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College Faculty's Perceptions of their Teaching Efficacy

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Abstract

This study was to investigate faculty perceptions of teaching efficacy and their relation to faculty characteristics. The sample included 513 faculty members from 17 universities in Taiwan. The instrument, Faculty Perceptions of Teaching Self-Efficacy Scale, consisted of six dimensions: Content, Pedagogy, Interaction, Technology, Support, and Assessment. The results indicate that faculty in this sample felt efficacious, from the greatest to the least, in the following areas: Content, Interaction, Support, Assessment, Technology, and Pedagogy. The statistical significances are found between male and female faculty members in their perceptions of teaching efficacy in the area of Interaction and Support. Faculty from public university show higher efficacy than private faculty on all of teaching factors. However, faculty with less than five years of teaching experience show lower perception of teaching efficacy in Content than do other faculty. Faculty teaching courses matched their specialty felt more confident about their teaching than partially-matched faculty. Full professors show a higher level of efficacy perception in Content and Pedagogy than assistant professors.

Keywords: College Faculty, College Teaching, Teaching Self-efficacy

Introduction

The major responsibilities of faculty in the modern university/college are essentially three: teaching, research, and service (Marsh & Hattie, 2003; Shen, 1997). Teaching, especially, is viewed as the primary function of university faculty in Taiwan. Since 2005, the Ministry of Education (MOE) in Taiwan has tried to promote the quality of college teaching by implementing the College Teaching Excellence (CTE) project, a four-year grant of six billion dollars. The MOE seems to believe that the more money that goes to the institutes to purchase hardware equipment and pedagogical and training software, the higher teaching efficacy will be achieved. Nonetheless, very few studies have been done to examine to what extent these hard and software supplies have helped to increase college teachers' belief in their own capacities of teaching. The current study is intended to fill the void in this area of research.

Teaching efficacy is a belief that educators have in their own capacities to influence student engagement and learning (Tschannen-Moran, Woolfolk Hoy, Hoy, 1998). When a teacher has a stronger sense of efficacy about her or his ability to teach, she or he appears to demonstrate a greater level of enthusiasm in teaching and the preparation for teaching. Pedagogically speaking, this type of teachers is more experimental and persistent in dealing with difficulties emerged from teaching (Bandura, 1997).

Teaching efficacy has been the subject of numerous studies with much of the research focusing on the elementary and secondary school teachers (e.g., Hutchinson, 1998; Lin & Correll, 2001). Comparatively little empirical investigation has been devoted to teaching efficacy among university/college faculty members. As John Gardner once commented that professors are to education as goldfish are to water;

they swim in the water but never think to study it (as cited in Gmelch, Wilke, & Lovrich, 1986). This study, examining college teaching, is aimed to understand more about college faculty's sense of teaching efficacy, with the hope to provide insights for future strategies in faculty development training program in Taiwan universities and colleges.

Current literature on teaching efficacy tends to focus on individual characters, such as gender, rank, type of university, years of teaching experience, and discipline. Building upon these studies, this research project explores teachers' perceptions of how A) their own academic expertise and B) experiences in professional development influence teaching efficacy.

Method

Data

The questionnaire, with a cover letter explaining its purpose, was mailed to a random sample of 100 faculty members each from nine public universities and eight private universities in Taiwan between May and July of 2006. An overall response rate of 30.2% ($N = 513$) was achieved. The information regarding the sample was indicated in Table 1. The sample consists of 226 (44.1%) public faculty, 263 (51.3%) private faculty, and 24 (4.6%) replies without specific identifications. Among the all respondents, 341 (66.5%) were male, 170 (33.1%) female, and 2 (.4%) missing. The year of teaching experience of sample was 21.2% less than 5 years, 22.6% between 6 and 10, 19.3% between 11 and 15, 12.7% between 16 and 20, and 24.1% more than 20 years. Five hundred and ten faculty members revealed their ranks, including 177 full professors, 184 associate professors, 128 assistant professors, and 21 lectures. Of the 513 respondents, 33.9% never attended any teaching workshop, 18.5% attended between 1 and 2 times, 46.0% attended more than 2 times, 1.6% were missing.

Regarding the degree that a faculty member's academic specialty matches the courses s/he teaches, 54.4% of the sample reported that all the courses they offer fall within their expertise, while 44.6% reported partially match. The respondents were from various discipline areas: 61 (13.3%) of faculty from Education, 122 (26.6%) Humanity, 147 (32.1%) Science, 64 (14.0%) Medicine, 64 (14.0%) Business, and 51 (9.9%) missing.

