Exploring the Inner Characteristics and External Competency of Excellent Teacher: The Case of a University of Technology in Taiwan

Tao-Ming Cheng[1], Hsing-Yu Hou[2*], Long-Sheng Chen[1], Shiao-Pei Yu[1]
[1]*Chaoyang University of Technology, Taichung, Taiwan, R.O.C.,*

[2] *National Taichung University of Science and Technology, Taichung, Taiwan,*

ABSTRACT

Institutional research in Taiwan has focused on student performance even though teachers and students influence student performance. Highly accomplished teaching, including teachers' innovative and digital teaching, can improve student performance. Consequently, it becomes crucial for the school administrative office to devote more effort to topics related to teacher performance. This study explores inner characteristics and external competence and predicts a promotion model of excellent teaching. The inner characteristics (teaching beliefs and values), external competency (creativity and information technology (I.T.), and background variables (gender, age, field, teaching experience, and title) of excellent teachers were explored to predict the teacher promotion type. Fifty-nine excellent teachers in the case university during the ten years participated in the questionnaire survey from April 12 to May 11, 2021. General statistics, correlation analysis, chi-squared test, and C5 decision tree models were carried out in this research. The results showed that the highest frequency of teaching beliefs belonged to enablers, implying that high sensitivity and inclusion are the principal teaching beliefs. Most excellent teachers have also focused on environment-centered teaching values. Creativity and I.T. were significantly positively correlated, but I.T. competency was negatively correlated with teaching experience. Furthermore, the field, teaching values, and teaching experience significantly influenced the promotion type of excellent teachers. The study outcome helps novice teachers' education by increasing the passing rate of adaptive promotion and assisting the management of other universities when they face similar situations in allocating administrative resources.

Keywords: Excellent teacher, Creativity, Information technology competency, Teacher promotion, Teaching beliefs, Teaching values

Introduction

Since 2015, institutional research (I.R.) has been promoted to conduct evidence-based research related to students, staff, and finances to advance sustainability and performance initiatives across institutions in Taiwan. Data availability and accuracy are vital in administrative and academic decision-making to enhance institutional effectiveness and accountability. In early studies, most issues were focused on students' performance and finance in Taiwan (Cheng et al., 2020; Hou et al., 2021; Lin et al., 2019; Lin & Borden, 2016; Moslehpour et al., 2020; Wang, 2017). Few studies discussed faculty outcomes in higher education (Cheng et al., 2020; Ho et al., 2017; Huang, 2018). Teachers and learners are the two main focus areas at higher education schools. Therefore, administrative offices need to devote more effort not only to students but to teachers as well. The more institutional resources for the teacher, the higher the productivity can be created in the universities. Most schools in Taiwan plan annual awards and budgets for excellent teachers to encourage excellent teaching. It is worth supporting these initiatives because highly accomplished teaching can raise student performance and satisfaction (Bond et al., 2000; Chen, 2007; Geier, 2021), resulting in a win-win environment between educational institutions and learners.

In retaining teachers' persistence and enthusiasm, there are four channels (M.O.E., 2016) that the instructors can promote during the teaching periods in Taiwan: (1) academic research, (2) industry-university cooperation, (3) teaching practice, and (4) art or sport. Although most teachers applied and passed the research promotion in the university case, the highest cluster of teachers was involved in teaching (Cheng et al. 2020). Furthermore, 11 instructors passed teaching promotions in the case school from 2011 to 2020. It is worth mentioning that all instructors are excellent teachers. The required qualifications of excellent teachers in the case of the university include teaching experience (more than three years), the average teaching evaluation scores from students' feedback are higher than 4.5 (highest is 5), practical/good teaching materials or pedagogies, and consulting students sincerely. After collecting the 11 teachers' outcomes, some significant factors influence their success in teaching promotion, including curriculum improvement portfolios, industrial teachers' cooperation, teachers' or students' competition awards, guiding students' certification records, professional publications, or teaching practical research projects.

Regarding outstanding teachers, the other requirements include innovative teaching methods, school award records, and so on (N.Y.U. Center for the Advancement of Teaching, New York University, 2009). The award-winning teacher group at the school was able to facilitate the development of professional cooperation and teaching innovation within the school and to transform it into a learning community (Lee, 2015; Lee & Li, 2015). Since the innovative teaching or digital teaching materials budget for the encouragement of excellent teachers was initiated, the administrative manager was keen to understand who had the potential to acquire resources and what the advanced plan was to encourage more excellent teachers to pass the adaptive promotion in the future.

