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FACULTY MEMBERS' UNDERSTANDING OF TEACHING EFFICACY CRITERIA AND IT RELATION TO THEIR CHARACTERISTICS

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This study, examining university teaching, is aimed to understand more about university faculty members' sense of teaching efficacy criteria, with the hope to provide insights for future strategies in faculty development training program universities and colleges. In this study, a descriptive and correlational survey is used. The population of this study was all faculty members at four state universities in Sistan and Baluchestan Province in Iran. The research instrument for the study was a questionnaire designated as The Faculty Teaching Self-Efficacy scale (FTSE). The findings showed that the faculty members felt efficacious in their work in the following criteria: communication skills, assessment, subject matters, curriculum and instruction, learning environment, and to implement technology. In other word, faculty members rated their teaching efficacy in all criteria as good. This study has also found relatively high positive correlation between criteria of teaching efficacy, and some significant differences for faculty members with different backgrounds. For example, faculty members with more than 20 years of experience have had good assessment skill in comparison with other groups. Faculty members in the education discipline had higher efficacy than their counterparts in some or even all dimensions of teaching efficacy.

Key Words: teaching efficacy, university teaching, faculty members, teaching, understanding of teaching efficacy

INTRODUCTION

Most higher education institutions pursue a mission of teaching, research and extension, and service, while their major focus varies according to the nature of the higher education institution. It seems the teaching, research and publications are the major expectations. Teaching efficacy refers to a judgment about capabilities to influence student engagement and learning (Woolfolk Hoy, 2004). Teacher competence for teaching efficacy is defined as the ability of a teacher to deal adequately with the demands of the teaching profession using an

integrated set of knowledge, skills and attitudes as manifested in both the performance of the teacher and reflection on his or her performance, In other words, professional competences are the systems of knowledge, skills, abilities and motivational disposition which provide the effective realization of the professional teaching activities. Different authors (for example, Grosso de Leon, 2001; Reynolds& Muijs, 1992; Jegede et al, 2000; Borko & Putnam, 1995; Glaser, 1987; Murray & Porter, 1996; Schulman, 1987; Darling-Hammond, 1997; NCTAF, 1996, 2003; NCES, 2000d; Mitchell, 2001; Hermann, 2002; Costa, 1985; Keating, 1988; Rosenthal & Ogden, 1998; Räsänen & Sunnari, 2000; Brusling, 2005; Haynes, 1998; Hostetler, 1997; Lovat, 1981) have proposed different kinds of skills, knowledge, dispositions, and values in which effective teachers must be proficient. They include: subject matters or content knowledge; curriculum and instruction knowledge (pedagogy); interaction or communication competences; evaluation of learning or assessment; knowledge of learning environment and knowledge and skills on how to implement technology in the curriculum. In the following these factors are elaborated further.

SUBJECT MATTERS KNOWLEDGE

Conant (1963:93) wrote that if a teacher is largely ignorant or uniformed he can do much harm. Research on teaching and on teacher knowledge is revealing ways in which teachers' understandings affect their students' opportunities to learn and also knowledge of the subject is very important to teaching, (e.g. Zumwalt, 1989; Passe, 1999; Leinhart & Greeno, 1986; Grossman, 1988; Lampert, 1986; Leinhardt & Smith, 1985; Shroyer, 1981; Wilson, 1988; Wilson & Wineburg, 1988). Shulman's (1986) three categories of content knowledge, subject matter content knowledge, pedagogical content knowledge, and curricular content knowledge are at the heart of much of the current inquiry. Many researchers (Ball, 1989; Carpenter et al, 1989; Grossman, 1990; Hashweh, 1987; Lampert, 1986; Shulman, 1987; Wilson, 1988; Wilson & Wineberg, 1988; Stodolsky, 1988) suggest that teaching in new ways, in ways focused on understanding, is highly dependent on the teacher's own understanding and conception of the subject matter. Teachers cannot be expected to know every little fact in science and there are advantages for having a "big picture" rather than an array of unconnected details.

Consistent with common belief, several studies showed a positive connection between teachers' subject matter preparation and both higher student achievement and higher ratings on teacher performance evaluations, particularly in mathematics, science, and reading (Darling-Hammond 1999a and 1999b, Goldhaber & Brewer 2000, Guyton & Farokhi 1987). Another study, Monk and

King (1994), finds both positive and negative, generally insignificant effects of teachers' subject matter preparation on student achievement.