Table 1. The Summary of Faculty Backgrounds (*N* = 513)

| Background | | Public | | Private | | Missing | | Total | |
|--------------------------|-------------------|----------|------|----------|------|----------|------|----------|------|
| | | <i>n</i> | % | <i>N</i> | % | <i>n</i> | % | <i>n</i> | % |
| Gender | Male | 143 | 63.3 | 186 | 70.7 | 12 | 50.0 | 341 | 66.5 |
| | Female | 82 | 36.3 | 77 | 29.3 | 11 | 45.8 | 170 | 33.1 |
| | Missing | 1 | .4 | 0 | 0 | 1 | 4.2 | 2 | .4 |
| Years of teaching | Less than 5 | 35 | 15.5 | 70 | 26.6 | 4 | 16.7 | 109 | 21.2 |
| | 6-10 | 39 | 17.3 | 71 | 27.0 | 6 | 25.0 | 116 | 22.6 |
| | 11-15 | 51 | 22.6 | 43 | 16.3 | 5 | 20.8 | 99 | 19.3 |
| | 16-20 | 38 | 16.8 | 24 | 9.1 | 3 | 12.5 | 65 | 12.7 |
| | 20more | 63 | 27.9 | 55 | 20.9 | 6 | 25.0 | 118 | 24.1 |
| Rank | Professor | 109 | 48.2 | 61 | 23.2 | 7 | 29.2 | 177 | 34.5 |
| | Associate | 72 | 31.9 | 100 | 38.0 | 12 | 50.0 | 184 | 35.9 |
| | Assistant | 42 | 18.6 | 82 | 31.2 | 4 | 16.7 | 128 | 25.0 |
| | Lecturer | 2 | .9 | 2 | .8 | 0 | 0 | 21 | 4.1 |
| | Missing | 1 | .4 | 2 | .8 | 0 | 0 | 3 | .6 |
| Workshop | No | 91 | 40.3 | 73 | 27.8 | 10 | 41.7 | 174 | 33.9 |
| | 1-2 times | 34 | 15.0 | 60 | 22.8 | 1 | 4.2 | 95 | 18.5 |
| | 3 times | 96 | 42.5 | 128 | 48.7 | 12 | 50.0 | 236 | 46.0 |
| | Missing | 5 | 2.2 | 2 | .8 | 1 | 4.2 | 8 | 1.6 |
| Course Matched specialty | All-matched | 128 | 56.6 | 141 | 53.6 | 10 | 41.7 | 279 | 54.4 |
| | Partially-matched | 96 | 42.5 | 120 | 45.6 | 13 | 54.2 | 229 | 44.6 |
| | Missing | 2 | .9 | 2 | .8 | 1 | 4.2 | 5 | 1.0 |
| Discipline | Education | 59 | 27.8 | 2 | .8 | 0 | 0 | 61 | 13.3 |
| | Humanity | 54 | 25.5 | 68 | 27.6 | 1 | 4.2 | 122 | 26.6 |
| | Science | 59 | 27.8 | 88 | 35.8 | 3 | 12.5 | 147 | 32.1 |
| | Medicine | 29 | 13.7 | 35 | 14.2 | 0 | 0 | 64 | 14.0 |
| | Business | 11 | 5.2 | 53 | 21.5 | 0 | 0 | 64 | 14.0 |
| | Missing | 14 | 6.2 | 17 | 6.5 | 20 | 83.3 | 51 | 9.9 |
| Total | | 226 | 44.1 | 263 | 51.3 | 24 | 4.6 | 513 | 100 |

Measures.

The Faculty Teaching Self-Efficacy scale (FTSE) developed by the authors was used to measure faculty's perceptions of teaching self efficacy. The FTSE scale was composed of 28 items rated on a 4-point Likert scale ranging from strongly agree

(4-point) to strongly disagree (1-point). As indicated in Table 2, these 28 items were clustered around six teaching self efficacy factors, including Content, Pedagogy, Interaction, Technology, Support, and Assessment. Support factor was comprised of 3 attributes, while the rest of factors were comprised of 5 attributes. The sum of these six factors was considered a total score of the perception of teaching self efficacy for a faculty member.

The results of validity and reliability analyses were also presented in Table 2. Factor loadings for items designed to measure each factor were consistently large, between .583 and .883. The six factors accounted for 73.588% of the total variance. The coefficients of internal consistency reliability for Content, Pedagogy, Interaction, Technology, Support, Assessment, and the total scale were .912, .878, .901, .928, .860, .868, and .951, respectively. These coefficients confirmed that the FTSF scale was a both valid and reliable instrument.

