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A Study of the Influence of Career Counseling Perception on the Employment Competencies of Design Students in Central Taiwan

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Abstract: In recent years, many advanced countries have been outsourcing their lower-skilled jobs to other countries for manufacturing. As a result, employment opportunity has been declining for younger generations in advanced countries. Moreover, the extensive application of production technologies also leads to the replacement of labors by automatic machines. The employment opportunity of young adults has also gradually been deprived. It has become more difficult for students to make a career decision during college. After graduation, students also encounter the difficult choice of getting a job or going to graduate school. Therefore, career counseling for a student is critical to his/her career development. It is required to assist students in developing a correct career concept so that they can make an appropriate choice for their career. College students who are studying in design-related departments in central Taiwan were selected as the research target in this study. A total of 460 questionnaire copies were dispatched and 378 valid questionnaire copies were returned with a rate of response of 82%. The result of this research is threefold, as follows. 1. Career counseling has a significant positive influence on the vocational self-concept. 2. Vocational self-concept has a significantly positive influence on the employment competencies. 3. Career counseling has a significantly positive influence on employment competencies. We proposed recommendations based on the results of the investigation and analysis. It is expected that, the result can help schools provide appropriate and proper career counseling in order to assist and guide students into making proper career choices.

Keywords: career counseling; employment competencies; counseling perception; higher education

1. Introduction

In the 21st century, the connection between people is getting closer. The distance between two countries is just like that between two villages in early days. With the advances in information technologies, the concept of global villages has evolved into interactions between countries due to modern globalization. The globalization phenomenon can be investigated from the cultural, systematic, political, and economic aspects. In general, the critical index of the degree of globalization can be observed from the enhancement of a country's homogeneity or heterogeneity. In other words, it can be observed from the fact whether a country moves toward a normalized state or develops toward a unique direction. From an extreme point of view, the phenomenon of cultural globalization is viewed as the expansion of cultural homogeneity. After the 2008 economic crisis, the economic prosperity gradually recovered while the unemployment rate did not improve to a significant extent. Among different age brackets, the unemployment rate of young adults was the highest. One of the reasons is the national policy of some countries such as Greece and Italy, which outsourced a large number of their lower-skilled jobs to other countries. This type of policy greatly reduced the employment

opportunity of young adults in each country. Moreover, the extensive application of production technology also gradually deprived young adults of their employment opportunity as labors were replaced by automatic machines.

Since 2007, the Taiwan government has promoted cultural and creative industries. More and more design-related departments were set up in different colleges and the number of students continues to grow. With industrial transformation and the cultural and creative trend, more students are studying in design-related departments. Those who study design in vocational high schools continue their studies in design-related departments in college. Other students who did not study design also switch over to design-related departments. However, if those students have no idea of their future living quality, financial burden, capacity demand or income after they studied design, they might make a wrong decision to study in a popular, but not suitable department. This will be a waste of money and time and will make the value of design talents depreciated [1].

The total number of students in design-related departments in Taiwan had reached 68,000 in 2018 and this means there are 40,000 more students than a decade ago. A growing number of students did not consider whether they suit this industry, but simply chose to study in design-related departments due to the trend. The supply is more than the demand and the quality of the graduate students in design-related departments is unevenly matched [2].

Facing diversified points of view, in society and the complicated knowledge across different territories, it is difficult for a design student to make his/her career decision. As a student will encounter the choice of getting a job or going to graduate school upon graduation, the career counseling during school is critical to his/her career development. Therefore, the career counseling for a student should be a joint effort between a student's family, school, and society. All stakeholders should assist the student in developing the correct concept in order to make an appropriate career decision. Although various schools already provided students with career exploration activities and career planning courses, one of the important topics for schools is to help students know themselves at the correct timing and provide students with the information that helps them make the decision of getting a job or going to graduate school. It is also required to coach students and carry out consultation activities in order to provide vocational high school students with substantial helps. However, the adverse factors such as the insufficiency of school counselors, the increase in students' problems, and the change in family structure all affect a school's capability of providing adequate and proper career counseling. It also requires further investigation on the optimal approach of assisting and guiding students to make the proper career decision. Therefore, the purpose of this study is to increase the career counseling perception on the employment competencies of design students in central Taiwan. In addition, we also proposed a practical approach to enhance the perception effect of career counseling.

2. Literature Review and Assumptions

The career counseling for college students is urgent, as this is a stage of critical transition for future career development. It also requires professionals with diversified experiences so that the career counseling at school can help students determine their future career direction. An adequate career planning can help students realize their own career goals. This study is to determine college students' demands of career counseling in order to assist them in determining the optimal career development.

From the aspect of vocational self-concept, people are affected by the interaction of environment, personal factors, and individual behaviors when they make career decisions. The vocational self-concept can help people monitor their career cognitive development and the development of career behaviors. A college student encounters important transition and it is the stage for critical decisions. If a student can get assistance from his/her school on an adequate vocational self-concept, the future career development will benefit from this. In this study, the vocational self-concept is defined as the self-assessment of personal career capability. This assessment comes from the sense of self due to the accumulated career experience and the observation of the surrounding environment. Therefore,

the vocational self-concept is related to the confidence of resolving problems when encountering career problems.

Moreover, more and more countries have included the employment competencies of college students into the indicators of national policy on young people. In recent years, more governments emphasize on students' effect of learning in school and one of the important indicators is the employment competencies of students. The definition of employment competencies is the knowledge, skills, and attitude that is required for a person to continue the self-realization and to bring up his/her potentials to contribute to the industry.