In addition there are other studies of the effects of subject matter preparation (Adams, 1998; Ball, 1990a & 1990b; Borko et al, 1992; Graeber et al, 1989; McDiarmid & Wilson, 1991; Stoddart et al, 1993; Tirosh & Graeber, 1989; Wilson, 1994; Wilson & Wineburg, 1988). These studies suggest that the subject matter preparation that prospective teachers currently receive is inadequate for teaching toward high subject matter standards, by anyone's definition. It appears that prospective teachers may have mastered basic skills but lack the deeper conceptual understanding necessary when responding to student questions and extending lessons beyond the basics (Wilson, 2002).

CURRICULUM AND INSTRUCTION

According to Curtis (1998:46) all teachers use curriculum and instructional techniques to integrate theory with practice, academic and workforce education, professional education and subject matter, and learning theory and workforce preparation. Research indicates dozens of activities that all teachers can use to help students with their school-to-work transition. Examples include involving students in organized workplace experiences, linking with employers and the community, and including workplace representatives in school curriculum and instruction activities. If teachers want to be more successful at organizing and conducting school to work programs they must develop new talents that extend beyond their current capabilities. Examples of these talents include being willing to change with technological advances, understanding the many needs of employers and the community, and having knowledge of curriculum and instructional techniques and also a knowledge of school-based learning that goes beyond specific teaching areas.

Curriculum and instruction are central to educational improvement, constituting the what, how and why of teaching and learning. The study of curriculum and instruction not only entails content, methodology and assessment but also entails an understanding of why curriculum and instruction are important in affecting change both within and outside of schools. Instruction is the creation and implementation of purposefully developed plans for the teaching of curriculum content. It is what teachers often concisely refer to as "planning" and "teaching". Moore (2002:2-3) says that while a school's curriculum consists of the "total experience", instruction can be more narrowly defined as the strategies selected and implemented by the teacher to deliver the intended curriculum. Teachers need to know district expectations regarding planned curriculum and instruction in order to implement the written curriculum successfully. Teachers need to provide knowledge in a professionally meaningful manner, include different contexts and scenarios as well as work

with authentic problems, and use assessment to drive and improve learning (Chambers & Glassman, 1997; Van et al, 2000; Kaufman, 2003; Friedman Ben-David, 2000). Education specialists believe that the success of educational reform depends on the ability of teachers to continually renew curriculum and instruction, the core of educational practice.

According to Morris et al (2007) the goal of teaching is to support student learning. It is hard to imagine teachers becoming more effective over time without being able to analyze teaching in terms of its effects on student learning. What did students learn, and how and why did instruction influence such learning? How could lessons based on this information be revised to be more effective when teaching them next time? They also state that two quite different kinds of knowledge, skills, and dispositions or competencies contribute to analytic expertise required to study and improve teaching. According to them, the first kind of competence is subject matter knowledge for teaching. This refers to the kind of subject matter knowledge needed to unpack the content learning goals for students, to understand students' thinking about the subject, to simplify the complex ideas of the subject in ways that sustain the integrity of the subject, to represent ideas in accessible ways for students, to pose key questions and problems, and so on. Shulman (1986) described this kind of competence as pedagogical content knowledge. Many researchers (e.g. Ball, 1999; Ball & Bass, 2000; Ma, 1999; Sherin, 2002) have extended these ideas in their own studies.

COMMUNICATION SKILLS

The importance of communication skills for educators whether administrators or teachers, is widely accepted. A teacher uses knowledge of effective verbal, nonverbal, and media communication techniques to foster active inquiry, collaboration, and supportive interaction in the classroom. The first stage of a teacher education course normally begins with a period of classroom observation, during which student teachers are invited to focus on certain aspects of teaching technique, e.g. classroom organization, use of voice, methods of presentation of material. The consideration of questioning skills and techniques may also be included. Work on developing communication skills focused upon use of key words, becoming a good listener, and giving constructive, helpful feedback (Hughes, 1999). Case studies of high-wage companies also state that essential skills for future workers include problem solving, working in groups, and the ability to communicate effectively (Murane, & Levy, 1996). Craddock (1997), in a survey of the importance of communication skills found that 97 percent rated communication skills very important to their job and 80 percent said their ability to communicate effectively helped them advance. Rosenthal and Ogden (1998) found that of the

