Working together
www.rcis.ro

Revista de Cercetare si Interventie Sociala

ISSN: 1583-3410 (print), ISSN: 1584-5397 (electronic)

FACTORS INFLUENCING THE TEACHING BELIEFS OF UNIVERSITY FACULTY MEMBERS DURING COVID-19 PANDEMIC

Wan-Chen HSU

Revista de cercetare și intervenție socială, 2022, vol. 78, pp. 107-122

https://doi.org/10.33788/rcis.78.7

Published by:
Expert Projects Publishing House

expert projects
publishing

On behalf of:
„Alexandru Ioan Cuza" University,
Department of Sociology and Social Work
and
HoltIS Association

Factors Influencing the Teaching Beliefs of University Faculty Members during Covid-19 Pandemic

Wan-Chen HSU[1]

Abstract

Taiwanese university educators' efficacy is traditionally associated with the belief in aligning teaching and learning outcomes. However, existing research on teacher efficacy involving modern university educators is limited. We bridge this gap by exploring university educators' perceived efficacy and the factors that influence those perceptions. We surveyed teachers from a national university in southern Taiwan using the Teacher Efficacy Scale and interviews about the source of efficacy beliefs. We obtained 74 survey responses and descriptive statistics and analysis of variance were performed. During the interviews, four qualitative data sets were collected, and we analyzed the data using a continuous comparison analysis method. Generally, participants had medium- to high-levels of perceived efficacy; however, levels differed by gender. Efficacy scores were also higher in course design, technology usage, and classroom management, compared to instructional strategies and learning assessments. The main sources of efficacy perception included mastery experience, role models, student-teacher relationship, professional growth, and student support. Our findings suggest several strategies for follow-up research to promote university educators' sense of efficacy.

Keywords: university educators, teacher efficacy, sources of efficacy beliefs, student-teacher relationship.

Introduction

The COVID-19 pandemic, caused by the novel Sars-CoV-2 coronavirus, has caused the death of millions of people and disrupted daily life worldwide. During this pandemic, individuals were restricted from going outside, and physical activities were reduced as a result of its impact. Consequently, people gathered, exchanged information, and entertained themselves via the Internet. On May 19,

[1] National Kaohsiung University of Science and Technology (NKUST), Center for Teaching and Learning Development, Kaohsiung, TAIWAN. E-mail: wanchen@nkust.edu.tw

2021, Taiwan's Ministry of Education announced that students at all levels would stop attending schools, fully initiating online instruction. The impact of campus closures and significant social changes has brought many challenges to higher education.

Literature review

In many higher education institutions worldwide, graduate teaching assistants play a critical role within the higher education teaching workforce; however, teaching is not a top priority for many budding academics (Shum, Lau, & Fryer, 2020). The quality of university education depends on how educators teach and students learn. Both educators' views about teaching and their understanding of what effective teaching is, affect individual teaching behaviors. Professional development initiatives for academic teaching staff have become increasingly prevalent in higher education; however, there is limited evidence on how teachers change through such initiatives.

As flexibility in teaching is a commonly observed demand, knowledge and core beliefs about one's own ability to teach are pivotal (Fabriz *et al.*, 2020). Teacher efficacy, thus, refers to teachers' belief in their ability to achieve desired teaching outcomes. It was assumed by the authors of this research that, in a teaching environment, teacher efficacy affects the goals set by educators as well as the effort invested and persistence maintained toward the said goals (Bandura, 1997; Tschannen-Moran, Woolfolk Hoy, & Hoy, 1998). It has been proven that university educators' perceived efficacy and associated beliefs positively affect their teaching performance and students' learning achievements. The incorporation of the said beliefs in the teaching process has a direct and indirect impact on students' learning effectiveness, as well as their mentalities and teaching behaviors (Woolfolk Hoy & Davis, 2006). Hence, educators' teaching beliefs are closely associated with their teaching behaviors. Teacher efficacy, which originates from personal experience, affects the planning and direction of performing the teaching tasks, as well as the self-evaluations of teaching performance following educational tasks. Educators with positive teacher efficacy tend to manifest positive behaviors, such as increased willingness to engage with students and employing new teaching strategies; as such, students of such educators show an improvement in their learning performance and motivation (Knoblauch & Woolfolk Hoy, 2008).