2.1. Higher Education Development Trend and Current Employment Competencies in Taiwan

The Taiwan government has been actively scaling up its higher education for the last two decades. The education system has evolved from elitism education to popularization education. Although the overall civic literacy keeps enhancing, problems such as value deviation, divide in learning and application, and the decrease in creativity have emerged. However, as crisis also leads to opportunity, the government needs to squarely face the adjustment of the higher education policy on vitality, employment competencies, and creativity under the limited amount of resource. Lin and Lin [3] proposed that Taiwan should keep strengthening the current employability policy. Rufai et al. [2] proposed a sustainable model of the employability of students after graduating from higher education. Their model highlighted the continuous enhancement of the teachers, expenditure, and equipment that were required for the integration of the higher education. The directions include strengthening the humanism literacy of higher education students, enhancing students' implementation capability by encouraging them to participate in international skill competitions, enhancing their capability of applying artificial intelligence (AI) and information technology, and the integration of higher education with the industry and certificates.

In 1994, the education reform task force announced their resort of increasing the number of high schools and colleges, which initiated the expansion of higher education in Taiwan. The Taiwan government has since promoted the popularization of higher education policy. Colleges were promoted, reorganized or newly built so that the number of colleges in Taiwan increased abruptly. As shown in Table 1, the number of colleges in Taiwan increased from 83 in 1994 to 157 in 2017 and this was an 89% increase. Moreover, the number of college students increased from 720,180 in 1994 to 1,273,894 in 2017 and this was a 77% increase. During that period, the peak occurred in 2009 when the number reached 164 colleges and a historical high of 1,355,290 college students. The most substantial change was the increase of universities from 23 in 1994 to 129 in 2017 with an increase of 561%. The total number of university students also increased from 242,184 in 1994 to 1,193,229 in 2017. This abrupt increase in the number of universities contributed to the transition from elitism education to popularization education. However, it also resulted in the unbalanced quality of universities, uneven distribution of university resources, reduced admission threshold, and insufficient manpower for the fundamental techniques.

Table 1. Comparison of the number of colleges and the number of students in 1994 and 2017.

Year	Number of Colleges			Number of College Students			Total	
	University	Independent College	Junior College	University	Independent College	Junior College	Count	Student Count
1994	23	35	72	242,184	107,624	370,372	83	720,180
2017	129	15	13	1,193,229	29,515	51,150	157	1,273,894

For the last two decades, the total number of graduate students in Taiwan increased from 196,384 in 1997 to 336,865 in 2005. This number has remained flat since 2006 to 304,649 in 2017. However, the unemployment rate of the age bracket of 20–24 years old was higher than the average of other age brackets in 2017. The gap of these two numbers presented a gradual increase since 2000. For example,

the gap between the unemployment rate of 20–24 years old and the average of other age brackets was 3.9% in 2000 and this gap increased to 8.6% in 2017, as shown in Figure 1 [4].

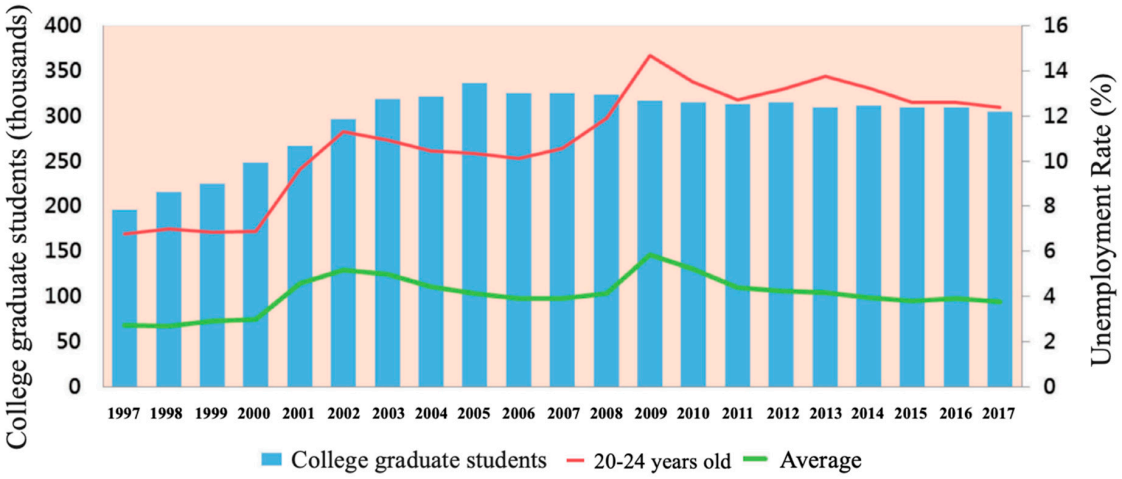

Figure 1. Unemployment rate of graduate students and young adults in the Age of 20–24 years old.