Table 2 · The summary of Faculty Teaching Self-Efficacy Scale

| Dimension | item | 1 | 2 | 3 | 4 | 5 | 6 | % | Alpha |
|-----------|---|------|------|---|---|---|---|--------|-------|
| Content | I believe I have sufficient professional ability to teach the courses I am teaching. | .783 | | | | | | 13.913 | .912 |
| | I believe I can establish comprehensive teaching objectives. | .791 | | | | | | | |
| | I believe I can select appropriate teaching material. | .806 | | | | | | | |
| | I believe I can arrange appropriate timeline for the curricular progress. | .788 | | | | | | | |
| | I can properly prepare my teaching material before class sessions. | .741 | | | | | | | |
| Pedagogy | I believe my teaching is based upon student individual levels of readiness. | | .652 | | | | | 13.923 | .878 |
| | I believe I can utilize effective teaching methods to improve students' grades. | | .664 | | | | | | |
| | I believe I can modify my teaching activities during class sessions in order to sustain students' attention. | | .766 | | | | | | |
| | I have confidence in inspiring and maintaining students' learning motivation | | .798 | | | | | | |
| | I believe I can utilize various inquiring skills to stimulate students' higher level thinking skills and discussions. | | .675 | | | | | | |

| | | | | | | | | |
|-------------|--|--|--|------|------|------|--------|------|
| Interaction | I believe I can promote a democratic environment in class. | | | .583 | | | 11.535 | .901 |
| | I believe I can nurture a pleasant learning environment. | | | .598 | | | | |
| | I believe I can maintain a good relationship with my students. | | | .813 | | | | |
| | I believe I can share my personal experiences with students in order to promote emotional bonding between the students and myself. | | | .725 | | | | |
| | I believe I can listen to my students in order to understand their thoughts. | | | .805 | | | | |
| Technology | I believe I know how to utilize technology to enhance my teaching. | | | .803 | | | 14.386 | .928 |
| | I believe I can select appropriate teaching media to enhance my teaching. | | | .793 | | | | |
| | I believe I know how to produce relevant teaching media. | | | .868 | | | | |
| | I believe I can appropriately employ educational software relevant to my teaching. | | | .883 | | | | |
| | I believe I can operate various types of teaching apparatuses such as overhead projectors and experimental equipments. | | | .806 | | | | |
| Support | I believe I can timely provide assistance to students whenever they encounter difficulties in learning. | | | | .785 | | 8.543 | .860 |
| | I believe I can co-assess learning results with my students and advise them on improvement. | | | | .780 | | | |
| | I believe I can provide appropriate assistance to my students if they are incapable of completing the assignments. | | | | .745 | | | |
| Assessment | I believe I can utilize a variety of assessment methods to evaluate students' learning results. | | | | | .694 | 11.292 | .868 |
| | I believe the assessment methods I use agree with my teaching objectives. | | | | | .754 | | |
| | I believe I can provide students the opportunities for exercise in order to master they have learned. | | | | | .649 | | |
| | I believe I can assess students' performance with positive methods. | | | | | .652 | | |
| | I believe I can improve my teaching according to assessment results. | | | | | .618 | | |
| Overall | | | | | | | 73.588 | .951 |

Analytic strategy.

In order to examine the degree to which the seven variables (associated with faculty backgrounds) discussed above are related to the six teaching efficacy factors and the total scale, individual mean of self- efficacy scores were calculated for each

subject on each factor and the total scale. An independent *t* test was performed to test the mean differences in teaching self-efficacy scores across faculty's gender, type of institutions, and course matching their specialty. A one-way analysis of variance was performed to assess whether a faculty teaching self-efficacy was related to the professional dimensions of years of teaching, academic rank, the amount of attending workshop, and disciplinary background.

Results

Scores from all the respondents

Table 3 presents the mean, standard deviation, and the range for each factor and total scores of all respondent perceptions of teaching self-efficacy. The ranges of the means of teaching self-efficacy factors are 3.127 to 3.576 (4-point scale). The mean scores above 2.5 (the average of the 4-point scale) could be interpreted as high as measured on the FTSE. The orders of means from high to low for these six factors are Content, Interaction, Support, Assessment, Technology, and Pedagogy, respectively. The average of total score is 3.316 which could be interpreted as "high" as measured on the scale.

