EFFECTIVE SCHOOL MODEL; MALAYSIAN PERSPECTIVE

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Abstract
The excellence education has become the primary concern for achievement to compete in this global village. Since the technological and vocational higher education became one of the essential elements in the educational road map, students are expected to be more skillful than the one of regular university. This study reviews the development of effective learning systems and examines the relationship between employability and effective learning systems from students' perception. The results found that the model indicates a highly acceptable fit between the model and data. Also, there exists significant direct effect between employability and effective learning systems.

Abstrak
Pendidikan unggul (bermutu) telah menjadi perhatian utama yang harus dicapai untuk bersaing dalam era global ini. Karena pendidikan kejuruan dan tehnik menjadi salah satu elemen penting dalam peta pendidikan, para siswa diharapkan lebih cakap ketimbang mahasiswa dari universitas biasa. Kajian ini mencoba meninjau perkembangan sistem pembelajaran efektif dan menguji hubungan antara kemampuan kerja dan sistem pembelajaran efektif berdasarkan perspektif siswa. Hasilnya menunjukan bahwa terdapat kecocokan antara model ini dengan data. Ini artinya bahwa terdapat pengaruh yang positif antara kemampuan kerja dengan sistem pembelajaran efektif.

Key words: *school model, malaysian*

Employability

Traditionally, employability was related to the propensity of students to obtain a job (Harvey, 2001) and regarded as the indicator of institutional effectiveness. Harvey (2001) made explicit and implicit definitions based on job type, timing, attributes on recruitment, further learning, and employability skills and developed a model of employability development and employment". Also, Harvey recognized a variety of factors that could mediate the employment process, which included type of higher education institution, mode of study, student location and mobility, subject of study, previous work experience, age, ethnicity, gender, and social class.

In 1997, the Principal Council of International Higher Education and Wu-Jing (the former Minister of Education) proclaim a revolution in Taiwan's higher education. The technological and vocational education system became one of the essential elements in the educational road map and received the same level importance as the regular education system. School leaders, governments, employers and other stakeholders have come to expect technological and vocational higher education to contribute to a variety of complex skills.

If the notion of employability is to contribute to the quality of higher education, the competencies (Boyatzis, 1995; Harpe, Radloff, and Wyber, 2000; Mayer, 1992; O'Neil and Onion, 1994; Warn and Tranter, 2001) were discussed in most cases, such as collecting, analyzing and organizing information; communicating ideas and information; planning and organizing activities; working with others and in teams; using numerical ideas and techniques; problem solving; using technology (Mayer, 1992); critical thinking, learning, interpersonal, intrapersonal (Arnold and Davey, 1992; Candy et al., 1994; Guthrie, 1994; Harvey, 1993).

The purpose of the technological and vocational education system higher education in Taiwan is to train each student to be the person who has adaptive and executive ability or can lead to create the economic structure of a new society (Council of Taiwan's Technological and Vocational Education, 2003). Harvey & Knight (1996, p.10) point out "higher education is about producing people who can lead, who can produce new knowledge, who can see new problems, and imagine new ways of approaching old problems". Therefore, leadership is also recognized as critical prerequisite competency for the employment.

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Effective Learning System

Christensen, Garvin, and Sweet (1991) defined the educational excellence as the creation of effective learning systems. Lengnick-Hall and Sanders (1997) defined high-quality management education "as a course or integrated program of study that consistently yields (1) high levels of learning (e.g., increased knowledge, skill, and understanding), (2) high levels of change or intention to change behavior (application of new knowledge and skills), and (3) highly positive reactions (e.g., satisfaction with the course, the method of instruction, and the value of what was learned and intentions to recommend the course to others" (p.1335).

Developing competencies require approaches to curriculum planning, teaching and assessment that are associated with effective learning (Harpe, Radloff, and Wyber, 2000). Betoret and Tomás (2003) applied the principles and indicators of the Instructional Model of the Educational Situation (MISE) to the evaluation of the university teaching/learning process for the improvement of quality in higher education. Carey and Gregory (2003) listed the indicators of a quality teaching/learning experience as a framework for course evaluation and revision; the indicators include learner characteristics, learning environment, course content, and essentials for learning.

This study reviews the indicators of effective learning systems, which was stated by Carey and Gregory (2003), and examines the relationship between students' competencies for employability and

effective learning systems from students' perception in a selected technical university.

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Methodology

A survey questionnaire design is used. The sample consisted of 74 students from day school, evening school and weekend school in a selected technical university. A five-point Likert scale is applied to measure the respondents' perception on each item for the Statistics course, anchored at 5 strongly agree to 1 strongly disagree.