2.2. Career Planning

Forrier el al. [5] proposed that career counseling deals with a series of coaching plans, which allows an individual to explore oneself and to achieve the result of self-understanding via the guidance and assistance of professional counselors. In order to fulfill the individual role in the society, the relevant self-image and the role in the workplace should be integrated. The process of transforming the challenges in the real world into real facts in order to assist an individual in his/her development is called career counseling [6]. Sangganjanavanich & Magnuson [7] also proposed that career counseling highlights the lifelong career development of an individual who can understand his/her responsibility for the future and what that means for him/her via the life experiences and events in the past, the social role he/she plays, and the follow-up consequences. A person can plan infinite possibilities for future development and endeavor to fulfill those based on the past and current experiences. Klehe et al. [8] proposed that career counseling integrates counselors with professional knowledge and systematic plans in order to facilitate students' career development. During the plans, it was required to integrate the theories and techniques of different subjects with counseling measures and strategy in order to help students understand: themselves, the educational environment, the workplace, and career strategy. Students should be capable of selecting the appropriate life style in order to enhance the happiness of their personal life. Bullock-Yowell et al. [9] defined career counseling as a human-to-human service. During the career counseling process, it was required to carry out various learning activities for self-exploration in order to make the most appropriate decision on various selection items. During the process, it was required to highlight the different psychological needs of each individual so that one can bring personal capability into full play. The goal was to seek for the most suitable development in order to achieve the adaptive development of right person in the right place. Ng & Feldman [10] defined career counseling as a systematic scheme that was hosted by counselors, and it was an important constituent element of the career education. It was mainly for facilitating personal career development and management and for promoting personal self-orientation, which integrates various aspects including family, school, and community. Moreover, this scheme is also for assisting people in self-understanding so that they can cultivate the skill of mastering the opportunities in the workplace, learn and develop the required personal decision-making capability, so that a person can accommodate to the appropriate vocation.

The study by Michaeli, Dickson & Shulman [11] indicated that, the support that an adult can perceive during the earlier stage of career development comes from his/her parents and other important

and influential people. Parents provide their support from the emotional and professional aspects while other influential people provide professional support.

Based on the contents of career counseling, the investigation in this study can be divided into three parts including self-awareness, discussion of future career direction (including the counseling of going to graduate school or getting a job), and career planning. (1) Self-awareness includes assisting students in knowing the environment, exploring oneself, understanding one's capability, orientation, and interest so that one can behave toward the expectation for his/her role. (2) Discussion of future career direction deals with assisting students in knowing and collecting information that is related to going to graduate school or getting a job. A student is invited to take counseling from experts or senior schoolmates or to participate in experiencing activities in order to get familiar with the learning environment or the workplace. (3) The main content of career planning is to cultivate students' capability of making career decision so that they can clarify the direction of their career development and get themselves well prepared.

2.3. Vocational Self-Concept

Gouse [12] proposed that the vocational self-concept of an individual is not generated inherently. Instead, it is transformed gradually from the self-concept. The vocational self-concept can be viewed as part of the self-concept since it belongs to a consistent development. Meanwhile, the process of transforming self-concept into vocational self-concept is very important for a person's career development. The vocational self-concept deals with the consideration of relevant personality traits that are required for a vocation when a person is selecting a vocation. During the course of individual career development, a person perceived the vocation-related self attributes which include personal orientation, capability, interest, and values [13]. Verbruggen [14] proposed that vocational self-concept determined the lifelong career decision for a person and promoted the person to fulfill vocational self-concept during career development. The fulfillment can be accomplished in the most effective way. It is known from this that the vocational self-concept is a self-concept system that is composed of the vocation-related self-attributes that were perceived by an individual. Yeager et al. [15] proposed that the individual characteristics that were presented by the vocational self-concept originated from the individual's degree of participation in the preferred job. Christensen et al. [16] proposed that during the process of individual career development, the combined vocation-related self-attributes are the meaning of the vocational self-concept. It is basically to understand a person's vocational interest, capability, value, and understanding of the vocation. After an individual had determined his/her vocation, the definition of vocational self-concept deals with the personal orientation, interest, capability, and personality traits that were highlighted [17]. Therefore, vocational self-concept deals with the further understanding of personal orientation, interest, capability, and values so that one can have a better understanding of his/her job and vocation and can select a vocation based on his/her recognition of the vocation [18]. Dumulescu et al. [19] proposed that the core of the vocational self-concept deals with an individual's orientation of vocational values. One can clarify the correlation between a vocation and one's own capability via the vocational self-concept and can carry out a series of reflections and learning during the process of career development. The combined self-concept that was rectified and adjusted via an individual's reflections and learning and the change in the vocational environment and the interactions [20].

Based on the study by Chan et al. [21], among the vocation-related self-attributes that are perceived by an individual in the self-concept system, the most influential constituent elements on the vocational selections are respectively clarity and certainty. From the aspect of overall self-concept, the most important constituent element is structure. Clarity indicates the degree of accuracy of the own attributes that an individual perceives or is aware of. A higher degree of clarity indicates that an individual can perceive his/her own attributes in a better way and therefore he/she clearly understands his/her own attributes. Clarity is the most essential dimension. Therefore, if a person is not clear about his/her own attributes, he/she will not be able to determine other dimensions. On the other hand, certainty

deals with a person's degree of confirmation and confidence on the unique attributes that he/she owns. An individual's degree of certainty affects his/her career selection and the decision-making capability. A higher degree of confidence on personal characteristics indicates a higher capability of confirming one's own direction of development. Structure indicates that the difference between various attributes among the self-concept or the correlation and interactions.