Some researchers have argued that good personal characteristics affect outstanding teachers' success and qualities (Al-Busaidi et al., 2016; Liu et al., 2016; Park & Lee, 2006). Related to excellent teachers' potential characteristics, some scholars have reported the following as beneficial factors: inner personalities such as teaching beliefs, accessibility and approachability, fairness, open-mindedness, enthusiasm, humor and knowledge, inspiration imparted, empathy and sympathy, good moral character, clarity, and values (Axelrod, 2008; Cheng et al., 2009; Giorgi & Roberts, 2012; Qureshi, 2015). The five important teaching values are students, content, environment, teachers, and groups (The National Board for Professional Teaching Standards (N.B.P.T.S.), 1989; Heimlich & Norland, 1994). In addition, self-awareness is essential in becoming an outstanding teacher by exploring teaching beliefs, values, and attitudes (Galbraith & Jones, 2008).

Additionally, it is necessary to have external competencies such as lecture delivery, ability to organize lectures, classroom and behavior management, teaching methodology, knowledge of the subject, instructor-group interaction, instructor-individual student interaction, reflective practice, innovation, curriculum design, teaching services to the community, research into discipline-specific teaching, pedagogical research, and professional development (Chen, 2007; Qureshi, 2015; de la Rosa, 2007; Vallance, 2003; Witcher et al., 2001). Notably, many scholars emphasized skills that competent teachers should possess, including digital literacy and technology integration (Ertmer et al., 2007; Güneş & Bahçivan, 2018; Şimşek & Yazar, 2016; Voogt & Roblin, 2012).

Taiwan's M.O.E. started to promote the Teaching Practice Research Program in 2018 to improve the quality of teaching through innovative pedagogies to solve real problems in classes or use technology to improve university students' learning outcomes. Therefore, the external competencies between innovation and information technology (I.T.) are two important items for discussion in this study. In addition, the odds rate of promotion in the university case was only .35 till 2020 (Cheng et al., 2020). From the basic statistics of the excellent teachers' promotion, the odds rates are .63 in our records. Therefore, the paths of excellent teachers' promotion are worthy of exploration to predict their rules through different background variables. These measures will enhance the stability of their retention in universities with more resources, salaries, reputation, and self-awareness.

The research structure is shown in Figure 1. The study aims to:

(1) Explore the inner characteristics of excellent teachers.

(2) Explore the external competency of excellent teachers.

(3) Predict the promotion model of excellent teachers.

The study's outcome may be fundamental in establishing a raw model of outstanding teachers for novice teachers' education and help the management of other universities that face similar situations with administrative support.

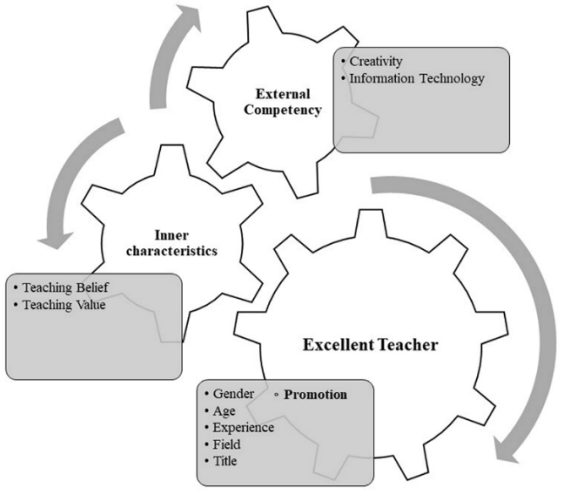

Figure 1: Research Structure

Literature review

Teaching Beliefs Scale

Teaching beliefs may be the foundation of the personal vision or philosophy of teaching. Understanding the teaching beliefs of excellent teachers can allow novice teachers to emulate outstanding benchmarks (Giorgi & Roberts, 2012) and affect students' achievement (Clark & Peterson, 1986). Some researchers have stated that teachers' beliefs are effective in their decision and behaviors in educational teaching (Bahcivan et al., 2019; Bahcivan & Cobern, 2016; Fives & Buehl, 2012; Yuan, 2017). As described, Heimlich (1990) stated that teachers' thoughts or actions associated with two dimensions (inclusion and sensitivity) change the focus from the teacher to learner (inclusion) and from content to process (sensitivity). Sensitivity refers to the teacher's ability to understand the learners' needs, while inclusion refers to the amount of control the learners have during their learning process in the instructor's classroom. The results of the teaching beliefs scale will cluster four types of teachers (expert, facilitator, provider, or enabler) concerning sensitivity and inclusion. The teaching belief scale from Heimlich and Norland (1994) was used in this study to understand the sensitivity and inclusion of excellent teachers, in this case, university, to explore their inner characteristics.