Table 3. The means and standard deviation of faculty teaching self efficacy (*N* = 513)

| Dimension | Item number | Minimum | Maximum | <i>M</i> | <i>SD</i> | <i>Rk</i> |
|-------------|-------------|---------|---------|----------|-----------|-----------|
| Content | 1-5 | 2.20 | 4 | 3.576 | .448 | 1 |
| Pedagogy | 6-10 | 1.40 | 4 | 3.127 | .556 | 6 |
| Interaction | 11-15 | 2.00 | 4 | 3.365 | .497 | 2 |
| Technology | 16-20 | 2.00 | 4 | 3.262 | .603 | 5 |
| Support | 21-23 | 1.00 | 4 | 3.317 | .539 | 3 |
| Assessment | 24-28 | 1.67 | 4 | 3.245 | .485 | 4 |
| Total | 1-28 | 2.07 | 4 | 3.316 | .403 | |

A 4-point scale: 4 = Strongly agree; 1= Do not agree at all.

Comparison among Faculty Members with Different Backgrounds

Faculty from different types of institutes (i.e., public & private)

Table 4 lays out the mean, standard deviation, and *t* values for the public faculty

and private faculty on each dimension and the total score. The ranges of the self-efficacy scores are, for the public faculty, in the 3.292 - 3.709, and the private, 2.968 - 3.449. It is statistically significant between the public faculty and private faculty throughout all dimensions and the total score. That is, based on the mean scores, public faculty, in general, achieve higher degree of teaching efficacy.

Table 4. Summary of the Independent *t* Test by Faculty from Different Types of Institute

| Dimension | Public (<i>n</i> = 226) | | Private (<i>n</i> = 263) | | <i>t</i> |
|-------------|------------------------------|-----------|-------------------------------|-----------|----------|
| | <i>M</i> | <i>SD</i> | <i>M</i> | <i>SD</i> | |
| Content | 3.709 | .394 | 3.449 | .458 | 6.626*** |
| Pedagogy | 3.292 | .511 | 2.968 | .549 | 6.688*** |
| Interaction | 3.522 | .491 | 3.221 | .458 | 6.974*** |
| Technology | 3.361 | .644 | 3.166 | .560 | 3.566*** |
| Support | 3.434 | .532 | 3.207 | .526 | 4.701*** |
| Assessment | 3.382 | .507 | 3.117 | .425 | 6.272*** |
| Total | 3.450 | .398 | 3.188 | .368 | 7.554*** |

Note. *** $p < .001$

Male faculty and female faculty

Table 5. Summary of the Independent *t* Test by Faculty Gender

| Dimension | Male (<i>n</i> = 341) | | Female (<i>n</i> = 170) | | <i>t</i> |
|-------------|----------------------------|-----------|------------------------------|-----------|----------|
| | <i>M</i> | <i>SD</i> | <i>M</i> | <i>SD</i> | |
| Content | 3.562 | .445 | 3.599 | .455 | -.877 |
| Pedagogy | 3.099 | .544 | 3.182 | .580 | -1.575 |
| Interaction | 3.330 | .480 | 3.434 | .523 | -2.226* |
| Technology | 3.282 | .582 | 3.217 | .644 | 1.160 |
| Support | 3.288 | .534 | 3.371 | .546 | -1.643 |
| Assessment | 3.209 | .451 | 3.313 | .543 | -2.280* |
| Total | 3.296 | .386 | 3.352 | .434 | -1.489 |

Note. * $p < .05$

The mean, standard deviation, and *t* values are presented in Table 5 for male faculty and female faculty. The ranges of the self-efficacy scores are in the 3.099 - 3.562 for males, and 3.182 - 3.599 for female faculty. Particularly female college educators score higher than their male counterparts in the areas of Interaction and

Assessment. That is, female faculty feel more confident in these two areas.

Faculty offering courses all matched their expertise and faculty with partially matched courses

Table 6 illustrates the mean, standard deviation, and *t* values for faculty teaching courses all matched their specialties, and faculty offering courses partially matched their specialties. The ranges of the self-efficacy scores are, for the all matched faculty, in the 3.189 - 3.660, and 3.054 - 3.479 for partially-matched faculty. With the exception in the dimensions of Technology and Support, the scores of all-matched faculty are statistically higher than those of partially-matched faculty.