2.4. Employment Competencies

Chudzikowski [22] proposed that employment competencies indicated the capability of acquiring a job and continuing to accomplish it. Therefore, the definition of employment competencies is to acquire, finish, and develop a job, which keeps a good attitude through a person's learning course. In other words, Harvey et al. [23] also agreed with the argument that employment competencies deal with the self-sustained capability of realizing one's potential in the labor market by sustainable employment. Moreover, De Guzman & Choi [24] also proposed that employment competencies indicated the workplace capability of acquiring and maintaining an individual's ambition. However, employment competencies guarantee no employment but only indicated an individual's employment potential [25]. Brown et al. [26] proposed that employment competencies should be defined as the highlight on the long-term career development in the professional territory and the definition also includes the cultivation of the workplace capability of shifting to other professional territories. Therefore, the highlight should not be confined to the employment of graduate students but on the contrary, should be on the competitiveness of graduate students. Even if what a student learned in school had approached saturation in the labor market or workplace, a spill-over benefit still allows the student to gain the capability of shifting to other professional territory for employment and the development of future career vision. Once an individual's employment potential is triggered, a social environment that allows full employment can be created. Merino-Tejedor et al. [27] also proposed that in addition to the job capability that is required on the workplace, the highlight should be on the profession technical capability, work attitude, interpersonal relationship, and addressing capability that are required for a job. Haidarabadi [28] proposed that employment competencies involve a series of skills, knowledge, and personal attitude for a person to maintain his/her job and achieve success on the selected vocation. It also deals with the expectation that a person can benefit the team, society, economy, and him/herself. Chan & Mai [29] proposed that for a person, employment competencies can be used as an index for assessing survival capability, competitiveness, and the capability of sustainable development. It is a vocation-related capability and the capability of adaptability and flexibility.

According to Fiori et al. [30], the constituent elements of employment competencies are as follows. (1) Characteristics and attitude: The characteristics that include good work attitude and cohesive collaboration. (2) Knowledge and skills: The average capability of listening reading, and writing and the specific professional knowledge and skills which are required for a vocation. (3) Career planning knowledge: The career planning and expectations before seeking for a job and this includes industrial environment, government policy, personal vision, etc.

2.5. Career Counseling and Vocational Self-Concept

The career counseling at school is intended to guide students in shaping up correct vocational self-concept, so that they can achieve the target of vocational education and develop properly with the right person in the right place. The results of earlier studies indicated that career counseling presents significant positive influence on a student's vocational self-concept [31]. The study by Chen & Li [32] also indicated the positive correlation between the vocational self-concept and career development for vocational high school students on cooperative education. Other related studies also indicated that the vocational self-concept is positively correlated to vocational career development, career decision-making, and career maturity with a prediction effect [6]. The study by Ng & Feldman [10] also indicated the significant effect of livelihood development course on vocational self-concept. Therefore, the following hypothesis was proposed in this study.

Hypothesis 1 (H1). *Career counseling has a significantly positive influence on vocational self-concept.*

2.6. Vocational Self-Concept and Employment Competencies

Yeager et al. [15] proposed that understanding personality traits and vocational information is helpful for shaping up the vocational self-concept. In other word, a vocational self-concept is more helpful for cultivating employment competencies if it is more concrete and clearer. Christensen et al. [16] proposed that vocational self-concept has a significant influence on employment competencies and shaping up a positive vocational self-concept is beneficial for enhancing employment competencies. This result is the same as those findings by Chan et al., [21], Dumulescu et al. [19], Verbruggen [14], Gouse [12], and Uy et al. [18]. As a result, another hypothesis was proposed in this study, as follows.

Hypothesis 2 (H2). *Vocational self-concept has a significantly positive influence on employment competencies.*

2.7. Career Counseling and Employment Competencies

Merino-Tejedor et al. [27] proposed that the influencing factors of career counseling on employment competencies are personal factors, which include personal interest, orientation, career, and vocational career planning. Other factors include the factors inside school such as school planning, curriculum planning of departments and the implementation, career and vocational counseling. The factors outside school include evaluation by the industry, industrial dynamics and requirements, and socio-economic conditions. The ultimate goal of vocational career counseling is to enhance employment competencies and reduce the rate of unemployment and those between jobs. The purpose is to allow people to get familiar with industrial environment and requirements so that they are prepared for entering the workplace without adverse factors such as mismatching orientation or interests or unanticipated career outlook. The investigation by Chudzikowski [22] indicated that, a student's idea of his/her career planning should be established in stages during school and this includes vocational orientation test and learning maps. On the other hand, the career counseling and planning require the joint cooperation between departments in the school for comprehensive assistance. Moreover, the study by Chan & Mai [29] indicated that employment competencies correlate to career development. The vocational counseling needs also affect a student's employment competencies [20]. Briefly speaking, the implementation of career counseling is to assist a person in his/her career development. As a result, a student's employment competencies to enter the job market could be enhanced by fulfilling career counseling and by accomplishing the student's career development. Therefore, another hypothesis was proposed in this study as follows.

Hypothesis 3 (H3). *Career counseling has a significantly positive influence on employment competencies.*

The overall research framework of this study is shown in Figure 2.

2.8. Linear Structural Relation (LISREL) Model

The LISREL model is a structural equation modeling (SEM) analysis that was developed by Jöreskog and Sorbom [33] in 1993. The purpose of this model was to investigate the correlation between multiple variables and single variables. The members of the LISREL model include covariance structure analysis, latent variable analysis, confirmatory factor analysis, LISREL analysis. The SEM integrates multiple regression and factor analysis and can apply to the analysis of the relationship between correlated dependent variables [34]. A structural equation includes two types of variables which are respectively latent variable and manifest variable. Social behavioral science deals with variables that cannot be directly observed and they belong to latent variables. The effect of a latent variable can only be reflected by the observed variables, which belong to the manifest variables. The theoretical structure of the LISREL model includes the structural model and the measurement model [35].

