

A study on constructing entrepreneurial competence indicators for business department students of vocational and technical colleges in Taiwan

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ABSTRACT: The main purpose of this study was to establish appropriate entrepreneurial competence indicators for business department students of vocational and technical colleges in Taiwan. This study used job competence models, the Delphic technique and expert interviews to develop competence indicators and achieve consistency of indicators. The Kolmogorov-Smirnov One Sample Goodness of Fit Test was used to validate whether the experts' opinions were consistent. It was found that the entrepreneurial competences for business of business major include a total of 10 major competences and 33 minor competences. This study also proposed suggestions for school curriculum development.

INTRODUCTION

Entrepreneurship education is the education that develops and increases students' basic competency for starting an enterprise. The teaching objective of entrepreneur education is to increase the students' entrepreneurial competences and entrepreneurial spirit. It further cultivates their attitude towards active employment based on the interactions of *competence in operating actions*, *competence in taking actions*, *competence in taking continuous action* and *competence in stimulating actions* [1-4]. Research has shown that individuals with entrepreneurial qualities have an active, flexible and adaptive attitude towards changes in the learning environment, and view environmental change as an opportunity for normal growth. They have sufficient competence to propose innovative thinking and putting it into practice [4-6].

Developed countries such as the USA, the UK, European countries, Australia and Canada are aggressively promoting entrepreneurship education, in order to reduce the gap between students' understanding and implementation through the teaching of entrepreneurship theories and the practice of learning content [6-8]. In EU countries, 200,000, or approximately 15% of high school students have established a total of 82 mini-companies, which are also known as student companies [5-9]. In the USA, many entrepreneurial organisations have been established for young people aged 14 to 25. There are more than 4,500 high schools and 200 vocational schools implementing entrepreneurship education by integrating student, teacher and administrative organisations. Since 1987, the National Foundation for Teaching Entrepreneurship (NFTE) has promoted the project of entrepreneurship education in 13 countries and 28 states, and has cultivated 4,200 teachers with a certificate of entrepreneurship education and helped produce 150,000 graduates [7-11]. In Taiwan, the Council for Economic Planning and Development has promoted the *2015 Economic Development Project - First Phase (3 Years) Plan for Development of Industrial Manpower*, which aims to integrate and strengthen the measures for providing the techniques/expertise and R&D talents needed for industrial development. The plan also cooperated with the Asia-Pacific Entrepreneurship Centre to facilitate the entrepreneurship trend and to promote economic growth and development [12].

The cultivation and training of technical manpower in Taiwan mainly relies on vocational high schools in the vocational and technical education system. In response to the need for technical manpower, the development of vocational and technical education must closely correspond to the needs of industry and commerce. Most business department graduates obtain employment in industry, commerce and service industries, accounting for 25.78% of the total business-related department graduates [5]. In order to improve the high unemployment rate after graduation, it is important to help graduates from the vocational and technical education system in Taiwan to meet the needs of job market better. The National Youth Commission, Executive Yuan, suggested that in addition to developing the curriculum to increase employability, it is also important to develop indicators for entrepreneurial competence education. Hence, entrepreneurship education is important for economic development in Taiwan. Numerous studies have indicated that

entrepreneurship courses can help them to develop their analytic competence, organisational competence, judgment competence, communication competence and teamwork competence. These competences are the weak points of current vocational and technical school students, and need to be addressed [3][4][11]. Some countries put emphasis on entrepreneurship education at the secondary school level [12][13]. However, courses for the cultivation of entrepreneurial competences in Taiwan are mainly provided in college rather than high school. As graduates of vocational and technical colleges share similar employment competences with high school graduates, it is a challenge to develop competence indicators for business department students when future curriculum emphasis is put on professional subjects. If competence indicators and curriculum content can be established effectively, it will help to improve students' employability and performance [5][11][14][15].

Entrepreneurship education has been implemented in the USA for many years, and has been regarded as an effective measure to solve the unemployment problem in society, as well as setting new trends in the development of vocational education. Entrepreneurship education can be an approach to solving the increasing unemployment rate and reducing the huge gap between students' learning and practice. If the entrepreneurial competence indicators used in business education in the USA can be provided effectively for use as a reference point for the development of entrepreneurship courses in Taiwan, it could help to solve the unemployment problem in Taiwan and develop entrepreneurship education.

Based on the research motivations above, the purposes in this study are:

1. To identify the major and minor competences of the entrepreneurial competences for business departments at vocational and technical colleges.
2. To propose the core curriculum contents of entrepreneurial competences for business departments at vocational and technical colleges.