There are multiple sources of teacher self-efficacy. Bandura (1977) suggests four main sources of efficacy beliefs, including enactive or mastery experiences, vicarious experiences, social/verbal persuasion, and physiological and affective states. The model of the "cyclical nature of teacher efficacy," proposed by Tschannen-Moran *et al.* (1998), suggests a process of formation of teacher efficacy whereby the experiences gained from the sources of self-efficacy were prerequisite factors for future performance and further reinforcement of perceived

efficacy. Specifically, existing mastery and vicarious experience, outcomes of social persuasion, and current responses to physiological and emotional cues, as well as other sources of efficacy information, are replaced through a feedback loop, facilitating the cyclical accumulation of a positive sense of self-efficacy. Mastery experience can be divided into enactive and cognitive mastery. Enactive mastery refers to successful teaching practice and experiences obtained through actual teaching, and is considered to be the greatest influence on the formation of teacher efficacy (Bandura, 1977). Cognitive mastery refers to teachers' reflections on and understanding of pedagogy and their knowledge, skills, and teaching methods, and it does not include actual teaching practice (Palmer, 2006; Palmer, 2011; Phan & Locke, 2015). Vicarious experience is associated with changing one's behavior following a role model. This is usually done through observation or apprenticeship, in which the observer learns from the success and failure experienced by the role model, helping the observer form teaching beliefs (Hoy, 2000). The stress caused by tedious teaching tasks or physiological and emotional messages, such as anxiety and fear, are likely to affect teachers' confidence in self-assessments and future teaching success (Bandura, 1977). Verbal persuasion refers to the affirmations, encouragement, and strategies obtained through verbal interaction with others.

Research on teacher efficacy has, for the most part, focused on primary and secondary school education (Tschannen-Moran & Woolfolk Hoy, 2002), and few studies have investigated teacher efficacy among university educators. Duong, Nguyen, and Nguyen (2017) conducted a survey on teacher efficacy among 124 university educators in Vietnam, finding that female teachers' perceived efficacy was higher than that of male teachers in terms of course design, technology usage, interpersonal relationships, and learning assessments. However, no differences were found in the areas of instructional strategies and classroom management. Moreover, there were no significant differences in perceived efficacy between teachers with different years of service, while teaching assistants appeared to have significantly higher self-efficacy in technology usage than lecturers. Chang, McKeachie, and Lin (2010) investigated teaching beliefs among university educators in Taiwan. Based on 505 completed responses, they concluded that public university educators had greater perceived teaching support and efficacy than private university educators. However, the correlation coefficient between perceived teaching support and efficacy of public university educators was smaller than that of private university educators. Additionally, peer support, teaching resources, and the type of university were revealed to have an impact on teaching effectiveness.

The quality of higher education and corresponding faculty are important measures of a nation's competitiveness and global influence. The rapid growth in the number of universities in Taiwan from 1994, promoted by the Ministry of Education, has resulted in Taiwan having the densest network of higher education institutions in the world (Li, 2017). However, except for doctoral graduates from normal universities, most university educators in Taiwan are not

trained in pedagogical methodology. Teaching knowledge is usually acquired through observing instructors as undergraduate students and imitating the vicarious experiences of role models. Only when the students themselves become university educators are they able to practice teaching in a specific academic field and pursue self-growth. As university educators tend to have specified fields of expertise, they are more likely to develop a sense of autonomy and isolation, leading to difficulties in forming socially comparative efficacy beliefs (Fives & Looney, 2009). According to the Department of Statistics of the Ministry of Education (2018), there are more male teachers (64%) than female teachers (36%) in Taiwanese universities. Considering that Duong, Nguyen, and Nguyen (2017) find that teachers of different genders may exhibit differences in perceived teacher efficacy, and given the limited number of studies focused on university educators' perceived efficacy and gender differences, in this research, a case study was conducted involving educators from a university in Taiwan. The research purposes include: (1) Understanding the prevailing status of university educators' perceived teacher efficacy and comparing the differences across various dimensions; (2) Comparing the differences in teacher efficacy between teachers of different genders: (3) Summarizing the factors that influence the sources of teacher efficacy of university educators; (4) Proposing strategies to promote the perceived efficacy of university educators, based on the findings.

