

# Analysis of college students' satisfaction with educational functions and teaching patterns of technological and vocational education in Taiwan

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**ABSTRACT:** The main purpose of this study was to analyse college students' degree of satisfaction with the educational functions and teaching patterns of technological and vocational education in Taiwan. Content analysis was used to analyse the distribution of college students' satisfaction with the educational functions of college and instructional patterns of teachers in the *Taiwan Higher Education Database*; a total of 76,319 students were investigated. Included in the study were in-depth interviews with five vocational college students, so as to understand their opinions regarding the educational functions of college and instructional patterns of teachers. The results show that vocational college students have the highest level of satisfaction with *expansion of the horizon of knowledge* from among all *educational functions of colleges*. In terms of *instructional patterns of teachers*, students have a highest level of satisfaction with the following: teachers' provision of cases and actual examples; discussions and interactions between students and teachers.

## INTRODUCTION

With the rapid increase in both colleges and teachers in Taiwan, the focus of elite education, regarding the educational functions of colleges, has been gradually switched to universal education. At present, one of the most important educational issues is the gradual transformation of employment-orientated educational functions into placing emphasis on the needs of students that can improve the quality of college education [1-3]. The main purpose of vocational education is to provide students with professional and technological education and occupational skills, thus allowing them to possess the competencies required by industries. However, in recent years, with the liberation of education and changes to educational environments, as well as an industrial transformation towards a knowledge economy, it is increasingly important to strengthen the educational functions of vocational colleges to foster innovative instructional characteristics [4][5].

Students' subjective perceptions and interpretations of teachers' instructional behaviours have far-reaching influence on the students' personal development. The investigation of educational functions of colleges and the current implementation of teachers' instructional patterns, as well as the degree of satisfaction with these areas, are important and useful information to assist teaching [6][7]. Students can directly experience and observe teachers' instruction. Analysis of students' satisfaction with instructional methods can quickly provide teachers with accurate and relevant information, so that teachers can arrange more appropriate instructional methods. The main objectives of this study includes enabling students to obtain the strongest learning effects, assisting teachers to improve instructional delivery, formulating projects for course development, providing references to academic studies, and assisting schools to improving teaching [5][8].

Vocational colleges are facing unprecedented challenges and change. They should adopt new management mechanisms, strengthen educational functions, develop innovative instructional characteristics, improve teachers' instructional functions, and maintain quality of teaching through the concept of a novel teaching model [9][10]. Moreover, with the tendencies towards a low birth rate and the expansion of higher education, analysis of college students' satisfaction with the educational functions of colleges and instructional patterns of teachers could help vocational schools to understand students' requirements in education and teacher instructions. This study also expects to improve the quality of teaching innovation in the face of industrial transformations.

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

1. To understand college students' satisfaction with *educational functions of colleges*.
2. To understand college students' satisfaction with *instructional patterns of teachers* and the proportion of the implemented *instructional patterns*.

## METHODS AND IMPLEMENTATION

### Content Analysis

Content analysis in this study, using data from the *Taiwan Higher Education Database*, was used to analyse vocational students' degree of satisfaction with the *educational functions of college* and *teaching patterns of teachers*. The samples were 76,319 junior students at vocational colleges.

A stratified sampling design was used to analyse the database of the 76,319 effective samples, taken from vocational college students during the 2003 and 2005 academic years. The sample size of vocational college junior students from the 2003 academic year was 75,357, with a questionnaire return rate of 100%, a completion rate of 97.2%, and 69,585 effective questionnaires. The sample size of vocational college junior students in the 2005 academic year was 22,333, with a questionnaire return rate of 45.8%, a completion rate of 69.3%, and 6,734 effective questionnaires.

Using content analysis to investigate the *Higher Education Database* has three advantages: 1) the data reliability of the *Higher Education Database* is higher than that of a questionnaire survey; 2) the external validity of the large amount of data of the *Higher Education Database* is more ideal than other methods; 3) the *Higher Education Database* is the largest educational data website in the Taiwan Higher Education Database, and is suitable for use as a parent group in the analysis of service quality for learning resources [1][11][12].