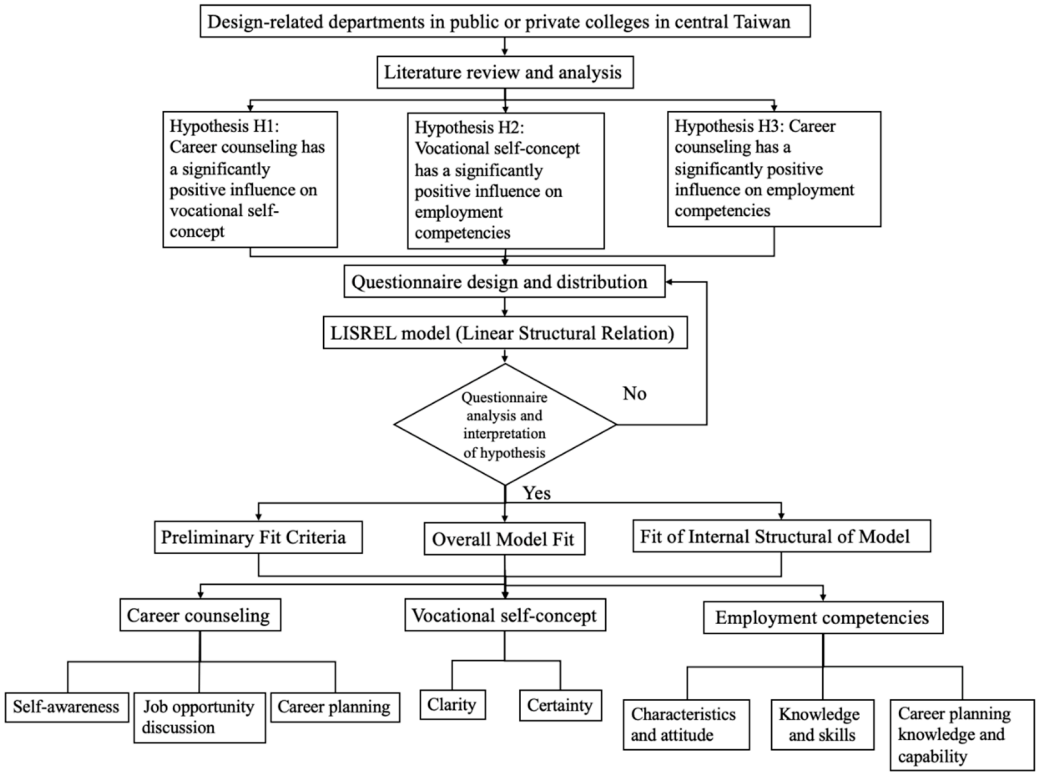

Figure 2. Flowchart of research framework.

For the estimation of model parameters, Jöreskog and Sorbom [33] proposed the maximum-likelihood approach for the LISREL model. This approach is different from the typical approach of least squares for path analysis. The LISREL applies the maximum-likelihood to estimate the parameters and the approach is to compare the goodness of fit of the variance matrix of the model and the variance matrix that is derived from the sample data. It can also be used to estimate the chi-square and the degree of freedom. If the chi-square is significant, it indicates a significant difference between the sample data and the model structure, which means the proposed model is not suitable for the real observed data. However, since the chi-square is very sensitive to the sample size, it tends to generate results with significant differences. Therefore, it is not enough to determine whether a model presents the goodness of fit from the chi-square. Instead, the common rule includes the ratio of the chi-square to the degree of freedom. A ratio that is less than five (or three, is even better) can serve as a criterion whether the model fits. In addition, there are other studies that proposed different models with the goodness of fit for researchers to determine whether a model is good such as GFI, AGFI, CFI, RMS, NFI, and NNFI [34]. Therefore, we applied the LISREL model to the analysis in this study.

3. Sample and Evaluation Indicator

3.1. Researcher Sample and Subjects

This study aimed at the design-related departments of public or private colleges in central Taiwan. The research targets included the students in the design-related departments of public or private colleges that were selected. We screened out all of the students and those with a part-time job were viewed as not qualified for the study and excluded from this investigation. The remaining 460 students were invited to participate in this study. A total of 460 questionnaire copies were dispatched. 378 valid questionnaire copies were returned with a rate of response of 82%. For a 95% confidence level, the confidence interval is ± 1.62%. These public or private colleges in central Taiwan include National Taichung University of Science and Technology, National Taichung University of

Education, Tunghai University, Asia University, National Yunlin University of Science and Technology, Ling Tung University, and Overseas Chinese University.

3.2. Reliability and Validity Examination

The so-called validity indicates whether a weighing tool can really weigh the problem that investigators want to assess. Generally speaking, validity can be classified into content validity, criterion-related validity, and construct validity. Since the questions that were used in questionnaire survey for the assessment referred to the questions that were used by earlier studies with further modification, the questionnaire in this study should be provided with a certain degree of content validity as all of the questions were reviewed and discussed with the advisor along with a pre-test. We carried out the verification of the casual relationship for the overall structure of the constituent elements including career counseling, vocational self-concept, and employment competencies. The verification approach implemented the analysis by linear structural relationship model. The data input was based on the correlation coefficient matrix of the observed variables as mentioned above. The result of the linear structural relationship model indicated that the global goodness-of-fit reached the reasonable range. Therefore, the convergence validity and prediction validity are both good.

Furthermore, we carried out the reliability and validity analysis in order to understand the reliability and validity of the questionnaire. A higher Cronbach's α value indicates better reliability. Based on the standard, the Cronbach's α values of reliability in the formal questionnaire that was used in this study are in the range of 0.80~0.92. This is clearly within the acceptable range of reliability value.