Teaching Values Scale

Heimlichand and Norland (1994) designed a teaching value scale for educators seeking to improve as teachers. It was indicated that understanding the self is understanding teaching values. Additionally, a sense of direction helped us decide what is important and provided us with an ethical and moral foundation' (Apps, 1996). There are five centers in this scale, including the teaching content/curriculum, the teaching environment/resources, the needs of a teacher/methods, the nature of the group of learners, and the nature of the individuals. It was ranked according to

the highest centered value after the evaluation. In addition, some scholars have focused on how the teaching value can be changed by different strategies and challenges (Moriates & Shah, 2014; Shah et al., 2015). Therefore, this study used the teaching values scale from Heimlich and Norland (1994) to explore the rank of five items from excellent teachers. Furthermore, it could be the reference model for novice teachers to learn and train in the pre-teacher program.

Creative Teaching

Innovative pedagogy can raise learners' learning interest, learning performance, and student satisfaction (Grainger et al., 2004; Hong, 2002; Huang et al., 2015;). In addition, creative teaching refers to unique and unconventional methods that improve or enhance the original activity (such as flipping classroom teaching and creative thinking pedagogy) in unison with information technology by participating in international competitions (Cheng, 2018). Horng et al. (2005) stated that personality traits, family factors, motivations, and the organizational environment are four important factors that influence creative teaching. Other researchers listed the most predictive of creative teaching of instructors in universities as being personality traits, motivation teaching, content knowledge, shared value, divergent thinking, and school culture (Amabile, 1988; Sternberg & Lubart, 1993; Wu & Liao, 2007). Due to the high reliability (mean of all Cronbach's α=.86) in the six functional creative teaching scales from Wu and Liao (2007), this study explored the scores of creative teaching from excellent teachers at the university.

Information Technology Literacy

In addition to creative teaching, more digital competence supported by information technology could enhance students' learning effectiveness (Lim et al., 2015) and instructors' teaching, communication, and content innovation (Garzón Artacho et al., 2020; Mirete et al., 2020; Vorobets, 2019). Coklar and Odabasi (2009) developed the educational technology standards scale to evaluate teachers' educational technology ability. There are six teachers' educational technology assessment standards: 1. Technology operations and concepts; 2. Planning and designing learning environments and experiences; 3. Teaching, learning, and curriculum; 4. Assessment and evaluation; 5. Productivity and professional practice; and 6. Social, ethical, legal, and human issues. In this research, excellent teachers have taught in real situations for more than three years. Therefore, the productivity and professional practice scale (Cronbach's α=0.919) from Coklar and Odabasi (2009) was adopted to explore the external outcomes of information and technology competency.

Decision Tree C5 and influencing factors

A decision tree is a part of data mining methods. Its goal is to predict the value of a user-specified output attribute based on the values of other attributes, known as the predicting attributes. C5 is an algorithm used to generate a decision tree developed by Quinlan (2017). C5 decision trees are created from various features, and then the tree is classified using a subsequent set to build the model. In addition, the C5 algorithm can extract valuable patterns and improve features

(Khanbabaei et al., 2019; Khraisat et al., 2020; Razi & Shahabi, 2016; Zare et al., 2019). The present study applied a C5 decision tree to explore the case of university's promotion rules among excellent teachers.

Several studies have identified the factors influencing teachers' performance and promotion, including background variables such as gender, age, experience, field, and professional title (Cheng et al., 2020; Drake et al., 2019; Hameed et al., 2015; Mayesthi et al., 2021; Li et al., 2016; Odebode, 2018; Wang et al., 2017). In this study, these background factors were included as independent variables, and the promotion of excellent teachers was the dependent variable. Through the C5 decision tree, the prediction of the promotion model of excellent teachers could be explored for the manager to make related decisions through this institution's research.