### In-depth Interviews

In-depth interviews were conducted in which 5 vocational college junior students were selected as research subjects. These junior students have a good understanding of both the school environment and teacher instruction, which can provide sufficient opinions on college education and teachers' instructional patterns.

Based on the results of a literature review and database analysis, an outline of the interview was developed so as to conduct pre-interviews, and then amend the interview outline, contents, order and the expression methods of the researcher. The formal interviews were conducted based on the interview outline and protocol, and were recorded with the consent of the subjects.

According to the data obtained from the interviews, *modified analysis* was applied to arrange and analyse the interview data of each subject, with concept analysis performed on the interview content for the purpose of encoding the subjects. With data analysis, *constant comparative analysis* was applied to arrange, analyse and record the differences and similarities of all data, which is compared with relevant data in literature. Suggestions were proposed to promote improvements in the operations of vocational colleges according to the research findings. The background, time of interview and code of the research subjects are in Table 1.

Table 1: Summary of the research subjects and school structure.

Background		Time of interview and code
A1-Junior student at college department of private vocational college	Department of Electrical and Electronic Engineering/working part-time at Office of Students Affairs for one year at the Department for one year	8 February 2009 (A1980208)
A2-Junior student at college department of public vocational college	Department of Commercial Technology/working part-time at the Department for one year at Office of Academic Affairs for one year	9 February 2009 (A2980209)
A3-Junior student at college department of public vocational college	Department of Information Management/working part-time at Computer Centre for two years	9 February 2009 (A3980209)
A4-Junior student at college department of public university of technology	Design-related department/working part-time at Office of Academic Affairs for two years	7 March 2009 (A4980307)
A5-Junior student at college department of private university of technology	Department of Business Administration/working part-time at Department Office for two years	15 March 2009 (A5980315)

## RESULTS AND DISCUSSION

### College Students' Satisfaction with the *Educational Functions of Colleges*

As shown in Table 1, as a whole, students' levels of satisfaction with the aspect of *educational functions of colleges* are more than 80%, and they are most satisfied with *the expansion of the horizon of knowledge*. The items with the lowest level of satisfaction for students at different schools are: 1) the students at public universities of technology and private vocational colleges are most dissatisfied with the *acquisition of professional knowledge*; 2) the students at public

vocational colleges are most dissatisfied with *increased self-understanding*; 3) the students at private universities of technology are most dissatisfied with *increased self-understanding* and *increased competitiveness for employment*. In brief, vocational college students are dissatisfied with the *acquisition of professional knowledge*, *increased self-understanding* and *increased competitiveness for employment*. According to the interview data, students' opinions of the educational functions of college may be easily affected by certain factors, such as the characteristics of the school itself, the faculties, the courses, the situations regarding employment advantages, departments, media information, etc. The interviews are summarised as follows.

*The latest CHEERS EMBA report indicates that, according to the questionnaire survey conducted regarding the overall rating of school selection evaluation, among the top ten universities, 8 are comprehensive universities; in addition, one of the two selected universities of technology has won recognition (A5980315).*

*Although the school is public, its diploma would not be beneficial to future employment, especially as some companies choose the graduates of specific schools. Apparently, certain employability characteristics that meet specific industrial needs are very important. (A3980209).*

*In terms of future work, schools are very important. The companies at the Hsinchu Science Park tend to look for future employees from two certain schools. Employability has incredible influence on future employment. (A1980208).*

This study finds that professional capacity and quality of teaching are related to future employability within industry. Foreign scholars have suggested that industries desire trans-disciplinary abilities, independent thinking abilities and communication skills [1][2][4]. As indicated in the research findings, vocational college students are dissatisfied with the educational functions of *increased self-understanding* and *increased competitiveness for employment*, which are also educational objectives that require strengthening in the future [8][13]. In general, vocational college students place greater emphasis on employment, thus, their needs for *acquisition of professional knowledge* and *increased competitiveness for employment* are stronger. In addition, as students at private vocational colleges lack resistance to stress and reflection abilities, they would have a stronger need for *increased self-understanding* [9][10].