Methodology

A national university in southern Taiwan was chosen as the case study. The university has nearly 850 full-time educators. The university's ethics committee approved this research. All participants were requested to provide written informed consent before the survey and interviews. Data were collected in two stages: In stage 1, the Teacher Efficacy Scale was adopted to investigate the prevailing status of participants' teaching beliefs. In stage 2, semi-structured interviews were conducted with willing respondents to the survey. The collected data were analyzed based on the research purposes to yield a better understanding of participants' teaching beliefs.

Research participants

Educators from the selected university were recruited as research participants. In stage 1, a questionnaire survey was conducted to collect data on teacher efficacy. In stage 2, several survey participants were asked to partake in a semi-structured interview to collect their in-depth views on the sources of teacher efficacy. A total of 108 survey questionnaires were distributed in May of 2021, and 74 valid responses were received in early July. Among the respondents, 51 were males (68.0%) and 23 were females (32.0%), and 4 (2 males and 2 females) agreed to

also participate in the interviews. The participants' average teaching experience (both inside and outside the investigated university) was more than three years. *Table 1* presents the interviewees' background.

Table 1. Descriptive Statistics of Participants of the Semi-Structured Interview

Teacher	Material	Department	Gender	Title	Years (and months) Teaching Experience at the University	Years (and months) Teaching Experience before University
A	T-1	Department of Information Management	Female	Assistant Professor	6 years 11 months	No
B	T-2	Department of Marketing and Circulation Management	Male	Associate Professor	2 years 6 months	2 years 6 months
C	T-3	Chinese Language Group, Basic Education Center	Female	Associate Professor	5 months	3 years
D	T-4	Department of Industrial Engineering and Management	Male	Associate Professor	6 years 6 months	9 years 6 months

Research instruments

The University Educator Efficacy Scale developed by Chang *et al.* (2010) was used to measure teacher efficacy. The scale comprises 28 items covering curriculum design (5 items), instructional strategies (5 items), technology usage (5 items), classroom management (5 items), interpersonal relationships (3 items), and learning assessments (5 items). Each item is rated on a 5-point Likert-type scale ranging from 1 = "absolutely inappropriate" to 5 = "absolutely appropriate." The reliability of the scale was .95, which explains 74% of the total variance. In the second stage, six open questions on the sources of teaching beliefs were used (*Table 2*).

Table 2. Outline of the Interview on the Manifestation of Teaching Beliefs and Behaviors

Focus	Open question
Sources of Teacher Efficacy	1. During your teaching career, were there any experiences that gave you a sense of achievement or satisfaction? Please provide examples. (A) (C) 2. During your teaching career, were there any role models that you have learned from? What influence have they had on you? Please provide examples. (C) 3. How do you interact with students? What are the influences of such interactions on you? Please provide examples. (D) 4. Do you think your own professional growth affects your teaching confidence? Please provide examples. (D) 5. Do you think the comments of influential third parties affect your teaching confidence? Please provide examples. (C) 6. What other phenomena or experiences do you believe has affected your teaching confidence? Please provide examples. (D)

Note: (A) indicates the item was designed with reference to Klassen et al. (2009); (B) indicates the item was designed with reference to Cantrell and Callaway (2008); (C) indicates the item was designed with reference to the sources of self-efficacy proposed by Bandura (1997); (D) indicates that the item was developed by the present rese

Data analysis

In this research, the mean values were used to indicate the concentration of teacher efficacy, a dependent sample single-factor analysis of variance was used to compare the differences between participants for each dimension, and the independent sample *t*-test was adopted to compare the differences between genders. The interview participants were coded ranging from "T01" to "T04," along with the date of the interview, and data were compiled using "belief sources vs. events" as a guideline.