METHODS AND IMPLEMENTATION

Research Method

1. Job competence model: Based on the theoretical *job competence model* proposed by Mansfield and Mitchell [16], this study used *work roles* to define personal competence. The *workplace competences*, which are expected to be possessed by workers and are commonly agreed, were used as the indicators for the establishment of entrepreneurial competences. The competence indicator categories established in this study based on the *job competence model* included a total of 10 major competences and 33 minor competences.
2. Delphi technique: In order to avoid having a few experts affecting the thinking of other participants, and to have a preliminary understanding of the entrepreneurial competences of business department students, the competence indicator categories were sent to a panel of experts to verify the necessity of these competences and collect feedbacks for revisions.
3. Expert panel: The participants held a panel discussion to review the entrepreneurial competences for business department students, and analysed each competence in the competence indicator categories. The competence indicators established based on the *Delphi technique* and the *expert panel* in this study included a total of 10 major competences and 33 minor competences.

Research Participants

The participants in the Delphi technique and expert panel were experts in accounting, international trade, information and business administration fields. Three representatives from business departments of vocational and technical colleges, colleges and universities, and industry were chosen, respectively. A total of 36 research samples were selected. The principles for sample selection were: 1) those who had attended an initial meeting of the job competence model in this study, and were willing to become participants; 2) those who had engaged in professional work for more than five years; and 3) those who could attend at least two group meetings, each lasting at least two hours.

Data Analysis

To achieve the research purposes, statistical methods, including frequency distribution and Kolmogorov-Smirnov One Sample Goodness of Fit Test, were employed to understand whether the participants shared consistent opinions. The statistical significant level of this study was 0.05.

RESULTS AND DISCUSSION

Major Competences of the Entrepreneurial Competences for Business Department Students

As shown in Table 1, the entrepreneurial competences for business department students include 10 major competences. The major competences for business department students include: entrepreneurial spirit and entrepreneurship competencies, marketing competence, business and economy competence, financial competence, accounting affairs competence, management competence, globalisation competence, business law competence,

enterprise resource planning competence, and information technology competence. The integrative competence indicators established in this study reveal the technical aspect of entrepreneurial competences and integrated attitude with the competence indicators, which is particularly helpful for cultivating an aggressive attitude towards employment [17][18].

Minor Competences of the Entrepreneurial Competences for Business Department Students

As shown in Table 1, the entrepreneurial competences for business department students include 33 minor competences: entrepreneur qualities, entrepreneur's business role, identifying and seeking opportunities, problem identification and solving, identifying the market, entering the market, maintaining the market, identifying the characteristics of a market economy, roles of profit and risk, the role of government, determining the demand for cash, identifying the resources and categories of funds, financial reporting, identifying the types of business records, establishing and using business records, explaining business records, establishing the vision, recruiting employees, establishing teams, monitoring results, crisis management, trade opportunities, global trends, applying foreign languages, types of enterprise ownership, government regulations, enterprise ethics, project participation competence, mission planning competence, information technology fundamental competence, competence in applying information technology, competence in supporting management, and competence in applying Internet commerce. In response to the development of new technologies, the application of information technology, the maintenance of intellectual property rights, globalisation and entrepreneurial awareness are becoming increasingly important [5][19]. This study differed from past studies on the core competence indicators for business department students by attaching importance to team learning and problem-solving [20]. Besides considering students' needs for further education and employment, the entrepreneurial competence indicators established in this study also intend to assist them in adapting to changes in the social environment and endow them with the *competence in obtaining knowledge* to facilitate the choice and development of their future career.

Table 1: Summary of the entrepreneurial competence indicators for business department students.