Table 2: Summary of college students' satisfaction with *educational functions of college*.

Schools	Public university of technology	Public vocational college	Private university of technology	Private vocational college	Total	Increase (%)
Acquisition of professional knowledge	85.1	86.8	84.9	83.1	84.5	-1.6
Expansion of horizons of knowledge	89.5	90.5	86.9	84.9	87	-0.5
Increased competitiveness for employment	85.4	86.3	84.2	81.4	83.7	-1.4
Establishment of interpersonal networks	87.6	88.2	86	83.7	85.6	-0.5
Expansion of areas of life	87.2	89.1	86.6	84.3	86.1	-0.5
Increased self-understanding	86.3	88.1	86.1	84.4	85.7	1.4
Increased understanding of social environments and time pulse	85.8	86.7	84.5	82.8	84.3	3.7

#### The Proportion of the Adoption of *Instructional Patterns of Teachers* at Vocational Schools

As shown in Table 3, the proportion of adopted *instructional patterns of teachers* and those instructional patterns with larger differences in levels of satisfaction are: 1) more than 80% of teachers adopt a *one-way textbook or handout instruction*, with students' level of satisfaction less than 60%; 2) approximately 20% of the teachers adopt *off-campus instruction* and *in-campus onsite inspections*, with students' level of satisfaction more than 50%; 3) 50% to 80% of teachers adopt instructional patterns, such as *group discussions*, *design*, and *presentation* and *students conduct practices, experiments, or studies with the assistance of the teacher*, with students' satisfaction more than 80%.

It is worth noting that the proportion of adopted instructional patterns at private universities of technology and private vocational colleges is higher than that of public universities of technology and public vocational colleges. It can be thus inferred that the proportion of instructional patterns, especially *completely internet-based instruction (the instruction is mainly given online without face-to-face instruction)* by teachers at private vocational colleges is higher than that of public vocational colleges. However, the students' level of satisfaction is lower. Future studies may further investigate the learning characteristics and needs of the students at private vocational colleges, taken from the perspective of value chain analysis on instruction. The factors affecting the learning performance of higher education students include

interactions between teachers and students, peer cooperation, active learning, feedback to students, effort-making circumstances, multiple interactive experiences, quality of teaching, and the schools' support of students. These are the most important aspects for improvements to the quality of teaching [4][5][14].

Table 3: Summary of the proportion of instructional patterns and vocational students' satisfaction with teachers' instructional patterns.

Schools Items of satisfaction	Public universities of technology		Public vocational colleges		Private universities of technology		Private vocational colleges		Total	
	Adopted proportion	Satisfaction	Adopted proportion	Satisfaction	Adopted proportion	Satisfaction	Adopted proportion	Satisfaction	Adopted proportion	Satisfaction
One-way textbook or handout instruction	81.8	59.9	84.3	57.8	83.4	60.3	82.1	60	82.9	59.9
Use of media-aided instruction	86.7	76.5	85.7	80.6	87.8	80	84.4	81.2	86.3	79.5
Provision of cases or actual examples for discussion	86.8	87.6	81.6	90.4	82.4	89.8	79.2	86.2	80.3	88.2
Interactive learning between teachers and students (with questions and discussions)	73.4	84.7	76.6	87.8	79.3	86.6	78.4	84.4	77.7	85.6
Students' group discussions, designs, and presentations	76.1	79.9	80.6	83.7	83	82.4	80.9	80.3	80.9	81.3
Students' practical experiments, or studies with the assistance of teachers	56.3	81.3	51.1	82.5	63.1	83.7	62.5	80.9	60.8	82.2
Students' selection of topics, collection and integration of data for research reports	65.7	76.4	70.3	81.1	69.9	78.3	69.6	76.3	69	77.5
Inviting someone to speak or give a demonstration	51.7	61.7	57	66.3	52.8	64.3	56.8	63.8	54.1	63.8
Off-campus instruction	20.9	66.1	22.1	67.1	19.6	68.1	21.5	66.6	21	67.2
In-campus onsite inspection	20.8	54.6	17	53.4	21.5	56.5	24.1	55.6	22	55.7
Use of mixed traditional classroom face-to-face + computer, and Internet-assisted instructions	57.5	62.9	61.8	64.4	62.8	66	63.9	68.2	62	66
Completely Internet-based instructions (the instructions are mainly given on-line, and there is no fixed face-to-face instruction)	18.4	38.1	21.9	44	25.5	47.8	30.7	52.5	25.6	47.2
Synchronous distance instruction (distance learning classrooms and assistive Internet resources)	10.3	32.1	12.2	35.3	15.6	41.2	19	46.2	15.4	40.7