After applied the Principal Component Factor Analysis to classify factors in the exploratory factor analysis, the scale includes three factors of effective learning system, which are learning guidance, active student participation, and learning environment; three factors of competencies, which are general competency, critical thinking competency, and leadership. The reliabilities applied the level of Cronbach α as the criteria of internal consistency, which are shown in Table 1.

Table 1 indicates the factors of reliability are above .70, which was an acceptable level suggested by Nunnally (1978) except for the active student participation and learning environment. Nevertheless, the learning environment factor was .6974, which was at a minimum acceptable level suggested by DeVellis (1991).

Table 1 The reliability of the effective learning system and employability

Factor	No of Questions	Cronbach α
Effective Learning System:		
1.Learning	8	.9145
guidance	3	.6974
2.Active student		
participation	3	.6305
3.Learning Environment		
Employability:		
1.General	6	.9392
Competency	4	.9130
2.Critical thinking		
competency	2	.9318
3.Leadership		

This study also measures the reliability and validity of structural equation modeling (SEM). The construct reliability and variance extraction measure are to estimate scale or construct reliability. The SEM construct reliability formula and the variance extracted measure are as follows (Garver and Mentzer, 1999):

Construct Reliability (CR) = $(\Sigma\lambda)^2/ (\Sigma\lambda)^2+\Sigma(1-\lambda_i^2)$

Variance Extracted (VE) = $\Sigma\lambda^2/ [\Sigma\lambda^2+\Sigma(1-\lambda_i^2)$

Fornell and Bookstein (1982) stated that if CR value is higher than 0.6, it means that construct reliability is good with high internal consistency. Fornell & Larcker (1981) stated that if VE value is higher than 0.5, then the scale has higher distinct validity.

For convergent validity, "If the factor loading are statistically significant, then convergent validity exists" (Dunn, Seaker, and Waller, 1994). "A reasonable benchmark value of substantial magnitude of the parameter estimate indicating convergent validity is 0.70" (Garver and Mentzer, 1999). Anderson and Berbing (1988) stated that if standardized factor loading of each item and all t-values are higher than the significant level (i.e., t-value > 2). It means that item scale had good convergent validity.

Table 2 shows that the CR values are higher than 0.6 and the effective learning system of VE value is higher than 0.5 and the employability of VE value is closer to 0.5, which it implied that the construct reliability is high internal consistency and the scale has fine distinct validity. The factor loading ranged from 0.50 to 0.95 and all t-

values are all higher than 2 indicating the item scale had good convergent validity.

Table 2 The reliability and validity of structural equation modeling (SEM)

Construct	Sub-construct	Factor Loading	t-value	CR	VE
Effective Learning Systems	1.Learning guidance 2.Active student participa tion 3.Learning environment	0.89[†] 0.50 0.61	a 4.37 5.55	71.61	47.14
Employability	4.General competency 5.Critical thinking compete ncy 6.Leadership	0.95[†] 0.92 0.70	a 13.76 7.70	90.36	64.15

Note. a. Parameter was set to 1. There was no significant test because it was not estimated.

  b. [†] represents referral indicator, ** $p<.01$.

Result

The Pearson's correlation is applied to analyze the relationship between effective learning system and employability. From Table3, the Pearson's correlation shows the positive relationship between employability and

effective learning systems ranged from 0.361 to 0.877 and were significant at the level of 0.01.

Table 3 The Pearson's correlations between effective learning system and employability

	1	2	3	4	5	6
Effective Learning Systems:	-					
1. Learning guidance	0.877**	-				
2. Active student participation	0.644**	0.658**	-			
3. Learning environment	0.783**	0.722**	0.637**	-		
	0.404**	0.339**	0.399**	0.471**	-	
Employability:	0.535**	0.545**	0.420**	0.522**	0.361**	
4. General competency	-					
5. Critical thinking competency						
6. Leadership						

For goodness fit of the model, the Chi-square value (X^2) for the model is 9.5 and non-significant (p=0.30). The X^2/df is 1.19, which is lower than the ratio of five (Marsch and Hocevar, 1985). The comparative fit index (CFI) (Bentler's, 1990), incremental fit index (IFI) (Bollen's 1989), the Tucker and Lewis (1973) fit index (NNFI), and goodness of fit index (GFI) (Jöreskoj and Sörbom, 1993) are 0.99, 0.99, 0.99, and 0.96, respectively.

A path analysis by LISREL 8.51 (Jöreskog & Sörbom, 1993) is used to test the causal relationship between employability and effective learning systems. There is significant direct effect (effect=0.91, t-value=7.94) between dependent variable (employability) and independent variable (effective learning system) in the path analysis with latent variables of structural models. There also exists significant indirect effect between effective learning system and general competency, critical thinking competency, and leadership. The learning guidance has the most explanatory power for the effective learning system, followed by learning environment and active student participation. For employability, general competency has the most explanatory power, followed by critical thinking competency and leadership.