383 responded, 64.8 percent agreed with the statement: “Greater emphasis should be placed on communication skills”, suggesting that the majority of students valued communication skills learning. However, response rates varied according to the year of training. For example, first, second and fourth year students had higher response rates (89.3, 78.6 and 88.8 percent, respectively) than third and fifth year students (65.4 and 54.2 percent, respectively). This suggests that the findings may not be generalizable to a wider population of third and fifth year students. The findings of Rees and Garrud (2001) showed that some medical students held positive attitudes towards communication skills learning. They also thought that communication skills were lifelong skills and helped them to work in teams. Finally, these findings suggested that communication skills learning was valued and that many students wanted more. Duncombe & Yinger (1999:91) pointed out that as organizational and systemic competence become more important in carrying out the work of teaching and learning, “communication, collaboration, and interdisciplinary and interprofessional conceptualizations and actions become increasingly necessary”.

According to Andrew et al (2005:69) teachers are generally expected to be able to do the following: Clearly and cogently present information; give clear explanations; help students put their ideas into words; help students improve their communication skills; help students understand the meaning of written language; provide apt analogies to assist learning; communicate well with parents both in speech (be "well spoken") and in writing, and, communicate effectively with administrators.

ASSESSMENT SKILLS

Assessment is the systematic collection, review, and use of information to increase students' learning and development. Educators use the results of tests and other assessments to monitor the progress of students, diagnose their needs, and make instructional plans. Assessment can also be used to provide information about the quality of programs, schools, and districts that are providing education and training. Several authors have argued that there are a number of essential assessment concepts, principles, techniques, and procedures that teachers need to know about (e.g. Calfee & Masuda,1997; Cizek, 1997; Ebel, 1962; Farr & Griffin, 1973; Fleming & Chambers, 1983; Gullickson, 1985, 1996; Mayo, 1967; McMillan, 2001; Sanders & Vogel, 1993; Schafer, 1991; Stiggins & Conklin, 1992), there continues to be relatively little emphasis on assessment in the preparation or professional development of teachers and administrators. In addition to the admonitions of many authors, there are established professional standards for assessment skills of teachers (STCEAS, 1990). The purpose can be formative assessment and assessment for

learning, assessment for learning is based on a student involved approach to classroom assessment and has been well documented by Guskey (2003), Stiggins (2002, 2001), and others. Formative assessment refers to the feedback provided by teachers during the formation stage of learning to check on student learning outcomes (Black et al, 2004). Gronlund and Cameron (2004:14) emphasize the importance of formative assessment, where the purpose is to "monitor learning progress and to provide corrective prescriptions to improve learning". Recent literature on teachers' classroom assessment practices pointed out that the principles and practices inherent in assessment reform need elaboration and development beyond generally accepted practices (McMillan, 2003; Brookhart, 2003). Furthermore, literature on classroom assessment has delineated the content domain in which teachers need to develop assessment skills (e.g., Airasian, 1994; Carey, 1994; O'Sullivan & Chalnick, 1991; Schafer, 1991; Stiggins, 1992, 1997). Finally, Boston (2002), Rolheiser and Ross (2000) and others have emphasized the importance of training and professional development for teachers to help them better understand and implement effective practices that are the important elements of assessment.

LEARNING ENVIRONMENT

One of the most important things a teacher can provide their students with is a learning environment in which they feel comfortable. Teachers should create a learning environment that encourages positive social interaction, active engagement in learning, and self-motivation. Learning environment research has provided a useful focus in evaluations of educational innovations (Fisher et al, 2001; Fraser & Maor, 2000; Maor & Fraser, 1996; Newby & Fisher, 1997; Teh & Fraser, 1995; Zandvliet, 2003; Jegede et al, 1995; Taylor & Maor, 2000; Walker, 2002; Moos, 1979). Past research has found links between classroom environments and student outcomes (Fraser, 1994, 1998a; Fraser & Fisher, 1983; Goh et al, 1995). Technology in the school is one of the best resources that allow students to become actively engaged in the learning process (Aldridge et al, 2003; Trinidad et al, 2001). Such research has shown that students' outcomes are likely to be better when the actual learning environment more closely matches their preferred learning environment (Aldridge et al, 2003; Fraser, 1998b, 1999; Fraser & Fisher, 1983). Brown and Palinscar (1989) believe that the role of learning environments, of collaboration, of community, and of environments that encourage different approaches in students. An important factor in creating a positive learning environment is classroom management. Teachers should manage their time and resources in the most efficient way possible. To create a positive learning environment, teachers should access any and every resource possibly provided by the school or community they teach in.