Methodology

Samples and Procedure

In the present study, data were collected from the academic affairs office. All the data were identified, and there were no ethical problems. One hundred excellent teachers in the case university in the academic year from 2011-2020 were invited to answer four questionnaire scales online from April 12 to May 11, 2021. A total of 59 participants completed this survey. The four scales include the teaching beliefs scale, teaching values scale, creative teaching scale, and educational technology standards scale. The researchers added a declaration at the beginning of the survey stating that academic institutions will only use it with their names kept anonymous and not for business purposes. In addition, these questionnaires were related to the evaluation of teaching pedagogies. Therefore, the ethical procedure was followed and matched the regulations of exemption from the I.R.B. review in Taiwan's Ministry of Health and Welfare (2012).

Measures and Variables

Basic statistics were carried out to understand the composition structure of excellent teachers at the university. The background variables were gender (male, female), age (thirty:30-39, forty:40-49, fifty:50-59, sixty:60 or above), experience (ten:4-10, twenty:11-20, thirty:21-30, forty:31-40 years), field (management, science and engineering, design, humanities and social sciences, informatics), and professional title (lecturer, assistant professor, associate professor, professor) of excellent teachers. The type of promotion from excellent teachers was coded into four clusters (research, teaching, skill, and no promotion).

The teaching beliefs scale has 22 items related to two dimensions: sensitivity and inclusion (Heimlich, 1990). Heimlich (1990) defined three levels for each score: low (0–6.0), neutral (6.0 – 8.0), and high (8.0 – 11) to label the respondents' Teacher Belief Scale type. After numeric scores were plotted on a grid with defined quadrants, the types of teaching beliefs could be explored.

Combining these two dimensions categorizes teachers into four groups: 1. experts have low sensitivity and low inclusion, 2. facilitators have low sensitivity and high inclusion, 3. providers have high sensitivity and low inclusion, and 4. enablers have high sensitivity and high inclusion.

There are 10 items in the teaching value scale to count five centers (content, environment, teacher, group, and student). From the average scores of ten items, the center could be ranked from the first to the last and explored, which was focused on by the excellent teacher.

There are 26 items in the creative teaching scale, including six domains: personality traits, motivation teaching, content knowledge, shared value, divergent thinking, and school culture. The scale is the same as the five-point Likert scale. The options were "strongly agree," "agree," "neutral," "disagree," and "strongly disagree." The scoring order was 5, 4, 3, 2, and 1 point, respectively. The higher the score, the more creativity the excellent teacher was with literacy.

There are 10 items on the educational technology standard scale. Excellent teachers' productivity and professional practice could be explored using a five-point Likert scale to understand their information technology competency. The higher the score, the more I.T. competency the excellent teacher had. To classify the level of the scores, the frequencies of three levels (coded: high > 4.5, middle = 4.0.-4.5, and low < 4.0) were also counted according to the average scores between creative teaching and educational technology standard scales.

Since the scores of the external scales were both five points, a correlation analysis was carried out to understand their effect. In addition, all background variables were analyzed using a cross table with internal and external characteristics. Through ANOVA, a significant difference between categorical and continuous variables could also be detected.

Finally, based on C5 cluster rules, the prediction model of promotion from excellent teachers in the case university was explored. The independent variables were background factors (gender, age, experience, field, and professional title of excellent teachers), teaching belief types (expert, facilitator, provider, or enabler), teaching value types (content, environment, teacher, group, student), creativity, and I.T. levels (high, middle, low). The dependent variable was the promotion type (research, teaching, skill, and no promotion). The results ensure the allocation of the resources concerning different backgrounds and internal and external clusters and see the weight of factors.

Results

Basic statistics

Table 1 shows the frequency counts, including six background variables, internal characteristics (teaching belief and teaching value), and external competency (creativity, information technology). Excellent teachers are the most common group in the field of management. There are more males (32) than females (27). Associate and assistant professors were the main groups. Most of them were between 40 and 59, and teaching experience is mainly in the 11-20 years range. Research is the highest rate of promotion for excellent teachers.

The enablers' frequency counts were the most related to teaching beliefs. High sensitivity and inclusion are the primary excellent teachers' teaching beliefs. Regarding teaching value, most excellent teachers were focused on being environment-centered (E) (mean=3.95). Since the average among the six domains of creativity (personality trait, motivation teaching, content knowledge, shared value, divergent thinking, and school culture) and I.T. competency (productivity and professional practice) are both 4.3 and high in Table 2, between 4.0 and 4.5 was coded as the middle level. The high level is the highest between creativity and I.T. from excellent teachers.