3.3. Research Tools

The questionnaire content includes three portions, which are respectively the career counseling scale, the vocational self-concept scale, and the employment competencies scale which are described as follows. Each question of these three portions was given the same weight with the same degree of importance.

The career counseling scale referred to the study by Hong [36] and the constituent elements, questions, and data sources are summarized in Table 2. The 7-point Likert scale was used and the 7 points include 7—very agree, 6—agree, 5—slightly agree, 4—neither agree nor disagree, 3—slightly disagree, 2—disagree, and 1—very disagree. The questionnaire contains no negatively worded question. A higher score in the career counseling scale indicated the respondent had a higher demand of the career counseling and vice versa. The scores of constituent elements of career counseling are summarized in Table 3. In this study, career counseling was analyzed from career planning, self-awareness, and discussion of future career direction. Table 3 indicated that the average score of discussion of future career direction is the highest, followed by self-awareness and career planning. The scores of the former two are higher than the average score of 5.72 while the score of career planning is lower than the average. It was known from these scores that the college students demand more for discussion of future career direction and self-awareness. However, they feel not much demand of their future career planning. This result indicated that college students would like to get themselves prepared for the future career and would like to understand more about themselves.

Table 2. Questions of career counseling demands.

Constituent Element	Questions	Average	Standard Deviation
Self-awareness (Average:5.74) (Standard deviation:1.04)	1. I would like to understand my current career development condition.	5.65	1.01
	2. I would like to understand my capability and professional specialty.	5.78	1.02
	3. I would like to understand my work values and ambition.	5.72	1.06
	4. I would like to understand others' opinion toward me.	5.69	1.04
	5. I would like to understand my suitable job.	5.91	1.01
	6. I would like to learn to accept and appreciate myself.	5.66	1.08
Discussion of future career direction (Average:5.74) (Standard deviation:1.06)	1. I would like to learn the skills for interpersonal relationship in workplace.	5.89	1.04
	2. I would like to learn the skills for self-management.	5.81	1.09
	3. I would like to cultivate professional ethics, adequate job attitude.	5.77	1.07
	4. I would like to learn second professional specialty or knowledge and skills in other territories.	5.92	0.96
	5. I would like to enrich the professional capability when I go to graduate schools in the future.	5.71	1.11
	6. I would like to understand the environment and channels for further studies domestically or overseas.	5.47	1.23
	7. I would like to understand the relationship between the majors and the personal career development.	5.61	1.05
	8. I would like to understand the influence of external environment on future career development.	5.70	1.02
	9. I would like to understand the job market and further development trend beyond my current majors.	5.66	1.07
	10. I would like to understand my potential vocations (such as job environment, development expectations).	5.88	1.00
Career planning (Average:5.62) (Standard deviation:1.06)	1. I would like to understand the skills, procedure, and factors to be considered for career decision.	5.63	1.02
	2. I would like to understand how to correspond to personal career changes.	5.66	1.00
	3. I would like to clarify my career direction and career targets.	5.68	1.05
	4. I would like to clarify the expectation and influence of important others (such as parents, friends, teachers or coaches) on my career target.	5.38	1.16
	5. I would like to learn to analyze my future assistance and resistance.	5.75	1.04
	6. I would like to learn how to make a career planning.	5.63	1.02

Table 3. Analysis of constituent elements of career counseling demands.

Construct	Constituent Element	Average	Standard Deviation
Career counseling demands (Average:5.72) (Standard deviation:0.80)	Discussion of future career direction	5.80	0.84
	Self-awareness	5.74	0.89
	Career planning	5.62	0.90

The vocational self-concept scale referred to the study by Hong [36] and the constituent elements, questions, and data sources are summarized in Table 4. The 7-point Likert scale was used and the 7 points include 7—very confident, 6—confident, 5—slightly confident, 4—neight agree nor disagree,

3—slightly disagree, 2—disagree, and 1—very disagree. The questionnaire contains no negatively worded question. A higher score in the vocational self-concept scale indicated the respondent had a higher confidence of the vocational self-concept and vice versa. The scores of constituent elements of vocational self-concept are summarized in Table 5. In this study, the vocational self-concept was analyzed from clarity and certainty. It was known from Table 5 that the clarity has a higher score than certainty. Therefore, the score of clarity is higher than the average of 5.08 while the score of certainty is lower than the average. It was known from the average score that from the aspect of vocation self-concept, college students gain confidence by understanding themselves and by confirming the things they want to pursue to a certain extent. However, they have less confidence in the certainty of their further career trend and related information and how they will overcome the difficulties.

Table 4. Questions of vocational self-concept.