EDUCATIONAL TECHNOLOGY

In reviewing the literature, the term educational technology tends to be implicitly defined. Ely in 1995 updated (2000:1) wrote that educational technology is a term widely used in the field of education ... but it is often used with different meanings.... Educational technology properly refers to a particular approach to achieving the ends of education. This definition, like others found in the literature, can be seen as focusing on processes for teaching and learning as much as they are about pieces of hardware or software.

Educational technology, especially the use of computers and associated information technology, is rapidly solidifying a prominent role in education. The computer has the capacity to be employed for instance as a cognitive tool (Salomon et al, 1991), a memory tool (Swan, 1996), a motivational tool (Means & Olson, 1995b), a communication tool (Doucette, 1994), or a project support tool (Marx et al, 1997). Understanding the range of possibilities, the appropriate applications, and the relevant pedagogical strategies requires an array of knowledge on the part of the teacher. This knowledge can be acquired from a variety of sources. For both student teachers and mentor teachers, the sharing of knowledgeable educational technology in the context of the student teaching placement may be a contributor to professional development (Easdown, 1994). Preservice teachers have reported that their student teaching experience is a very consequential portion of the teacher preparation process (Dowrick, 1997). Mentor teachers play a contributing role in the value to the student teacher of the student teaching experience (McIntyre, 1988). Their classroom experience, subject matter knowledge, and familiarity with particular teaching settings, cause them to be viewed as a respected source of knowledge for the student teacher.

According to Margerum-Leys (2004:423-424) sharing of knowledge is important for teacher preparation and development generally; it may be especially important in the acquisition of educational technology knowledge. Educational technology is an area in which mentor teachers are eager to access content knowledge held by student teachers. Mentor teachers view student teachers by virtue of their relative youth as members of a generation that holds more knowledge of technology than they themselves do. They also perceive that student teachers' teacher education coursework will have contained more educational technology information than their own coursework (Lundeberg et al, 2001; Margerum-Leys & Marx, 2000). An additional motivation for studying the knowledge of teachers regarding technology is that the role of educational technology, especially computers in education, is changing rapidly. In the early days of computer use in education, computers were thought to be useful for the teaching of logic through programming (Papert, 1993).

Subsequently, there was a conceptualization of computers as standalone information processing and document production tools. More recently, the computer has been thought of as a communication tool; computers are now used and viewed as portals to an ever-expanding array of information through electronic mail and the World Wide Web (Jonassen et al, 2000; Tiene & Ingram, 2001). Paralleling these changes in our perceptions of the utility of technology has been a steady movement toward more student-centered learning environments and activities. This has implications for the preparation and development of teachers. To use technology in ways that are congruent with our current understandings of teaching and learning as well as of technology itself, teachers need to be familiar with an expanding variety of pedagogical techniques (Forcier, 1999; Jonassen et al, 2000; Marx et al, 1997; Mergendoller, 1996).

The use of technology in an appropriate manner can actually enhance the learning process. Technology can play a vital role in helping students meet higher standards and perform at increased levels by promoting alternative, innovative approaches to teaching and learning (George, 2000). Review literature shows that teachers must be effective users of information and educational technology (Allen, 2001; Davidson et al, 2000; Dwyer, 1994; McNabb et al, 1999; Nevens et al, 2001; U.S. Department of Education Study, 2003; Brennan, 2000). Because, it is believed that instructional technology can improve the quality and quantity of teaching and student learning and Technologies are described as essential tools of the teaching trade (Sandholtz et al, 1997). In terms of research into these developments, issues concerning technological literacy (Gabriner & Mery, 1998), interface design (Wild and Stoney, 1998), software adaptability (Stahl et al, 1995), professional development (Schrum, 1995) and cost effectiveness of educational technology (Bacsich & Ash, 2000) are abundant and well represented. Many studies have investigated teacher's attitudes toward the use of technology and their anxiety about using technology. These studies are particularly important because a teachers' attitude about computers and related technologies can positively or negatively influence their students' attitudes toward technology (Sheingold & Hadley, 1990). Finally, as reported by Green and Staley (2000), technologies such as computer conferencing systems can provide an effective learning tool if they attend to constructing a safe context and interpersonal rapport. That is a challenge, how to design educational systems where technology is in service to, values, and supports diverse learners and learning contexts (Wise et al, 1997; Vannatta & Beyerbach, 2000; Yildirim & Kiraz, 1999; Bryant, 2001; Hasselbring et al, 2000; NCATE, 1997; McCoy, 2001). According to Howey (1996) practitioner preparation programs should not underestimate the power of modern communications technology for learning to teach. Technology must be