Table 6. Summary of the Independent *t* Test by Faculty with Courses All-matched and Partially-matched Their Specialty

| Dimension | All-matched (<i>n</i> =279) | | Partially-matched (<i>n</i> =229) | | <i>t</i> |
|-------------|---------------------------------|-----------|---------------------------------------|-----------|----------|
| | <i>M</i> | <i>SD</i> | <i>M</i> | <i>SD</i> | |
| Content | 3.660 | .428 | 3.479 | .444 | 4.647*** |
| Pedagogy | 3.189 | .569 | 3.054 | .537 | 2.722** |
| Interaction | 3.418 | .498 | 3.305 | .493 | 2.544* |
| Technology | 3.301 | .609 | 3.226 | .582 | 1.398 |
| Support | 3.344 | .549 | 3.285 | .528 | 1.237 |
| Assessment | 3.293 | .503 | 3.191 | .459 | 2.351* |
| Total | 3.368 | .407 | 3.257 | .390 | 3.137** |

Note. * *p* < .05; ** *p* < .01; *** *p* < .001

Faculty with different years of teaching experiences

The mean, standard deviation, and *F* values are presented in Table 7 for faculty from different years of teaching experiences. Faculty with less than or equal to 5 years of teaching experience show lower efficacy score on Content than the other levels of faculty. Faculty with more than or equal to 20 years of teaching experience have higher efficacy scores on Pedagogy and Assessment than faculty with less than or equal to 5 years. Faculty with teaching years between 16 and 20 show higher efficacy score on Assessment and the overall scale than faculty with less than or equal to 5

years. That is, faculty with 16 to 20 years of teaching feels most confident about teaching.

Table 7. Summary of Analysis of Variance by Faculty with Different Years of Teaching Experiences

| Dimension | Below 5 (n = 109) | | 6-10 (n = 116) | | 11-15 (n = 99) | | 16-20 (n = 65) | | Above 20 (n = 118) | | F | Post hoc |
|-------------|----------------------|------|-------------------|------|-------------------|------|-------------------|------|-----------------------|------|----------|--------------------|
| | M | SD | M | SD | M | SD | M | SD | M | SD | | |
| Content | 3.398 | .472 | 3.580 | .436 | 3.598 | .441 | 3.729 | .378 | 3.630 | .435 | 7.001*** | Y2 Y3 Y4 Y5 > Y1 |
| Pedagogy | 2.974 | .607 | 3.095 | .581 | 3.125 | .533 | 3.172 | .489 | 3.272 | .503 | 4.453** | Y5 > Y1 |
| Interaction | 3.264 | .482 | 3.370 | .519 | 3.331 | .466 | 3.491 | .492 | 3.412 | .503 | 2.586 | |
| Technology | 3.277 | .587 | 3.240 | .559 | 3.303 | .644 | 3.271 | .595 | 3.231 | .634 | .252 | |
| Support | 3.193 | .545 | 3.368 | .552 | 3.337 | .514 | 3.431 | .526 | 3.305 | .534 | 2.513 | |
| Assessment | 3.091 | .437 | 3.275 | .504 | 3.250 | .468 | 3.365 | .493 | 3.289 | .492 | 4.166** | Y4 > Y1 Y5 > Y1 |
| Total | 3.200 | .403 | 3.323 | .409 | 3.324 | .391 | 3.410 | .361 | 3.356 | .412 | 3.556** | Y4 > Y1 |

Note. Y1= Less than or equal to 5 years of teaching experience, Y2 = 6-10 years, Y3 = 11-15 years, Y4 = 16-20 years, Y5 = greater than or equal to 20 years of teaching experience.

** $p < .01$; *** $p < .001$

Faculty with different times of attending training workshops

Table 8. Summary of Analysis of Variance by Faculty with and without Teaching Workshop Training

| Dimension | Never (n = 174) | | 1-2 times (n = 95) | | More than 2 times (n = 174) | | F | Post hoc |
|-------------|--------------------|------|-----------------------|------|--------------------------------|------|--------|----------|
| | M | SD | M | SD | M | SD | | |
| Content | 3.601 | .466 | 3.507 | .436 | 3.587 | .437 | 1.463 | |
| Pedagogy | 3.075 | .576 | 3.048 | .531 | 3.195 | .550 | 3.441 | |
| Interaction | 3.310 | .519 | 3.326 | .470 | 3.418 | .488 | 2.729 | |
| Technology | 3.215 | .680 | 3.147 | .548 | 3.340 | .552 | 4.273* | W3 > W2 |
| Support | 3.276 | .555 | 3.297 | .561 | 3.352 | .515 | 1.071 | |
| Assessment | 3.210 | .508 | 3.187 | .438 | 3.292 | .479 | 2.256 | |
| Total | 3.283 | .417 | 3.253 | .383 | 3.364 | .394 | 3.425 | |

Note. W2 = 1-2 times of teaching workshop training, W3 = more than 2 times of attending teaching workshop training

* $p < .05$

Table 8 indicates the mean, standard deviation, and F values for faculty with different frequency of attending teaching workshop training. The ranges of self-efficacy scores are in the 3.075 - 3.601, 3.048 - 3.507, and 3.195 - 3.587 for, respectively, faculty without training, faculty with 1 or 2 times, and faculty with more than 2 times. Technology is only statistically significant area. That is, faculty with

more than 2 times of training presents higher score on Technology than faculty with 1 or 2 times of training.