Major competences	Minor competences	K-S One Sample Goodness of Fit Test Z value
A1 Entrepreneurial spirit and entrepreneurial competencies	A1-1. Entrepreneur qualities	2.27*
	A1-2. Entrepreneur's business role	1.98*
	A1-3. Identifying and seeking opportunities	2.23*
	A1-4. Problem identification and solving	1.59*
A2 Marketing competence	A2-1. Identifying the market	1.64*
	A2-2. Entering the market	1.60*
	A2-3. Maintaining and increasing the market	1.81*
A3 Economic competence	A3-1. Identifying the characteristics of a market economy	1.90*
	A3-2. Roles of profit and risk	1.62*
	A3-3. Role of government	1.61*
A4 Financial competence	A4-1. Determining the demand for cash	1.93*
	A4-2. Identifying the resources and categories of funds	1.39*
	A4-3. Explaining financial reports	1.80*
A5 Accounting competence	A5-1. Identifying the types of business records	1.88*
	A5-2. Establishing and using business records	1.49*
	A5-3. Explaining business records	1.57*
A6 Management competence	A6-1. Establishing the vision	1.52*
	A6-2. Recruiting employees	1.45*
	A6-3. Establishing teams	1.99*
	A6-4. Monitoring results	1.65*
	A6-5. Crisis management	1.66*
A7 Globalisation competence	A7-1. Trade opportunities	1.60*
	A7-2. Global trends	1.68*
	A7-3. Applying foreign languages	1.60*
A8 Law competence	A8-1. Types of enterprise ownership	1.99*
	A8-2. Government regulations	1.67*
	A8-3. Enterprise ethics	2.27*
A9 Enterprise resource planning competence	A9-1. Project participation competence	1.99*
	A9-2. Mission planning competence	2.25*
A10 Information technology competence	A10-1. Information technology fundamental competence	1.99*
	A10-2. Competence in applying information technology	1.45*
	A10-3. Competence in supporting management	1.43*
	A10-4. Competence in applying Internet commerce	1.64*

Cultivation Objectives and Curriculum Contents of the Entrepreneurial Competences for Business Department Students

The findings indicate that the objective of the cultivation of business department students is to cultivate the basic technical manpower needed in the commerce and service industries, to lay a foundation for learning the knowledge and skill of business management, to cultivate professional ethics and the spirit of service, and to cultivate the ability to adapt to transformations of the environment and industry.

The courses developed according to the competence indicators for business department students are shown in Table 2, including: 1) *general economics* developed according to the business and economy competence and globalisation competence indicators; 2) *introduction to business* developed according to the entrepreneurial spirit and entrepreneurial competence, enterprise planning competence, management competence, marketing competence and business law competence indicators; 3) *introduction to accounting* developed according to the accounting affairs competence and financial competence indicators; 4) *introduction to computer science* developed according to the information technology competence indicator. Besides putting emphasis on basic intelligence, such as attaching importance to teamwork, customer-facing, communication skills, problem-solving and basic computer skills; the education of business department students must also attach importance to attitudes that affect employability, such as professional ethics and spirit of service, as well as the cultivation of the competence in adapting to transformations of the environment and industry [5][17][18][21].

Table 2: Recommended courses for the professional courses of business departments.

Entrepreneurial competence indicators	Recommended subjects	Credits
1. Business and economy competence, globalisation competence	1. General economics	6-8
2. Entrepreneurial spirit and entrepreneurial competencies, enterprise resource planning competence, management competence, marketing competence, business law competence	2. Introduction to business	6-8
3. Accounting affairs competence, financial competence	3. Introduction to accounting	6-8
4. Information technology competence	4. Introduction to computer science (advanced)	6-8

CONCLUSIONS AND RECOMMENDATIONS

The entrepreneurial competence indicators for business department students include a total of 10 major competences, which are entrepreneurial spirit and entrepreneurial competencies, marketing competence, business and economy competence, financial competence, accounting affairs competence, management competence, globalisation competence, business law competence, enterprise resource planning competent and information technology competence. They can be provided as a reference to the planning and revision of core courses for business departments at vocational and technical colleges. Under future studies, task analyses to establish the expertise and relevant knowledge and assignments required for each competence as references to the development of teaching materials, may be conducted.

The entrepreneurial competence indicators for business department students include a total of 33 minor competences, and the results of this study can serve as a basis for teachers to integrate entrepreneurial education with teaching activities in order to develop the students' entrepreneurial competence. Teachers may integrate the entrepreneurial competences with the teaching materials for formal courses such as professional subjects, or potential courses such as extracurricular activities, club services, school competitions and skill tests based on the minor competences of entrepreneurial competences. In order to cultivate entrepreneurial competences effectively, the following activities can be included in teaching activities: 1) offer a simulated work practice environment, which enables the students to verify academic theories; 2) integrate the actual status of enterprise activities into their studies; and 3) design entrepreneurial project-centred teaching courses, and include teaching methods such as case studies, literature review, entrepreneurs' speeches and BP practice.

The core courses developed according to the entrepreneurial competence indicators for business department students include four subjects, which are economics, introduction to business, introduction to accounting and introduction to computer science (advanced). This study was based on the analysis conducted on the job competence model, as well as an expert survey and interviews to discern their opinions, in order to integrate the entrepreneurial competences into the core courses for business departments. In addition to the basic professional competences, the development of future curriculum content for cultivating entrepreneurial competences must focus on operational details such as planning, management and service. The two major competences for students' future employment and entrepreneurship are the competence in career transition and the competence in autonomy and entrepreneurship. Therefore, business departments of vocational and technical colleges should develop the fundamental courses, core courses and integrative practice courses concerning entrepreneurship based on the entrepreneurial competence indicators, in order to cultivate an aggressive attitude towards employment and entrepreneurial competences.