integrated into the classroom and the practitioner preparation program so that it acts as a facilitator of quality education. Shields and Behrman (2000) proposed that the most effective use of technology in classrooms is as a tool for accessing information and interpreting, organizing, and representing personal knowledge. These are the types of activities that empower children to play active roles in the emerging digital world, not merely navigate in it. In the area of teacher preparation, Sosniak (1990) suggested better use of alternative instructional technologies, e.g., the Internet, for the development of subject matter and professional knowledge.

The relationship between perceived teaching efficacies in the faculty members is still unknown. Without information about it, the teaching development may not meet the teaching goals. This study, examining university teaching, is aimed to understand more about university faculty members' sense of teaching efficacy, with the hope to provide insights for future strategies in faculty development training program universities and colleges. In fact, this research tries to answer these questions: How faculty members rate their teaching efficacy? Is there any correlation between factors of teaching efficacy? Are there significant differences between teaching efficacy and faculty members' characteristics?

METHOD

In this study, a descriptive and correlational survey is used. The population of this study was all faculty members at four state universities in Sistan and Baluchestan Province in Iran. From the existing population, the researcher sampled 300 faculty members out of the targets population. The sample random sampling technique was used in the selection of subjects. Of the 300 possible respondents contacted by e-mail, 231, or 77 percent responded to the survey and of 231 respondents 215, or 71.7 percent were usable and 16 or 5.3 percent were unusable. The research instrument for the study was a questionnaire designated as The Faculty Teaching Self-Efficacy scale (FTSE) by Chang et al (2006) and revised and developed by author. The questionnaire was made up of two sections, the first section was 4 items about demographic and other background information (table 1) and second section was faculty members' self-ratings of their teaching efficacy (35 items) clustered around six teaching self efficacy factors: subject matters or content knowledge (5 items); curriculum and instruction knowledge (10 items); interaction or communication competences (5 items); evaluation of learning or assessment (5 items); knowledge of learning environment (5 items); and knowledge and skills on how to implement technology in the curriculum (5 items). The FTSE scale was rated on a 5-point Likert scale ranging from strongly agree (5-point) to strongly disagree (1-point).The questionnaire was designed and validated in its contents

and faced values. The reliability of the battery of test was estimated by Cronbach's alphas. Table 2 reports summary measures of reliability for all scales and six teaching self efficacy factors. SPSS 15 was used to produce Mean; Standard Deviations; Pearson Product Moment Correlation (r); T-test; one-way analysis of variance, and post hoc Bonferroni test.

Table 1: Summary of faculties' background (N=215)

Background		***N***	***%***
Gender	Male	186	86.5
	Female	29	13.5
Teaching Experience	1 - 10	70	32.6
	11 - 15	51	23.7
	16 - 20	50	23.3
	21 - 25	20	9.3
	26 - Over	24	11.2
Rank	Lecture	60	27.9
	Assistant	136	63.3
	Associate and Professor	19	8.8
Discipline	Technical and Engineering	38	17.7
	Science	50	23.3
	Humanities	109	50.7
	Education	18	8.4

Table 2: Summary measures of reliability

Factors	*N. of Items*	*Cronbach's Alpha*
subject matters or content knowledge	5	.81
curriculum and instruction knowledge (pedagogy)	10	.93
interaction or communication competences	5	.90
evaluation of learning or assessment	5	.72
knowledge of learning environment	5	.86
to implement technology in the curriculum	5	.89
Total	35	.93

FINDINGS AND DISSCUSION

Question 1: How faculty members rate their teaching efficacy?

The findings in table 3 indicate that the respondents rated their teaching efficacy in all factors as good. The ranges of the means of teaching self-efficacy factors were 3.91 to 4.25 (5-point scale). The orders of means from high to low for these six factors are communication, assessment, subject matters, curriculum and instruction, learning environment, and to implement technology, respectively.