Results

Overall teacher efficacy and gender differences

The means of each item ranged from 4.06 to 4.54, showing that the participants had medium to high perceived confidence in *accomplishing teaching tasks* (Table 3). However, the dimension ratings were significantly different ($F[5, 370] = 3.11$, $p < .01$), with the only exception being *interpersonal relationships*. The post-hoc comparison revealed that the mean response values for *course design* were significantly higher than those of other dimensions, followed by that of *technology usage* and *classroom management*. Moreover, those for *instructional strategies*

and *learning assessments* were the lowest. The Partial Eta Squared (η_p^2) was .568, indicating that the correlations between variables were substantial. Further, only the value for *technology usage* was significantly different between male and female participants ($t = 2.89$, $df = 73$, $p < .01$). Specifically, male participants had a higher overall value than female participants (Cohen's $d = 0.71$, effect size $r = 0.33$).

Table 3. Mean and Standard Deviation for Each Dimension

Dimension	# of Items	Mean Rating of the Dimension	SD of the Dimension Ratings	Mean Rating by Item
Course Design	5	22.57	2.26	4.51
Instructional Strategies	5	20.23	2.77	4.05
Technology Usage	5	21.58	2.53	4.32
Classroom Management	5	21.72	2.53	4.34
Interpersonal Relationship	3	13.47	2.53	4.49
Learning Assessments	5	20.89	2.52	4.18

Note: N = 75

Sources of teacher efficacy

Based on the findings of the interviews, the sources of teacher efficacy included mastery experience, role model imitation, student-teacher interaction, professional growth, and student support. The details are as follows.

Mastery experience

The interviewees believed that mastery experience was a source of self-efficacy. Interviewee A said,

> *"Many teachers shared their teaching experience [with me], and [I've] learned from [their] teaching methods, made modifications, and applied [them to my teaching] when I returned [to the university]" (T1-20210926). Interviewee C stated, "A senior female doctoral student taught me [the method], [which] I used when teaching and received a satisfactory reaction from my students" (T3-20211003).*

The interviewees also revealed that they had acquired teaching methods through self-study, and gained a sense of accomplishment and self-confidence from the teaching results. Through self-study and accumulating teaching experience, the interviewees were able to develop a personalized teaching method that was conducive to students' learning performance, as demonstrated by interviewee D's statement:

> *"My pluralistic teaching method was developed through a gradual accumulation of teaching experience and refinement" (T4-20211007).*
>
> *"Before teaching this course in the university, I used this method when working as a part-time instructor at other schools, and [the results] were pretty good! It was when I was [working] at the further education department, I thought that, since it worked with [students] of further education, it should work with [students of] universities. So, I applied [the method] to the university students, and the results were really good!" (T1-20210926).*
>
> *"There are so many different problems [one] can encounter when teaching; who teaches [you] these things?! It was the same in terms of what you mentioned. I didn't know how to teach in the beginning, so I just observed how others were teaching on the Internet and learned [the skills] one by one" (T4-20211007).*

Imitating role models

All the interviewees reported that they had acquired experience from successful predecessors or colleagues as role models for teaching. As interviewee D stated:

> *"[My] role model was a teacher from the research institute" (T4-20211007).*

By imitating and learning from other teachers and making modifications, the interviewees were able to apply the methods and skills learned to their classroom, and they received positive responses from students.

> *"The students would mention that some teachers have used certain teaching methods and they were very good; so then [I] learned those methods. So, for me, it was mostly inspired by the teachers around me or previous teachers" (T1-20210926).*
>
> *"I have a role model. When I was studying at graduate school, I met Associate Professor Chien, who became the role model I learned from. The future generations of disciples [should] get along well with [their own] teachers" (T2-20210930.)*
>
> *"A senior female doctoral student taught me a method: telling stories, [instead of] explaining the text; telling students historical stories, and embedding the thing (knowledge) into the stories" (T3-20211003).*

Student-teacher interaction

The student-teacher relationship was reported to be a source of teacher efficacy. According to the interviewees, maintaining a good student-teacher relationship

positively affected teaching and students were more willing to provide feedback and suggestions regarding the course.

"[When] you are close to the students, some of them may be willing to answer your questions in terms of how the course was and where [it can be further improved]. And [also] you'll get necessary information faster when there are problems with some students" (T1-20210926).

"For the students who are close to me and spend more time with me, I usually know [everything about them]: their family background, parent-child relationships, relationship between siblings, sources of household income, and personality" (T2-20210930).