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REFERENCES

1. Zhang, X.H., Chinese entrepreneurs' study patterns based on schools and the educational system. *Inter. Forum of Teaching and Studies*, 3, 1, 55-60 (2007).
2. McGee, J.E., Peterson, M., Mueller, S.L. and Sequeira, J.M., Entrepreneurial self-efficacy: Refining the measure. *Entrepreneurship Theory and Practice*, 965-988 (2009).
3. Jones, B. and Iredale, N., Developing an entrepreneurial life skills summer school. Innovations in education and teaching international. *Innovations in Educ. and Teaching Inter.*, 43, 3, 233-244 (2006).
4. Heinonen, J. and Poikkijoki, S.A., An entrepreneurial-directed approach to entrepreneurship education: mission impossible? *J. of Management Development*, 25, 1, 80-94 (2006).
5. Chou, C.M., Shen, C.H. and Lee, Y.J., A study on enterprises' employment terms and competencies for technological and vocational school graduates in Taiwan. *World Transactions on Engng. and Technol. Educ.*, 6, 2, 301-308 (2007).
6. Junior Achievement Yong Enterprise, *Enterprise 2010 the next generation*. 19 August 2010, http://www.juniorachievement.ie/pdf/enterprise_2010_the_next_generation_2005.pdf
7. Kauffman the Foundation of Entrepreneurship, Entrepreneurship in American Higher Educ. A report from the Kauffman panel on entrepreneurship curriculum in higher education. 19 August 2010, <http://www.scribd.com/doc/13584686>
8. Matlay, H., Entrepreneurship education in UK business schools: Conceptual, contextual and policy considerations. *J. of Small Business and Enterprise Development*, 12, 4, 627-643 (2005).
9. Watt, D., Enterprise Education in Secondary Schools: Scottish Enterprise Young Enterprise Scotland. National Centre: Education for Work and Enterprise (2007).
10. Business Wire, New York city council expands NFTE youth entrepreneurship education program in city schools. Business Wire, New York (2006).
11. Finkle, T.A., Kuratko, D.F. and Goldsby, M.G., An examination of entrepreneurship centers in the United States: a national survey. *J. of Small Business Management*, 44, 2, 184-206 (2006).
12. Council for Economic Planning and Development, 2015 Economic Development Project - First Phase (3 Years) Plan for Development of Industrial Manpower, 18 August 2010, <http://www.cepd.gov.tw/ml.aspx?sNo=0000453>
13. St-Jean, E. and Audet, J., The role of mentoring in the learning development of the novice entrepreneur. *Inter. Entrepreneurship and Management J.*, 21 December 2009, <http://www.springerlink.com/content/a6n7r83420252251>
14. Zhang, X.H., Chinese entrepreneurs' study patterns based on schools and the educational system. *Inter. Forum of Teaching and Studies*, 3, 1, 55-60 (2007).
15. Chou, C.M., Shen, C.H., Lee, Y.J. and Hsiao, H.C., The e-commerce entrepreneur' professional knowledge in the service industry. *Proc. 2009 IEEE 16th Inter. Conf. on Industrial Engng. and Engng. Management*, Beijing, China, 21-23 (2009).
16. Mansfield, B. and Mitchell, L., *Towards a Competent Workforce*. Gower: Aldershot (1996).
17. Berman, J. and Ritchie, L., Competencies of undergraduate business students. *J. of Educ. for Business*, 81, 4, 205-209 (2006).
18. Levenburg, N.M., Lane, P.M. and Schwarz, T.V., Interdisciplinary dimensions in entrepreneurship. *J. of Educ. for Business*, 81, 5, 275-281 (2006).
19. Shinnar, R., Pruett, M. and Toney, B., Entrepreneurship education: attitudes across campus. *J. of Educ. for Business*, January, February, 151-158 (2009).
20. Hua, Z.X., Chinese entrepreneurs' study patterns based on schools and the educational style. *Inter. Forum of Teaching and Studies*, 3, 1, 55-60 (2009).
21. Smith, R.M. and Schumacher, P., Academic attributes of college freshmen that lead to success in actuarial studies in a business college. *J. of Education for Business*, 81, 5, 256-260 (2006).