Table 3: Mean and standard deviation of faculty members' teaching self efficacy (N=215)

Factors	*Min.*	*Max*	*Mean*	*Std. D.*	*Rank*
subject matters	1.00	5.00	4.1116	.82971	3
curriculum and instruction	2.00	5.00	4.0000	.68359	4
communication competences	2.00	5.00	4.2512	.73763	1

assessment	2.00	5.00	4.1302	.69158	2
learning environment	2.00	5.00	3.9721	.78488	5
to implement technology	2.00	5.00	3.9163	.81600	6
Total	2.00	5.00	4.2372	.65888	

Question2: Is there any correlation between factors of teaching efficacy?

Table 4 shows there was relatively high positive correlation between factors of teaching efficacy. The highest correlation was between communication competences and curriculum and instruction (r=867), to implement technology and learning environment (r=.834), and lowest correlation was between learning environment and subject matters (r=385).

Table 4: Correlation between factors of teaching efficacy (N=215)

Factors	*SM*	*CI*	*CC*	*A*	*LE*
subject matters	1		.		
curriculum and instruction	.489(**)				
communication competences	.502(**)	.867(**)			
assessment	.434(**)	.479(**)	.499(**)		
learning environment	.385(**)	.611(**)	.605(**)	.416(**)	
to implement technology	.473(**)	.713(**)	.761(**)	.480(**)	.834(**)

**P < .01

Question 3: Are there significant differences between faculty members' teaching efficacy by gender, teaching experience, rank, and discipline?

Q 3.1 Male and female faculty members

The ranges of the self-efficacy scores were in the 3.90 - 4.25 for male faculty members, and 3.93 – 4.27 for female faculty. In fact, male and female university educators scored their teaching efficacy in high level. The lowest and highest teaching self efficacy for males was to implement technology and communication competences and for females was assessment and subject matters, respectively. (Table 5)

Table 5: Mean, standard deviation, and t-test of teaching efficacy by Gender (N=215)

Factors	*Male*		*Female*		*t*
	N = 186		*N = 29*		*df(213)*
	M	*SD*	*M*	*SD*	
subject matters	4.086	.8466	4.275	.7018	-1.147
curriculum and instruction	4.000	.6896	4.000	.6546	.000
communication competences	4.252	.7538	4.241	.6355	.077
assessment	4.161	.6864	3.931	.7036	1.675
learning environment	3.973	.7741	3.965	.8653	.048
to implement technology	3.903	.8129	4.000	.8451	-.593
Total	4.236	.6641	4.241	.6355	-.037

P > .05

Q 3.2 Faculty members with different years of teaching experiences

As shown in table 6, there was significant difference between faculty members with different years of teaching experience on factor of assessment. In fact, faculty members with more than 20 years of experience have had good assessment skill in comparison with other groups (M=4.30). The post hoc Bonferroni test comparisons revealed this difference. There were no significance differences between groups in other factors.

Table 6: Mean, standard deviation, and analysis of variance of teaching efficacy by years of teaching experiences (N=215)

Factors	*1 - 10*		*11 - 15*		*16 - 20*		*21 - 25*		*26 - Over*		*F*
	N = 70		*N = 51*		*N = 50*		*N = 20*		*N = 24*		*df(4,*
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*210)*
subject matters	4.157	.6051	4.156	1.065	3.900	.8391	4.100	.8522	4.333	.7613	1.342
curriculum and instruction	4.000	.6370	3.902	.7281	4.020	.6223	4.150	.8750	4.041	.6902	.531
communication competences	4.357	.6601	4.196	.8251	4.200	.670	4.300	.923	4.125	.740	.686
assessment	4.185	.5969	3.862	.8004	4.180	.6907	4.350	.745	4.250	.531	2.866(*)
learning environment	3.928	.6878	4.058	.8345	3.900	.8144	3.950	.887	4.083	.829	.435
to implement technology	3.928	.6878	3.843	.924	3.980	.7690	3.950	.944	3.875	.9469	.203
Total	4.214	.5354	4.196	.7216	4.260	.6327	4.400	.882	4.208	.7210	.398

P > .05 *P < .05

Q 3.3 Faculty members with different rank

There was significant difference between faculty members with different rank on factor of learning environment. The post hoc Bonferroni test comparisons revealed that assistant professors (M=4.06) had higher score than associate and full professors (M=3.58) on teaching efficacy of learning environment. There were no significance differences between groups in other factors.