Table 1: Frequency counts of excellent teachers

Item		Count
Field	Management	15
	Science & Engineering	11
	Design	6
	Humanities & Social Sciences	16
	Informatics	11
Gender	Male	32
	Female	27
Professional title	Lecturer	6
	Assistant professor	21
	Associate professor	22
	Professor	10
Age	Thirty	1
	Forty	29
	Fifty	21
	Sixty	8
Experience	Ten	5
	Twenty	35
	Thirty	19
Promotion	Research	26
	Skill	6
	Teaching	5
	Not yet	22
Teaching Belief	Enabler	48
	Expert	1
	Facilitator	4
	Provider	6
Teaching Value	Environment(E)	33
	Content(C)	8
	Teacher(T)	5
	Student(S)	4
	Group(G)	4
	C/S	2
	E/S	3
Creativity	High	26
	Middle	19
	Low	14
I.T.	High	27
	Middle	15
	Low	17

Table 2: basic statistics of creative teaching and information technology

Type	Min	Max	Mean	SD
Personality trait	2.14	5.00	4.32	.47628
Content knowledge	2.80	5.00	4.32	.55734
Divergent thinking	2.75	5.00	4.36	.58781
Shared value	2.50	5.00	4.29	.63959
School culture	2.00	5.00	4.21	.77425
Motivation teaching	2.50	5.00	4.48	.60475
Information technology	3.10	5.00	4.30	.56140

Table 2 shows that excellent teachers' motivation teaching is the highest item (mean=4.48) of creative teaching. School culture is the lowest item of the six domains; however, the average score is still higher than 4.2. In addition, the average I.T. competency of excellent teachers was 4.3 high. Both creativity and I.T. competency is good for the most excellent teachers, in this case, university.

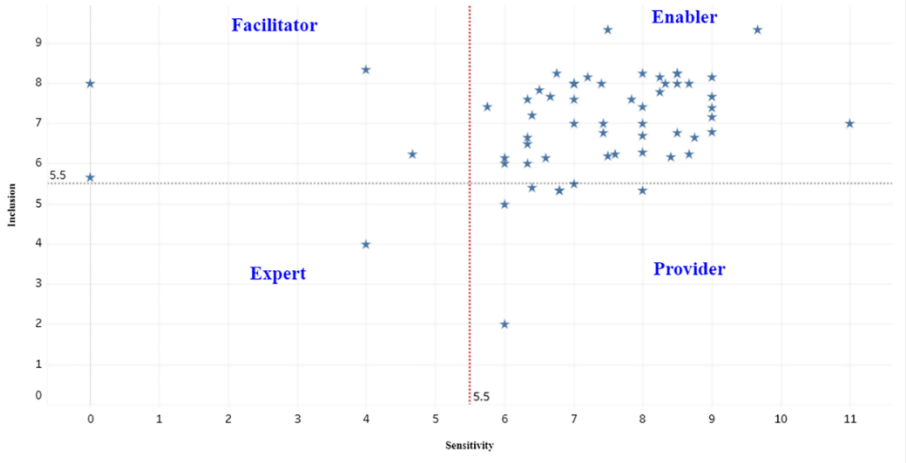

Figure 2: Teaching beliefs scale

Based on the star scores (Figure 2), the respondents fell into one of four types: enablers, providers, facilitators, and experts. It was found that of the participants, 81% (n = 48) were scored as "enabler," 10% (n = 6) were scored as "provider," 7% (n = 4) were scored as "facilitator," and 2% (n = 1) scored as an "expert." The mean calculated score for sensitivity was 7, and for inclusion, the score was 7. Most excellent teachers belong to the type of enabler (high sensitivity, high inclusion).

Correlation and Chi-squared test

Creativity and information technology are positively related (correlation coefficient=.698), as shown in Table 3. The better the creative teaching, the better the I.T. competency of excellent teachers.

Table 3: Pearson Correlations

		ACA	AIT
ACA	Pearson correlation	--	
	N	59	
A.I.T.	Pearson correlation	.698**	--
	significance （two-tailed）	<.001	
	N	59	59

Note: ** p-value is significantly smaller than 0.01

From the Chi-squared test in the cross table, the effect between the I.T. competency and teaching experience (Table 4) was significantly different (p-value<.05). The teaching experience below 20 years had higher levels of I.T. competency.