"[It's important] to establish a good relationship in daily life, and then go on to chatting [with them] more in class. For instance, I often tell them not to stay in the classroom all the time, go participate in social clubs and exercises more often, and [do more] physical activity to build more relationships so that they are less likely to suffer mental stress. [You should maintain] a relationship as both a teacher and a friend and not be too distant" (T4-20211007).

Unlike teachers in junior and senior high schools, university professors do have significant time to spend with students and therefore, must familiarize themselves with the students individually or collectively, using the limited time spent together. Most interviewees believed that good student-teacher interactions were vital, and that teachers should treat students like family. Interviewees B and C both supported this viewpoint:

"I treat my students as my own children" (T2-20210930); and "I treat them as friends." (T3-20211003) However, they also agreed that a certain amount of distance was needed to avoid problems. Interviewee D mentioned, "[It's necessary to] keep certain distance with students [because] sometimes, when you know each other too well, they forget to behave themselves in front of you." (T4-20211007)

"[I'd] use the meetings we have. I won't talk about papers and theses with you (the student) for an hour or two. We'd talk about things in life. Only when the distance between the teacher and student has been shortened should we talk further about studies" (T2- 20210930).

"You have to care about the students in class, there is no other way. [Otherwise], students [tend] to stay at a distance. [When you] start with student-teacher interactions and establish a [good] relationship, you can focus [your efforts] on the teaching. Interactions online are quite distant, face-to-face student-teacher interaction is more effective" (T4- 20211007).

"[I treat my students] how I want others to treat my children. To see this from another perspective, when I have a graduate student [I ask myself] if she were my child, how would I treat her? Of course, if she were my child, I'd have more than two years of interaction with her. I hope to have the opportunity to participate in her future life" (T2-20210930).

Furthermore, most interviewees believed that each student is unique, and teachers cannot control what kind of students they may encounter; hence, each student should be treated as their own individual.

"[I] think it's difficult to guarantee the performance of all students because there are many types of students, and each one is a different type. I can only say that there are courses where I can design multiple evaluations so that every student can use their strengths, but I don't think there is a way to cover everyone" (T1-20210926).

"Every student should be treated as a different individual. Confucius once said that there shall be no partiality with any pupil!, But for most teachers nowadays, the teaching load (workload) is heavy. There are 60 students in a class. It is difficult to work out the differences of every single student" (T2-20210930).

"There's a saying that makes perfect sense: "teach students in accordance with their aptitude." According to my understanding, it subtly suggests that, even though the teaching materials are the same, some students can understand while others just can't. Some just connect with you while others just don't. These things are sometimes beyond your control" (T3-20211003).

Professional growth

Teacher training provides professors who did not receive programed pedagogy with effective teaching methods and skills. All interviewees believed that teacher training courses were helpful. As interviewee C said:

"Participating in teacher training is somewhat helpful to the teachers, and [the techniques and skills acquired] can be used in actual teaching" (T3-20211003).

Interviewee D said,

"After learning [the] mind mapping [technique], [I've] introduced it into the courses in my [own] teaching" (T4-20211007).

"From those teachers, [I] learned not only teaching content but also their teaching methods. I think I've gained a lot [from the training]. Many of the topics were quite in line with what was needed in teaching. Also, I was quite surprised to see that some of the teachers in the training courses were not new. I was very touched, as all the teachers [who attended the training] were very enthusiastic [to improve their skills]" (T1-20210926).

"Participating in the training sessions broadened my teaching horizons. It's an eye-opener for me! I never knew that teaching could be so creative, and that teaching methods and curriculum design could be so diverse" (T2-20210930).

Student Support

For most interviewees, students' comments about the course affected their teaching confidence. As interviewee A said:

"The main source of confidence is the students' comments." (T1-20210926).

The educators often reported feeling frustrated when receiving negative comments from their students. According to interviewee B,

"There may even be rumors that a teacher is not doing well in class. I think it's hard not to let this affect one's confidence" (T2-20210930).

However, interviewee D claimed,

"I only compare my performance with my [own previous performance], and it doesn't matter what the students think" (T4-20211007).

"I think [if] you are willing to take the time to adapt your teaching methods, you'll actually look forward to students' reactions. Of course, I think it doesn't matter whether they are positive or negative; although sometimes, seeing negative comments does make you feel bad" (T2- 20210930).