Faculty with different ranks

The mean, standard deviation, and *F* values are presented in Table 9 for faculty with different ranks. The post hoc comparisons reveal that full professors have higher score than assistant professors on teaching efficacy of Content and Pedagogy. Also, full professors have higher score than associate professor regarding teaching efficacy of Content.

Table 9. Summary of Analysis of Variance by Faculty with Different Ranks

| Dimension | Full (n =177) | | Associate (n =184) | | Assistant (n =128) | | Lecturer (n =21) | | <i>F</i> | Post hoc |
|-------------|------------------|-----------|-----------------------|-----------|-----------------------|-----------|---------------------|-----------|----------|----------------|
| | <i>M</i> | <i>SD</i> | <i>M</i> | <i>SD</i> | <i>M</i> | <i>SD</i> | <i>M</i> | <i>SD</i> | | |
| Content | 3.690 | .421 | 3.546 | .433 | 3.470 | .457 | 3.514 | .571 | 6.773*** | K1>K2 K1>K3 |
| Pedagogy | 3.243 | .512 | 3.085 | .549 | 3.033 | .599 | 3.100 | .576 | 4.186** | K1>K3 |
| Interaction | 3.425 | .496 | 3.360 | .496 | 3.313 | .476 | 3.233 | .611 | 1.826 | |
| Technology | 3.298 | .642 | 3.248 | .564 | 3.286 | .579 | 2.971 | .658 | 1.958 | |
| Support | 3.339 | .554 | 3.320 | .512 | 3.284 | .546 | 3.333 | .615 | .266 | |
| Assessment | 3.287 | .493 | 3.233 | .479 | 3.209 | .467 | 3.198 | .588 | .778 | |
| Total | 3.381 | .400 | 3.300 | .396 | 3.266 | .392 | 3.225 | .499 | 2.659 | |

Note. K1 = full professor, K2 = associate professor, K3 = assistant professor, K4 = lecturer
 ** *p* < .01; *** *p* < .001

Faculty from various disciplines

Table 10 presents the mean, standard deviation, and *F* values for faculty from different discipline. Faculty from the discipline of Education scores highest on the teaching efficacy scale respectively with all the six dimensions and, consequentially highest with the overall score. In terms of statistical significance, education faculty members have higher score than those from Business on Pedagogy, Interaction, Assessment, and the total score. They also have higher score than faculty from Science regarding Pedagogy, Interaction, and Support. Additionally they have higher score than faculty from Humanity on Technology.

Table 10. Summary of Analysis of Variance by Faculty with Different Disciplines

| Dimension | Education (N = 122) | | Humanity (N = 147) | | Science (N = 64) | | Medicine (N = 64) | | Business (N = 51) | | F | Post hoc |
|-------------|---------------------|------|--------------------|------|------------------|------|-------------------|------|-------------------|-------|----------|----------------|
| | M | SD | M | SD | M | SD | M | SD | M | SD | | |
| Content | 3.633 | .461 | 3.587 | .438 | 3.577 | .445 | 3.509 | .456 | 3.544 | .472 | .694 | |
| Pedagogy | 3.357 | .446 | 3.189 | .551 | 3.050 | .549 | 3.091 | .596 | 2.988 | .563 | 4.938** | E > S E > B |
| Interaction | 3.571 | .457 | 3.420 | .514 | 3.312 | .475 | 3.328 | .547 | 3.216 | .428 | 5.121*** | E > S E > B |
| Technology | 3.358 | .658 | 3.033 | .640 | 3.377 | .503 | 3.388 | .548 | 3.119 | .681 | 7.870*** | E > H |
| Support | 3.514 | .474 | 3.301 | .540 | 3.225 | .560 | 3.273 | .606 | 3.313 | .424 | 3.279* | E > S |
| Assessment | 3.433 | .489 | 3.226 | .500 | 3.263 | .453 | 3.256 | .513 | 3.152 | .434 | 3.069* | E > B |
| Total | 3.477 | .390 | 3.301 | .427 | 3.295 | .389 | 3.307 | .423 | 3.222 | 3.524 | 3.510** | E > B |

Note. E = Education, H = Humanity, S = Science, M = Medicine, B = Business.