Constituent Element	Questions	Average	Standard Deviation
Clarity (Average:5.14) (Standard deviation:1.08)	1. I can search for the relevant information of my interested vocation.	5.20	1.18
	2. I can list several of my interested vocations.	5.18	1.18
	3. I can list several of my interested departments.	5.22	1.11
	4. I can list a list of vocations to be considered and choose one vocation among them	5.20	1.15
	5. I can clearly choose my favorite department to study.	5.05	1.24
	6. When I am interested in certain vocations, I will consult others in the same industry.	5.28	1.10
	7. I can clearly describe the job content that I am pursuing.	5.14	1.20
	8. When parents are forcing me to choose the department that is beyond my capability, I still insist on my decision.	5.03	1.31
	9. I can clearly describe my desired lifestyle.	5.27	1.12
	10. In addition to my majors, I also study other courses that are beneficial for my future job.	5.04	1.11
	11. I can point out what I still lack to complete my vocational target.	5.07	1.10
	12. I can undertake those jobs that are related to my future target.	5.10	1.17
Certainty (Average:5.00) (Standard deviation:1.24)	1. I can determine my ideal job.	5.16	1.12
	2. I can choose the job that complies with my ideal lifestyle.	5.23	1.13
	3. I can determine the vocation that I would like to undertake.	5.25	1.14
	4. I can understand the vocational development trend in the next decade.	4.74	1.39
	5. I can find the annual salary of my target vocation.	4.78	1.33
	6. I can find those companies that hire graduate students from the related departments.	4.92	1.30
	7. I can correctly assess my capability.	4.87	1.29
	8. I can determine the procedure that is required for me to successful reach my desired target.	4.95	1.29
	9. I can resolve the problems that I am encountering.	5.10	1.19

Table 5. Analysis of constituent elements of vocational self-concept.

Construct	Constituent Element	Average	Standard Deviation
Vocational self-concept (Average:5.08) (Standard deviation:0.92)	Clarity	5.15	0.92
	Certainty	5.01	1.15

The employment competencies scale referred to the study by Hong [36] and the constituent elements, questions, and data sources are summarized in Table 6. The 7-point Likert scale was used and the 7 points include 7—very confident, 6—confident, 5—slightly confident, 4—neight agree nor disagree, 3—slightly disagree, 2—disagree, and 1—very disagree. The questionnaire contains no negatively worded question. A higher score in the employment competencies scale indicated the respondent had a higher degree of understanding of the employment competencies. On the other hand, a lower score in the employment competencies scale indicated the respondent needed no enhancement of his/her employment competencies. The scores of constituent elements of employment competencies are summarized in Table 7. In this study, the employment competencies are analyzed from characteristics and attitude, knowledge and skills, and vocational planning knowledge. It was known from Table 7 that the knowledge and skills have the highest score, followed by characteristics and attitude and vocational planning knowledge. The scores of the former two are higher than the average score of 5.77 while the score of vocational planning knowledge is lower than the average. It was known from the average that from the aspect of employment competencies, college students would like to apply theories to real practice and they would like to enhance their foreign language proficiency and computer application skills. On the other hand, they consider less on enhancing innovation capability or leadership.

Table 6. Questions of employment competencies.

Constituent Element	Questions	Average	Standard Deviation
Characteristics and attitude (Average:5.80) (Standard deviation:1.04)	1. I should cultivate my stability and resistance to stress.	5.78	1.02
	2. I should develop a good job attitude.	5.79	1.05
	3. I should learn the team collaboration capability.	5.82	1.06
	4. I should understand and abide by the professional morale and ethics.	5.79	1.06
Knowledge and skills (Average:5.87) (Standard deviation:1.05)	1. I should enhance my foreign language capability.	5.88	1.11
	2. I should enhance my fundamental computer application skills.	5.80	1.04
	3. I should enhance my capability of applying theories to actual practices.	5.93	1.01
Vocational planning knowledge (Average:5.69) (Standard deviation:1.01)	1. I should enhance my innovation capability.	5.61	1.02
	2. I should understand the industrial environment and its development.	5.70	0.95
	3. I should my capability of seeking a job and self-marketing.	5.69	1.05
	4. I should cultivate my leadership capability.	5.69	1.02
	5. I should strengthen my career planning capability.	5.74	1.01

Table 7. Analysis of constituent elements of employment competencies.

Construct	Constituent Element	Average	Standard Deviation
Employment competencies (Average:5.77) (Standard deviation:0.85)	Knowledge and skills	5.87	0.95
	Characteristics and attitude	5.79	0.95
	Vocational planning knowledge	5.69	0.87

4. Analysis of the Empirical Results

The linear structural relation (LISREL) model integrates the factor analysis and the path analysis in the traditional statistical territory. It also includes the simultaneous equations of econometrics. It is a good tool for obtaining the solutions to multi-factor and multi-casual problems. The assessment of the model's goodness-of-fit can be accomplished from three aspects which include the preliminary fit criteria, the overall model fit, and the fit of internal structural of model.

4.1. Evaluation Indicator of LISREL Model

The item-total correlation coefficient that was recommended by Kerlinger [37] was used to verify the construct validity of the content of this questionnaire. In other words, the item-total correlation coefficients were analyzed by their reliability in order to judge the questionnaire content. The item-total correlation coefficients of each constituent element are larger than 0.7. This indicated that the constituent elements of the questionnaire that was used in this study had a certain degree of construct validity.

The results of this study are summarized in Table 8. The global goodness-of-fit of this model is descried as follows. From the aspect of the global goodness-of-fit the standard value of $\chi 2/Df$ is 1.822 which is smaller than the criterion of 3. The RMR value is 0.005, which indicated that the $\chi 2/Df$ and the RMR are adequate. Moreover, since the chi-square value is very sensitive to the sample size, it is inadequate to use this value to judge the adequacy. However, the GFI value of the global goodness-of-fit is 0.969 and the AGFI is 0.911, which reached the criterion of 0.9. Therefore, this model has a better goodness-of-fit indicator since the goodness-of-fit of a model is better when the GFI and AGFI values are closer to 1.

Table 8. Results of global goodness-of-fit analysis.