"In a course where technology was integrated into the teaching, I paid attention to [a certain] student and saw that his cell phone had a poor connection with the university's Wi-Fi; so, I turned my hotspot function on to share it with him, and sometimes just lent him my cell phone... At least I saw his difficulties and tried to help him. [This] helps students learn. So, their comments about me are generally positive, which I think is quite important" (T3-20210930).

Discussion

Dimensional differences in perceived teacher efficacy

This generally assessed course design, technology usage, and classroom management to a greater degree than instructional strategies and learning assessments. Additionally, male teachers' efficacy in technology usage was found to be significantly greater than that of female teachers. These findings are generally inconsistent with those of existing research in foreign countries, such as that of Fives and Looney (2009) and Duong *et al.* (2017), which both find that female university educators had higher teacher efficacy than male educators across most dimensions. This research found that university educators' perceived efficacy was high. However, there were dimensional and gender differences. These findings could be used by universities when designing teacher-training courses. Specifically, the training should emphasize the application of science and technology and student-teacher interactions, as well as use professional development as a feasible strategy to stimulate the sense of efficacy. Furthermore, as university educators are yet to fully master teaching skills and lack practical experience, role models play an important role in promoting efficacy. Providing opportunities for social learning for teachers, and providing them with opportunities to develop observations and vicarious experiences is conducive to their growth (Usher & Pajares, 2008). Professional

growth was also found to be a source of teacher efficacy. As such, introducing measures to facilitate professional growth enhances teaching confidence. Training that incorporates role-playing and practical exercises may thus be particularly beneficial to the professional development of new teachers (Glackin, 2021).

Teachers' efficacy in teaching methods, materials, and technological knowledge may vary according to their background and school (Morris, Usher, & Chen, 2017). Yin, Han, and Perron (2020) investigated teachers in higher education institutions in Mainland China, finding that in research universities, there was a positive correlation between teachers' perceived stress and self-efficacy. This could be because research-oriented universities are more likely to use stress as a motivator to overcome challenges, which promotes teacher efficacy. As teacher efficacy entails national, cultural, and contextual differences, there are no global standards, and evaluation methods to measure teaching ability and behavioral comparisons between student groups are not feasible. It is therefore a more common practice to evaluate teaching efficacy based on a comparison between teachers' past and present performance (Fives & Looney, 2009).

Sources of teacher efficacy

The sources of teacher efficacy included mastery experience, teaching role models, student-teacher interaction, professional growth, and student support. These findings were in line with the study of Bandura (1977), which suggests four sources of self-efficacy; three sources—mastery experience, imitation of role models, and verbal persuasion—were mentioned by the interviewees, while one, physiological and affective stimulation, was not. Fabriz *et al.* (2020) find that professional development programs had a positive impact on university educators' teaching-related self-efficacy and self-concept, as well as subjective knowledge about teaching. As accreditation standards for teaching development programs for university educators have not been developed in Taiwan, it is a research direction worth exploring in further studies.

Interacting with students and obtaining their support were also found to be important sources of teacher efficacy. Shum *et al.* (2020) find that graduate teaching assistants experienced a small increase in a student-focused teaching approach and a moderate increase in teaching self-efficacy at the end of a teaching course. Moreover, the results suggested a developmental pathway from student-focused teaching to teaching self-efficacy to teaching performance. Collier (2005) points out that the interactions and expressed care between teachers and students encouraged teachers to invest more effort in teaching, which is, in itself, a key source for the development of teacher efficacy. Past studies indicate that vicarious experience tends to have more influence on novice teachers (Tschannen-Moran & Hoy, 2007; Hoy, 2000). However, this study found that role models also affected interviewed teachers with more than three years of teaching experience. Following cognitive assessments, teachers were found to use strategies contingently in teaching practice,

indicating that teachers tended to adapt teaching strategies while imitating the personal characteristics of role models to enhance their sense of efficacy. Past research points out that the support of influential parties is one source of teacher efficacy (Mohamadi & Asadzadeh, 2012). This could be because there are more social expectations on university educators than on other teachers. To meet such expectations, educators are required to be positive, have confidence, and commit to their teaching practice. Further, none of the interviewed educators mentioned the influence of administrative support. Hence, the influence of administrative resources on high-performance teachers requires further exploration. Phan and Locke (2015) suggest that the supervisory behaviors of administrators, especially leaders, contribute to the development of a negative sense of efficacy among teachers. Because motivating teachers is the primary task of school administrators, efforts should be made to enhance teacher efficacy and help students learn and grow.

