organizational innovation indicators for technological and vocational schools system.

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