* $p < .05$; ** $p < .01$; *** $p < .001$

Discussion

A few comparative observations are noteworthy. First of all, the survey of teaching efficacy corresponds with the findings of studies on students' ratings of instruction (e.g. Chang, 2005). According to studies on students' ratings, generally speaking students are most content with the instructors' mastery of content, and least content with how college teachers teach, i.e., pedagogy. This study on teaching efficacy finds that teachers are most confident in their level of mastery in the content area, and least satisfied with their own pedagogies. The correspondence between how college students perceived professors' instruction and how professors perceive their own abilities to teach might suggest that in general teachers are aware of how their students feel about their teachings. That awareness in turn shapes their own sense of efficacy. Most importantly it begs further explanation regarding why professors score high on content and least on pedagogy, and what implications we can draw from this statistic result.

Usually it requires years of academic training for a faculty member to be able to teach in universities these days. On the other hand, unlike k-12 educators who have to

go through a series of extensive training on pedagogy, most of college teachers hardly received any training on how to teach in classrooms. Many simply assume Ph. Ds can teach (Leiding, 1996). Traditionally most of universities in Taiwan do not pay special attention on how to assist professors to teach better. Most of higher education institutes emphasize the importance of research and publication when they hire, evaluate, and promote professors. As a result of the lack of acknowledgement of the importance of pedagogy and the constant emphasis on required academic training and research, college professors in general, from the perspectives of both students and teachers, feel relatively comfortable with how they maneuvered in the “content” area, while dissatisfied with how they handled the class and delivered the content.

Another related observation on teaching efficacy addresses the degree that a professor’s specialty matches the content of the courses that he or she offers. Understandably when a professor perceives that the parameters of the course fall within his/her specialized area, his/her level of self confidence about teaching increases, and vice versa. The challenge for us is how we make sense of the statistically significant data in this regard. Are we proposing that a course, such as Introduction to Sociology, is best to be taught by a professor who has a Ph.D. in sociology? That’s not necessarily what this research result indicates. Teaching efficacy is about “perception,” i.e., how a teacher perceives how capable he/she is as an effective teacher. In other words, this research examines the “perceived match” between what teachers understand as the content of the course and what they consider their expertise. A professor with a degree on Building and Planning or Local Studies might be perfectly allegeable and feel confident to offer courses on sociology or even anthropology, as long as he/she perceives the compatibility between the course and his/her areas of study.

With that being said, based on my observations on college campus, quite often

professors find themselves in a situation where they are “assigned” to teach (particularly required) courses due to lack of staff, not necessarily because of their expertise. When this happens, professors tend to feel less comfortable with the course materials and resistant to (and very likely less enthusiastic about) this “obligated” teaching assignment. As their teaching efficacy decreases, their students usually are keen to observe and take note on this unfortunate situation.

Another set of statistically significant data refers to the differences between faculty members in the public universities and those in the private institutes. In Taiwan, public universities by and large are perceived as more affluent and “desirable” as places to learn and to work. Usually when students choose which schools to go to, or when professors consider universities for employment, they tend to prefer public universities to private ones. This study indicates that faculty of public universities score higher in all areas of teaching efficacy than those of private universities. Interestingly when I was invited by the teaching center of public universities to give lectures or workshops on college teaching, those worked in teaching centers usually shared with me how difficult it was for them to their faculty to attend the professional development workshops on teaching. On the other hand, when I went to private universities at the similar occasions, relatively speaking, their faculty were much more participatory in workshops held by teaching centers. What’s the relationship between this differential attitudes toward workshops on teaching and the scores of teaching efficacy? Does that mean that teachers of public universities who feel more confident in their teaching do not see the necessity to attend workshops on teaching, while those who feel less content with their own abilities to teach tend to attend teaching workshops?

However, this explanation doesn’t stand when it comes differences between faculty of various disciplines. Professors in the field of science score lowest on the

overall teaching efficacy, while those in the field of education score the highest. Science faculty are particularly low in the areas of interaction and support. At the same time it is reported by university teaching centers members that science faculty in general have the lowest participation rates when it comes to attending teaching workshops. Based on the survey they are the cohort which is least confident in their ability to teach, but in this case they are also the group that shows least interest in attending workshops which are geared to help them enhance teaching. Don't they perceive the importance of teaching? Or, might this have something to do with the nature of workshops held by most of the university teaching centers? Many of the teaching workshops tend to focus on the use of technology. Not surprisingly faculty from the field of Humanities as a whole score the lowest on technology, while their counterparts from Education score the highest. Is it likely that though science faculty in general don't see themselves as effective as they would like to be, they tend not to attend the teaching workshops since many of the training sessions are about the use of technology, an area in which most of them feel confident?