Evaluation Item	Parameter/Evaluation Criteria	Result	*p* Value
Global goodness-of-fit	X2/Df	1.822	
	GFI	0.969	
	AGFI	0.911	
	RMR	0.005	

4.2. Analysis of Preliminary Goodness-of-Fit

The results of this analysis are summarized in Table 9. The preliminary goodness-of-fit of this model is described as follows. The results of the global model analysis in Table 8 indicated that for the preliminary goodness-of-fit the three constituent elements of career counseling including self-awareness, discussion of future career direction, and career planning all reached the significance level ($t > 1.96$, $p < 0.05$). For the explained results of the two constituent elements of vocational self-concept including clarity and certainty, both reached the significance level ($t > 1.96$, $p < 0.05$). For the three constituent elements of employment competencies including characteristics and attitude, knowledge and skills, and career planning knowledge, the explained results reached the significance level ($t > 1.96$, $p < 0.05$). Therefore, the overall model has a favorable preliminary goodness-of-fit.

Table 9. Results of preliminary goodness-of-fit analysis.

Evaluation Item	Parameter/Evaluation Criteria		Result	*t* Value
Preliminary goodness-of-fit	Career counseling	Self-awareness	0.759	11.35 **
		Discussion of future career direction	0.763	11.82 **
		Career planning	0.748	10.68 **
	Vocational self-concept	Clarity	0.792	13.04 **
		Certainty	0.786	12.69 **
	Employment competencies	Characteristics and attitude	0.804	14.27 **
		Knowledge and skills	0.811	14.96 **
		Career planning knowledge	0.795	13.85 **

Note: ** indicates $p < 0.01$.

4.3. Analysis of Internal Goodness-of-Fit

The results of this analysis are summarized in Table 10. The internal goodness-of-fit of this model is described as follows. For the internal goodness-of-fit, the career counseling and vocational self-concept have a positive significant correlation (0.833, $p < 0.01$). The vocational self-concept and employment competencies have a positive significant correlation (0.857, $p < 0.01$). Moreover, the career counseling and employment competencies have a positive significant correlation (0.867, $p < 0.01$). This result indicated that Hypotheses 1, 2, and 3 are all supported.

Table 10. Results of internal goodness-of-fit analysis.

Evaluation Item	Parameter/Evaluation Criteria		Result	*t* Value
Internal goodness-of-fit	Career counseling → Vocational self-concept		0.833	24.18 **
	Vocational self-concept → Employment competencies		0.857	27.62 **
	Career counseling → Employment competencies		0.867	31.59 **
Research hypothesis	Correlation	Empirical result	*p* Value	Result
Hypothesis 1	+	0.833	$p < 0.01$	Established
Hypothesis 2	+	0.857	$p < 0.01$	Established
Hypothesis 3	+	0.867	$p < 0.01$	Established

Note: ** indicates $p < 0.01$.

5. Conclusions

In this study, the LISREL model was utilized to analyze data from the preliminary fit criteria, the overall model fit, and the fit of internal structural of model. From the preliminary fit criteria, the career counseling presented a significantly positive correlation to vocational self-concept (0.833, $p < 0.01$). The vocational self-concept also presented a significantly positive correlation to employment competencies (0.857, $p < 0.01$) while career counseling also presented a significantly positive correlation to employment competencies (0.867, $p < 0.01$). Therefore, the results of this study indicated that 1. Career counseling is significantly correlated to vocational self-concept in a positive way. 2. Vocational self-concept is significantly correlated to employment competencies in a positive way. 3. Career counseling is significantly correlated to employment competencies in a positive way.

With the promotion by the educational system in Taiwan and the implementation of various tests, college students are allowed to understand themselves. Moreover, career planning has been included as a required course by the Ministry of Education so that students have a clearer understanding of their career development and they can be guided to make a correct career decision with the implementation of the course. For the discussion of future career direction, colleges are advised to hold speeches or

seminars in order to provide information of the industry so that students can be more familiar with the current trend of the job market and the development of the overall environment. This approach helps students before they enter the job market as they will have a clearer and more definite vocational self-concept. A work-study experience can help students learn and grow so that they gain different job experiences before entering the job market. Therefore, a student with work-study experience has a clearer and more concrete vocational self-concept than others without any work-study experience. During the course of study, students have a higher degree of confidence on the work attitude in the workplace. On the other hand, a few students have a lower degree of confidence on their professional skills and schools need to encourage students to acquire more certificates. Although certificates do not equal to employment competencies, students can learn from the course of preparing for certificates and can apply what they learned from school to the workplace.

By concluding the results and finding of this study, the practicability of this study is summarized as follows.

1. While schools highlight skill examinations and encourage students to acquire more certificates, they should emphasize more on students' career counseling. The urgent mission is to help students build up a concrete and clear vocational self-concept and to fulfill the guidance of career counseling so that students can develop good vocational self-concept. Schools should provide resource and assistance for students to develop their capability of finding vocational information.
2. Schools are advised to highlight and fulfill career counseling activities, while it needs to be carefully arranged by considering students' experience and demands. They should assist students in understanding the job market and the vocational information by encouraging their interaction with the workplace. This approach can reduce students' concern with the workplace and can help them understand the current trend in different industries. With more information on the industries, the effect of students' career counseling perception can be greatly enhanced.
3. Most of college students in Taiwan lack confidence in their foreign language skills. As foreign language is a required tool in a globalized workplace, students are advised to keep learning and sharpen their foreign language skill. Schools should do their best to provide students with a foreign language environment so that they can gain good foreign language skill and enhance their competitiveness and employment competencies in the workplace.

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