Table 4 The path analysis with latent variables of measurement models

	Dependent Variable (Endogenous Observed Variables)	
	Learning Active student Learning guidance participation environment Effect t^b Effect t^b Effect t^b	Critical General thinking competency competency Leadership Effect t^b Effect t^b Effect t^b
Effective **Learning** **Systems** Direct effect Indirect effect Total effect	.89 a .50 4.37*** .61 5.55*** - - - - - - .89 a .50 4.37*** .61 5.55***	- - - - - - .87 7.94*** .83 7.59*** .64 5.85*** .87 7.94*** .83 7.59*** .64 5.85***
Employability Direct effect Indirect effect Total effect		.95 a .92 13.76*** .70 7.70*** - - - - - - .95 a .92 13.76*** .70 7.70***

Note. a. Parmeter was set to 1. There was no significant test because it was not estimated.

b. When t value > 1.96m * p<.05; >2.58, ** p<(0.01; >3.29, *** p<.001

Conclusion and Further Research

The Pearson's correlation shows positive relationship between employability and effective learning system, it indicates that there is positive mutual dependence between employability and effective learning systems. The indicators for goodness fit of the model, which include X^2, X^2/df, CFI, IFI, NNFI, and GFI, indicate a highly acceptable fit between the model and data. The results also found that there exist significant direct effect between effective learning systems and learning guidance, active student participation, and learning environment, as well as between employability and general competency, critical thinking competency, and leadership. Also, there exists indirect effect between

effective learning systems and general competency, critical thinking competency, and leadership. It implied that if the statistics teacher can appropriately apply learning guidance, learning environment, and active student to participate during the class, it would enhance the students' competencies for employability. Further study can adopt different subject of study to find different competency or apply different effective learning systems to strength the teacher effectiveness to improve students' competencies.

References

Anderson, J.C. and Gerbing, D.W. (1988), Structural equation modeling in practice: a review and recommended tw-step approach, Psychological Bulletin, 103, 411-423.

Bentler, P.M. (1990). Comparative fit index in structural models, Psychological Bulletin, 107(2), 238-246.

Bollen, K.A. (1989). A new incremental fix index for general structural equation models, Sociological Methods and Research, 17(3), 303-316.

Carey, J.O. & Gregory, V.L. (2003). Toward improving student learning: policy issues and design structures in course-level outcomes assessment, Assessment & Evaluation, 28(3), 215-227.

Christensen, C.R., Garvin, D.A., & Sweet, A. (1991). Education for judgment: the artistry of discussion leadership. Boston: Harvard Business School Press.

Council of Taiwan's Technological and Vocational Education. (2003, August 12, 13). Technological and Vocational Education, Ministry of Education. Retrieved October 12, 2003, from the World Wide Web: http://www.tvc.edu.tw

Dunn, S.C., Seaker, R.F., & Waller, M.A. (1994). Latent variables in business logistics research: scale development and validation, Journal of Business Logistics, 15(2), 145-172.

Fornell, C. and Bookstein, F.L. (1982). Two structural equation models: LISREL and PLS applied to consumer exit-voice theory, Journal of Marketing Research, 19(4), 440-453.

Fornell, C. and Larcker, D.F. (1981). Structural equation models with unobservable variable and measurement error: algebra and statistics, Journal of Marketing Research, 18(3), 382-388.

Garver, M.S. and Mentzer, J.T. (1999). Logistics research methods: employing structural equation modeling to test for construct validity, Journal of Business Logistics, 20(1), 33-57.

Harvey, L. (2001). Defining and measuring employability, *Quality in Higher Education*, 7(2), 97-109.

Jöreskog, K.G. & Söbom, K. (1993). LISREL 8:analysis of linear structural relationships by maximum likelihood, instrument variables and least squares methods, 8th ed., Scientific Software, Morresville, IN.

Lengnick-Hall, C.A. & Sanders, M.M. (1997). Designing effective learning systems for management education: student roles, requisite variety, and practicing what we teach, Academy of Management Journal, 40 (6), 1334-1368.

Mayer, E. (Chair of Committee), 1992. The Key competencies: Report to the Austrian Education Council and the Ministers for Vocational Education, Employment and Training (Melbourne, Australian Education Council).

Tucker, L.R. and Lewis, C. (1973). The reliability coefficient for maximum likelihood factor analysis, Psychometrika, 38(1), 1-10.

Warn, J. & Tranter, P. (2001). Measuring quality in higher education: a competency approach, Quality in Higher Education, 7(3), 191-198.