Table 4: Cross Table of Experience with I.T. levels

			I.T.			Total
			High	Middle	Low	
Experience	Ten	Count	3	2	0	5
		% within IT	11.1%	13.3%	0.0%	8.5%
	Twenty	Count	18	11	6	35
		% within IT	66.7%	73.3%	35.3%	59.3%
	Thirty	Count	6	11	2	19
		% within IT	22.2%	64.7%	13.3%	32.3%

C5 Decision Tree

There were six rules in the C5 decision tree model. The precision was 82%. Independent factors, including experience, teaching value, and field, influenced the promotion type of excellent teachers. Regarding promotion type, research was the main channel in the university case (.44). Also, concerning the teaching experience as a variable (20 and 30). 48 belonged to the research promotion. Furthermore, in the environment-centered fields of science and engineering, informatics, and management, the promotion rate with research was higher than .52.

The models were as follows (Figure 3):

(1) If the teaching experience is 6-10 years, then the promotion type is not yet. (Node1)

(2) If the teaching experience is higher than 10 years, the teaching value is group-centered, then the promotion type is research. (Node 2 & 3)

(3) If the teaching experience is higher than 10 years, the teaching value is content-centered or individual student-centered, then the promotion type is a skill or teaching. (Node 2 & 4)

(4) If the teaching experience is higher than 10 years, the teaching value is environment-centered, and the field is designed, then the promotion type is a skill. (Node 2 & 5 & 6)

(5) If the teaching experience is higher than 10 years, teaching value is environment-centered, and the field is science and engineering, informatics, or management, then the promotion type is research. (Node 2 & 5 & 7)

(6) If the teaching experience is higher than 10 years, the teaching value is environment-centered, and the field is humanities and social sciences, then the promotion type is not yet. (Node 2 & 5 & 8)

(7) If the teaching experience is higher than 10 years, the teaching value is teacher-centered, then the promotion type is not yet. (Node 2 & 9)

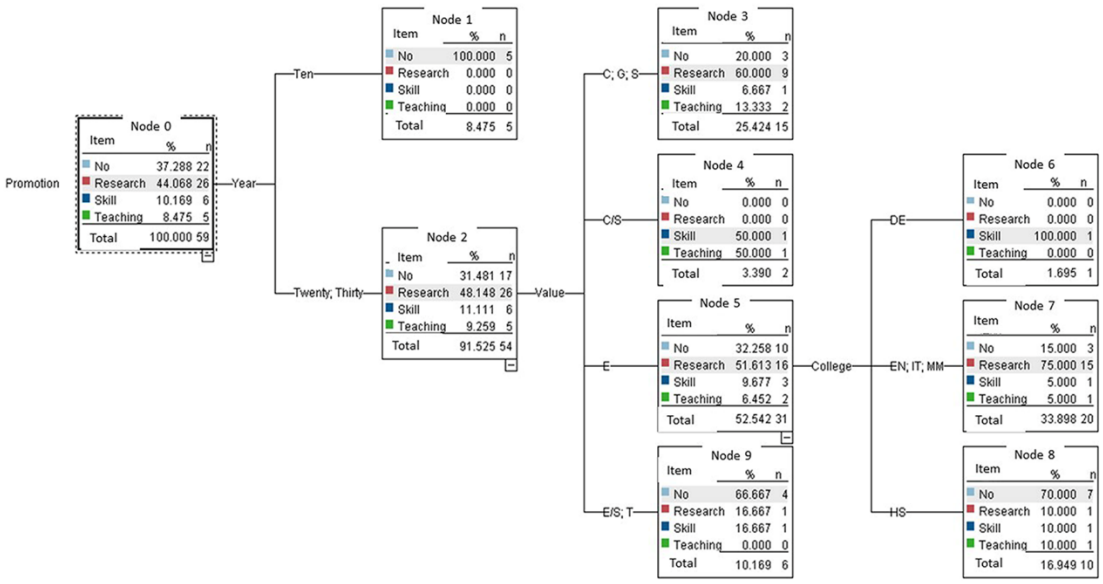

Figure 3. C5 decision tree

Discussion

This research served three purposes: (1) It explored the inner characteristics of excellent teachers; (2) it explored the external competency of excellent teachers; and (3) it predicted the promotion model of excellent teachers. Additionally, some related literature supported our findings, and the inner characteristics were divided into teaching beliefs and values.