Another significant result involves the differences between female and male faculty members. That is, female professors feel more confident than their male counterparts in the areas of Interaction and Assessment. Culturally we as a society tend to demand females to be caring and attentive. This cultural expectation seems to be played out in college classrooms though many professors and students are aware of and in some ways trying to defy this expectation. Nonetheless, female professors by and large feel more comfortable with their abilities to interact with students. Future studies need to examine what constitute "Interaction." What do we mean by "interaction" between teachers and students in the context of higher education?

With regard to assessment, based on my personal observations, female professors tend to spend more effort in constructing course syllabi. They tend to have more

detailed descriptions regarding every aspect of the course (which includes assignment and assessment). They might explain why generally speaking, they feel more comfortable with how they are capable of assessing students' performances. And certainly if they feel that they are more interactive with students, they might also feel that they have more foundations to gauge how and what students learn.

The last but not least, is the differences between senior faculty (teaching more than 16 years) and junior faculty (teaching less than five years). It seems that most of the new faculty in this study are learning about teaching by teaching, specifically in the areas of content and pedagogy. On the other hand, for the experienced professors these are the areas where they reported as their strongholds. This certainly again, points to the importance of creating opportunities where experienced and junior faculty can dialogue.

Conclusions and Implications

This study is tended to shed light on educational practices and research. On the practical level, this research confirms the necessity for college teaching centers and professional development for faculty. This certainly is nothing new. Nonetheless it is essential to focus on the nature of professional development. While based on the results of the survey it is necessary to have workshops which address how to better use of technology in teaching, we need to rethink how to conceptualize the meaning and purpose of workshops on teaching. It cannot be simply mechanical and didactic. We suggest that teaching center faculty should create "workshop" spaces where teachers with various experiences to share their teaching and learning excitements and concerns. In addition, teaching centers should position themselves as working with faculty to work through the difficulties emerged in their teaching, rather than teaching faculty how to teach. Besides, there are many issues factoring into how teachers

perceive their abilities to become effective teachers. Teaching centers cannot ignore the complexity when it comes to designing workshops for effective teaching.

With regard to possibilities for future studies, first this project focuses solely on the so-called general universities in Taiwan. There are other types of Taiwanese universities, such as the so-called “Technology Universities,” that we did not include in this study. Structure and mission wise, as well as the characteristics of their students are different from the general universities which are less career oriented. How do faculty in this type of professionally oriented universities feel about teaching? In addition, though we already identify seven variables, there are other factors that might shape how teachers think about their ability to perform the task of teaching. We encourage future studies to complicate the way we think about and examine teaching efficacy. Lastly, there have very few studies which empirically examine how teaching efficacy impact the outcomes of teaching (i.e., students performances). We suggest researchers interested in college teaching to engage in studies that actually explore this relationship.

References

- Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York: Freeman.
- Chang, T. (2005). *The validity and reliability of student ratings: Comparison between paper-pencil and online survey*. *Chinese Journal of Psychology*, 47(2), 113-125.
- Gmelch, W. H., Wilke, P. K., & Lovrich, N. P. (1986). Dimensions of stress among university faculty: Factor-analytic results from a national study. *Research in Higher Education*, 24(3), 266-284.
- Hutchinson, W. (1998). *An investigation of teacher stress and efficacy*. Stanley, Hong Kong: The Hong Kong Sea School. (ERIC Document Reproduction Service No. ED460105)

- Leiding, J. A. (1996). The organizational socialization of new community college faculty: A qualitative study (Doctoral dissertation, University of Texas at Austin, 1996). *Dissertation Abstracts International*, 57, 2338A.
- Lin, H. L., & Correll, J. (2001). Exploratory analysis of pre-service teacher efficacy in Taiwan. *Teaching and Teacher Education*, 17(5), 623-635.
- Marsh, H. W., & Hattie, J. (2003). The relation between research productivity and teaching effectiveness: Complementary, Antagonistic, or independent constructs? *The Journal of Higher Education*, 73(5), 603-641.
- Shen, J. (1997). Mission involvement and promotion criteria in schools, colleges, and departments of education. *American Journal of Education*, 104, 186-211.
- Tschannen-Moran, M., Woolfolk Hoy, A., & Hoy, A. (1998). Teacher efficacy: Its meaning and measure. *Review of Educational Research*, 68(2), 202-248.