Conclusion

The changes and challenges related to higher education subject university educators to multiple role expectations and pressures. According to traditional research and subject-oriented attitudes, teachers are "dual professionals," who are expected to have both professional knowledge in the subject field as well as teaching knowledge to transfer the implicit knowledge and skills to students. This research was aimed at understanding the teacher efficacy of university educators and exploring feasible strategies to promote professional growth. The findings showed that role models, student-teacher interactions, student support, and professional growth were conducive to improving teacher efficacy and were its main sources. Although the findings have practical significance, this research also has limitations. First, it focused only on one university, which limits the generalizability of the results. Second, using a questionnaire for data collection restricted the range of responses that may have better reflected the actual situation, limiting the accuracy of the responses. As teacher efficacy represents teachers' perceived self-efficacy while teaching, under specific circumstances, the generalized method used in the present research to collect responses and data may have prevented an in-depth understanding of individual teachers' sense of efficacy, leading to low ecological validity. Future studies must focus on specific teaching contexts to acquire a more in-depth understanding of the subject. Compared with teachers from other educational stages, university educators are required to be invested in teaching, research, and other educational services. Hence, the specific feedback processes that enhance or develop teacher efficacy require further investigation. Future research is also suggested to further investigate the influential factors of university educator efficacy by comparing the differences between novice and experienced teachers to design more targeted incentives.

Acknowledgements

The author declare that no support, financial or otherwise, has been received from any organization that may have an interest in the submitted work.

Disclosure statement

There are no relationships or activities that could appear to have influenced the submitted work. Informed consent has been obtained from all patients included in this study.

References

Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review, 84,* 191-215; DOI: 10.1037/0033-295X.84.2.191

Bandura, A. (1997). *Self-efficacy: The exercise of control.* New York: W. H. Freeman and Company.

Cantrell, S. C., & Callaway, P. (2008). High and low implementers of content literacy instruction: Portraits of teacher efficacy. *Teaching and Teacher Education, 24*(7), 1739-1750; DOI: 10.1016/j.tate.2008.02.020

Chang, T. S., McKeachie, A. W., & Lin, Y. G. (2010). Faculty perceptions of teaching support and teaching efficacy in Taiwan. *Higher Education, 59*, 207-220; DOI: 10.1007/s10734-009-9243-8

Collier, M. D. (2005). An ethic of caring: The fuel for high teacher efficacy. *The Urban Review, 37*(4), 351-359; DOI: 10.1007/s11256-005-0012-4

Department of Statistics of Ministry of Education (2018). *Education Statistics Newsletter*. Retrieved from https://reurl.cc/RKW3x

Duong, M. Q., Nguyen, T. A., & Nguyen, H. P. (2017). Demography factors and faculty members' teaching efficacy in Vietnamese higher education. *Journal of Studies in Education, 7*(1), 17-31; DOI: 10.5296/jse.v7i1.10397

Fabriz, S., Hansen, M., Heckmann, C., Mordel, J., Mendzheritskaya, J., Stehle, S., Schulze-Vorberg, L., Ulrich, I., & Horz, H. (2020). How a professional development programme for university teachers impacts their teaching-related self-efficacy, self-concept, and subjective knowledge. *Higher Education Research & Development, 40*(4), 738-752; DOI: 10.1080/07294360.2020.1787957

Fives, H. & Looney, L. (2009). College instructors' sense of teaching and collective efficacy. *International Journal of Teaching and Learning in Higher Education, 20*(2), 182-191; DOI: 10.5901/jesr.2013.v3n1p179

Glackin, M. (2019). 'It's more than a prop': Professional development session strategies as sources of teachers' self-efficacy and motivation to teach outside the classroom. *Professional Development in Education*, *45*(3), 372-389. https://doi.org/10.1080/19415257.2018.1490917

Hoy, W. A. (2000). *Changes in teacher efficacy during the early years of teaching*. Retrieved from https://www.coe.ohio-state.edu/ahoy/efficacy%2043%.