Teaching Belief: Enabler

Based on the learner-centered teaching belief, we can infer that a fourth to a fifth of the excellent teachers in the university will demonstrate behaviors at a high level related to understanding and addressing the needs of their students. In this research, 81.4% of the excellent teachers were clustered into high sensitivity and inclusion. It meant that most of the excellent teachers in the case of the university were enablers. This result is consistent with previous academic results worldwide

(Cano et al., 1992; Giorgi & Roberts, 2012; Heimlich, 1990; *Ramchander, 2020;* Whittington & Raven, 1995). Most excellent teachers paid attention to the students' needs, and let the students think, design, discuss, group work, present, and practice with freedom during their learning process in the classroom. Therefore, there are many innovative pedagogies created by teachers to enhance learners' motivation and satisfaction, such as problem-based learning (Belland et al., 2020; Edens, 2000; Jones & Mendez, 2021), team-based learning (Cagliesi, & Ghanei, 2022; Choi et al., 2021; Michaelsen & Sweet, 2008), attention-relevance-confidence-satisfaction (ARCS) (Brieger et al., 2020; Keller, 2000; Sugahara & Dellaportas, 2018), Conceive-Design-Implement-Operate (C.D.I.O.) (Crawley et al., 2014; Hawse & Wood, 2019; Polenov et al., 2020), and so on. In the next step, it would be interesting to analyze and discuss the pedagogies most excellent teachers utilize.

Teaching Value: Environment (environment & equipment)

Regarding the teaching value, the results showed that most excellent teachers focused on the environment-centered, with a percentage was 0.56 (The rank was environment>Individual Student>Teacher>Group>Content). The result signifies that creating and improving the learning environment, effective academics, and facilitating learning for the learners' benefit is for educators to understand their preference toward a teaching style (Heimlich, 1990; Huntley-Moore & Panter, 2006; Kirupainayagam & Sutha, 2022). The results showed that creating a good environment is the accountability of individual teachers and includes administrative institutions' support, corresponding, and responsibilities. Some researchers have emphasized friendly classroom management and pleasant interaction situations in the learning environment (Maheux, 2001; Sueb et al., 2020). Therefore, some environment or equipment innovation pedagogies have been applied in class interactions globally, such as experiential learning or project learning (Amigó, & Lloyd, 2021; Murshidi, 2021; Tavangar, 2014); game learning (Barr, 2017; Khalid et al., 2020; Nadolny et al., 2017), service-learning (Hsiung, 2021; Sahatjian et al., 2022; Sykes et al., 2017), and so on.

Creativity & I.T.

In the analysis of correlation, creativity and I.T. were positively correlated. These results were consistent with other studies in different countries (Laval et al., 2021; Lee & Hong, 2016; Stolaki & Economides, 2018). However, I.T. competency is negatively related to teaching experience. Information technology knowledge and skills are updated daily; however, more experienced teachers may think that the traditional pedagogies are sufficient, show a decline in motivation to learn new skills (Torenbeek & Peters, 2017), or are afraid or have stress about accepting the new technology (Özgür, 2020). Concerning administrative support, the academic affairs office can plan and invite digital experts to train the teachers, especially in more detailed steps for the highly experienced teachers. Therefore, students in each class can learn about modern and practical I.T. competencies. In addition, regarding creativity with I.T., different tools in the e-market, such as Facebook, YouTube, Instagram, WebQuest, Zoom, Google Meet, Zuvio, Robot, V.R., AR, e-book, podcast, e-learning, simulation, A.I., E-portfolio, Big Data, Massive Open Online Course/MOOC,

I.O.T., 3D print, and so on have been developed, and innovative pedagogies between creativity and I.T. have also designed in the learning environment in higher education, such as the flipped classroom instructional model (He, 2020; Long et al., 2019; Zhu & Xie, 2018). No matter how many years of teaching experience, learning motivation creates win-win situations between students and instructors.