#### College Students' Satisfaction with *Instructional Patterns of Teachers*

As shown in Table 3, as a whole, the students' degree of satisfaction with *instructional patterns of teachers*, including all five items, which are *the provision of cases or actual examples by teachers is helpful to learning, the interactive learning between teachers and students (asking questions and discussion) is helpful to learning, students' group discussion, design, presentation are helpful to learning, students' conduct of practices, experiments, or studies with the assistance of teachers is helpful to learning, and teachers' use of media-aided instruction is helpful to learning* is more than 70%. The items with a level of satisfaction less than 50% are *completely Internet-based instruction (the instruction is mainly given on-line without face-to-face instruction) is helpful to learning, and synchronous distance education (distance education with assistive internet resources) is helpful to learning*. It can be inferred that vocational college students prefer the instructional patterns mainly based on practical instruction [2][9][10].

It was also found in this study that the level of satisfaction of students at private universities of technology and vocational colleges is higher than that of public schools. The proportion of *the teachers never use instructional patterns during instruction* at public universities of technology and vocational colleges is higher than that of private schools. There may be two reasons for this, namely, students do not have a high need for patterns because the properties of the

course require its delivery face-to-face; and it is difficult for teachers to implement such instructional methods [6][15]. The interviews are summarised as follows:

*When teachers are busy catching up with the course progress, they usually use direct instruction, and thus, students have fewer opportunities for discussions with one another. Some lectures require a full detailed explanation by teachers, which helps students to understand the overall content, which enables discussions and presentations (A1980307).*

*Usually, when teachers give lessons in professional classrooms within a department, they provide cases, ask questions, and have discussions with the students. In addition, the learning activities, such as group discussions, design, presentations, etc, are all included. Students suggest that the teachers teach well, with appropriate reminders of key points and hints. (A4980307)*

*During the class, if the instructional content is dynamic, the students' participation is higher, making the course more interesting. When teachers design cases to facilitate student group discussions, they give instructions, which helps to increase students' abilities in expression (B2980604).*

## CONCLUSIONS AND RECOMMENDATIONS

Among the educational functions of colleges, vocational college students are most satisfied with the *expansion of horizons of knowledge*, and most dissatisfied with *acquisition of professional knowledge, increased self-understanding, and increased competitiveness for employment*. In the future, administrative units of vocational colleges can use the Service Quality Gap Model to investigate the reasons for students' dissatisfaction with educational functions of colleges and teachers' instructional patterns.

The instructional patterns of vocational college teachers remain *one-way textbooks or handout instructions* and *use of media-aided instruction*, which is followed by students' group discussions, designs, presentations, practices, experiments, studies, etc. It is suggested that in regard to instructional design, teachers should adopt instructional patterns that most satisfy vocational college students, such as visits, practical applications, discussions, presentations, and use of media-aided instructions, which help to increase students' level of satisfaction with instructional patterns.

In terms of *instructional patterns of teachers*, vocational college students are most satisfied with the provision of cases and actual examples, followed by the discussions and interaction between teachers and students, students' group discussions and presentations, students' conducting of practical experiments, studying with the assistance of teachers, and the teachers' use of media-aided instructions. However, vocational college students are dissatisfied with completely Internet-based instruction and synchronous distance education. In the future, schools should evaluate low level of satisfaction instructional content in order to understand the needs of students, assist teachers in adjusting instructional patterns, analysing course effectiveness and provide the improvement mechanisms, such as instructional supervision.

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