Hoy, W. A. (2000). *Changes in teacher efficacy during the early years of teaching*. Retrieved from http://www.coe.ohio-state.edu/ahoy/efficacy%2043%2022.pdf.

Klassen, M., Foster, R. Y., Rajani, S., & Browman, C. (2009). Teaching in Yukon: Exploring teachers' efficacy beliefs, stress, and job satisfaction in a remote setting. *International Journal of Educational Research, 48*(6), 381-394. https://doi.org/10.1016/j.ijer.2010.04.002

Knoblauch, D. & Woolfolk Hoy, A. (2008). "Maybe I can teach those kids." The influence of contextual factors on student teachers' efficacy beliefs. *Teaching and Teacher Education, 24*, 166-179; DOI: 10.1016/j.tate.2007.05.005

Li, M.J. (2017). My view on higher education—Taking Taiwan's higher education transformation strategy as an example. *Taiwan Educational Review Monthly, 6*(4), 112-117; DOI: 10.5539/hes.v8n4p116

Mohamadi, F. S., & Asadzadeh, H. (2012). Testing the mediating role of teachers' self-efficacy beliefs in the relationship between sources of efficacy information and students' achievement. *Asia Pacific Education Review, 13*(3), 427-433; DOI: 10.1007/s12564-011-9203-82022.pdf

Morris, D. B., Usher, E. L., & Chen, J. A. (2017). Reconceptualizing the sources of teaching self-efficacy: A critical review of emerging literature. *Educational Psychology Review, 29*(4), 795-833; DOI: 10.1007/s10648-016-9378-y

Palmer, D. (2006). Sources of self-efficacy in a science methods course for primary teacher education students. *Research in Science Education, 36*(4), 337-353; DOI: 10.1007/s11165-005-9007-0

Palmer, D. H. (2011). Sources of efficacy information in an in-service program for elementary teachers. *Science Education, 95*(4), 577-600; DOI: 10.1002/sce.20434

Phan, N. T., & Locke, T. J. (2015). Sources of self-efficacy of Vietnamese EFL teachers: A qualitative study. *Teaching and Teacher Education, 52*, 73-82; DOI: 10.1016/j.tate.2015.09.006

Shum, A. L., Lau, P., & Fryer, L. K. (2020). From learner to teacher: (re)training graduate teaching assistants' teaching approaches and developing self-efficacy for and interest in teaching. *Higher Education Research & Development*, 1-18.

Tschannen-Moran, M., & Hoy, W. A. (2007). The differential antecedents of self-efficacy beliefs of novice and experienced teachers. *Teaching and Teacher Education, 23*(6), 944-956; DOI: 10.1016/j.tate.2006.05.003

Tschannen-Moran, M., & Woolfolk Hoy, A. (2002). The influence of resources and support on teachers' efficacy beliefs. Retrieved from http://www.coe.ohio-state.edu/ahoy/AERA%202002%20megan.pdf

Tschannen-Moran, M., Woolfolk Hoy, A., & Hoy, W. K. (1998). Teacher efficacy: Its meaning and measure. *Review of Educational Research, 68*, 202-248. https://doi.org/10.3102/00346543068002202

Usher, E. L., & Pajares, F. (2008). Sources of self-efficacy in school: Critical review of the literature and future directions. Review of Educational Research, 78(4), 751-796; DOI: 10.3102/0034654308321456

Woolfolk Hoy, A., & Davis, H. A. (2006). Teacher self-efficacy and its influence on the achievement of adolescents. In T. Urdan & F. Ajares (Eds.), *Self-efficacy beliefs of adolescents* (pp. 117-137). Greenwich, CT: Information Age. https://doi.org/10.3102/0034654315626801

Yin, H., Han, J., & Perron, B. E. (2020). Why are Chinese university educators (not) confident in their competence to teach? The relationships between faculty-perceived stress and self-efficacy. *International Journal of Educational Research, 100*:101529; DOI: 10.1016/j.ijer.2019.101529.