Predicting promotion model

From the prediction model of the C5 decision tree, three significant factors influence excellent teachers' promotion in the case of university. First, the promotion rate was .68 when the teaching experience was higher (over 10 years). Second, the teaching value is clustered into environment-centered teaching, with a value of .67 to pass the teachers' promotion. Third, if the field is science and engineering, informatics, or management, the promotion rate is .85. It is the same with some researchers' findings which focused on research performance (Cai, 2015; Wang et al.,2016). Contrarily, the less experienced, teacher-centered, and humanities and social sciences excellent teachers seemed not worthy of passing the promotion. Most excellent teachers applied for the research promotion; however, the field of design passed the skill promotion, and the fields of humanities and social sciences passed the teaching promotion more easily than the research channel. Since the Ministry of Education (M.O.E.) has opened multiple promotion channels for instructors in higher education in Taiwan (M.O.E., 2016), the innovative pedagogy has become more and more popular (Huang, 2020; Lu, 2020), and the strategy could benefit teachers in different fields to apply the teaching promotion in higher education. These results also confirm the importance of multiple promotions by previous researchers (Cheng et al., 2020; Ho, 2014; Mu & Hatch, 2021). The administrative manager could arrange different resources for each promotion channel; thus, the excellent teachers could satisfy the school's support and retain to serve at school with sustainability.

Implications

In traditional pedagogy, university teachers paid attention to self-teaching and regarded teacher-centered as normal. However, the excellent teachers were clustered into high sensitivity and inclusion in this study. The students-centered belief could be designed in the curriculum between teacher-developing programs and teaching training workshops. In Taiwan, most teachers in universities lack teacher development programs. Only primary and secondary education offers teachers programs such as Philosophy of Education, Educational Psychology, Sociology of Education, and Introduction to Special Education. The training between high sensitivity and high inclusion is necessary to learn from the curriculum of psychological counseling in higher education. Therefore, the administration managers could design basic educational workshops and invite related professors and experts to share their teaching beliefs and some meaningful case studies in the universities to improve the growth of enablers.

Most excellent teachers in the case of university belong to environment-centered teaching values. Therefore, profound equipment support or expert training with the latest innovations and information technology operations are necessary for logistics from the side of administration offices. Since managers offer sufficient resources, teachers can create attractive teaching materials for students or set up practical situations, such as intern field areas, to simulate vocational operations after graduation. From the spotlight of the learning environment, the enrollment rate of undergraduates could be improved by the reputation of alumni. In addition, international visits and exchanges also improved the excellent teachers' vision and world perspective. Administration offices could plan the budget for short-term visiting scholars to encourage excellent teachers to pursue their specific welfare and bonus.

In addition, the strategy of multiple promotion channels should be encouraged by excellent teachers. Through teaching, skill, or research experience sharing, teachers' evaluation indicators might be modified according to different fields. Since excellent teachers in science and engineering, informatics, and management fields are easier to publish in Scopus journals in the case of a university, their evaluation indicator in research could be higher in the total weight of teachers' assessment. As excellent teachers are in design, skill performance should be represented in journal items such as skill reports, inventive patents, or works exhibitions. Finally, since excellent teachers belong to the humanities and social sciences fields, the performance indicator could be more focused on teaching. Thus, the foundation indicators are the teaching experience, students' satisfaction scores, and creative teaching materials or pedagogies.

Recommendations

Currently, university social responsibility (U.S.R.), service learning, technical implementation, English as a Medium of Instruction (E.M.I.), and sustainable development goals (S.D.G.) in universities are the latest trends in teaching and learning. Since the teachers paid more attention to developing mature characteristics and nutrient undergraduates' competency through humanities and social sciences, the educational outcome is necessary to spend a long time and be checked by the other indicators such as career interest or competency development.

There are many research methodologies in the educational area, such as quality and quantity research. The questionnaire analyses demonstrated excellent teachers' initial direction and phenomenon in this study. However, detailed preparation, process management, organization, and modification of teaching skills or pedagogies are necessary to collect through In-depth interviews in the future. Therefore, more precise and specific factors could be explored depending on the different promotion channels.

Conclusions

This study explored the potential characteristics of excellent teachers between teaching beliefs and teaching values. In the case of the university, most excellent teachers are highly sensitive and

inclusive. Regarding teaching values, the environment-centered is the top one. Therefore, related administrative support could be arranged, and the weight of teaching resources could be modified in the institutional planning according to the result. In addition, creative teaching using information technology is positive; hence, excellent teachers who have taught for more than 20 years are encouraged to advance their I.T. competency to offer the latest pedagogies for each student.

Moreover, the field, teaching value, and teaching experience were significant factors that influenced excellent teachers' promotion type. Regarding the promotion percentage of excellent teachers, there are still .37 hidden values (22 of them not yet applied). In future research, excellent teachers can be observed for longer periods to develop more precise models. The study's outcome may be helpful for novice teachers' education and help the management of other universities that face similar situations in their allocation of administrative resources.

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