Table 7: Mean, standard deviation, and analysis of variance of teaching efficacy by rank (N=215)

Factors	*Lecture*		*Assistant*		*Associate & Full*		*F*
	N = 60		*N = 136*		*N = 19*		*df(2, 212)*
	M	*SD*	*M*	*SD*	*M*	*SD*	
subject matters	4.033	.9736	4.169	.7359	3.947	.9703	.966
curriculum and instruction	3.933	.7333	4.058	.6296	3.789	.8549	1.701
communication competences	4.266	.8410	4.286	.6656	3.947	.8481	1.796
assessment	4.150	.7089	4.139	.6685	4.000	.8165	.372
learning environment	3.900	.7059	4.058	.7675	3.578	1.0173	3.550(*)
to implement technology	3.833	.8060	4.000	.7793	3.578	1.0173	2.691
Total	4.283	.6911	4.250	.6055	4.000	.8819	1.409

P > .05 *P < .05

Q 3.4 Faculty members with different discipline

As shown in table 8, faculty members from the discipline of education scored highest on the teaching efficacy scale respectively with the four factors and, consequentially highest with the overall score. In terms of statistical

significance, educations' faculty members had higher score than those from technical and engineering and humanities on curriculum and instruction, assessment, learning environment, use of technology, and the total score. The post hoc Bonferroni test comparisons revealed these differences. However, there was no significance difference between groups in communication competences, but faculty members of education had highest score than other groups. There were no significance differences between discipline groups in subject matters and communication competences factors. The finding also showed that faculty members of technical and engineering had high score in subject matters in comparison with other groups.

Table 8: Mean, standard deviation, and analysis of variance of teaching efficacy by discipline (N=215)

Factors	*Tech & Eng*		Science		*Humanities*		Education		F
	N = 38		N = 50		N = 109		N = 18		df(3,
	M	SD	M	SD	M	SD	M	SD	211)
subject matters	4.263	.8280	4.140	.7287	4.073	.9098	3.944	.5393	.760
curriculum and instruction	3.868	.5775	4.120	.6892	3.935	.7107	4.333	.5940	2.799(*)
communication competences	4.184	.6516	4.380	.6966	4.165	.7878	4.555	.6157	2.163
assessment	4.157	.5939	4.380	.6966	4.027	.6999	4.410	.6859	3.312(*)
learning environment	3.789	.8106	4.080	.8290	3.908	.7520	4.444	.6157	3.536(*)
to implement technology	3.605	.7897	4.000	.8571	3.908	.7997	4.388	.6076	4.213(**)
Total	4.131	.6645	4.280	.6401	4.211	.6676	4.500	.6183	1.416

P > .05 *P < .05 **P < .005

This study has confirmed that the faculty members felt efficacious in order of importance, in the following areas: communication, assessment, subject matters, curriculum and instruction, learning environment, and to implement technology. This study has also found relatively high positive correlation between factors of teaching efficacy, and some significant differences for faculty members with different backgrounds. In this study, faculty members with more than 20 years of experience have had good assessment skill in comparison with other groups. It seems that most of the new faculty members are learning about teaching by teaching, specifically in the areas of curriculum and instruction (pedagogy). This study revealed that assistant professors had higher score than associate and full professors on teaching efficacy of learning environment. Traditionally most of higher education institutes emphasize the importance of research and publication when they evaluate, and promote professors. Maybe for this reason, the faculty members with higher rank don't pay attention more to their teaching. Faculty members in the education discipline had higher efficacy than their counterparts in some or even all dimensions of teaching efficacy, because they have a good knowledge of whatever educators need to teach.

It can suggest that supervision and evaluation center at the universities should create workshop spaces where faculty members with various experiences to

share their teaching and learning excitements and concerns. The supervision and evaluation center should position them as working with faculty members to work through the difficulties emerged in their teaching, rather than teaching faculty members how to teach. Continuous professional development is a catalyst for professional growth as it is increases curiosity, motivation, and educators' knowledge about their professions. It will supply best practices, new ways of thinking, and problem solving skills that empower them. Overall, it will improve the quality of schools and prepare and support educators to help all students achieve high standards of learning and development (Moore, 2000). The quality of professional development programs for teachers depends on the content characteristics, process variables, and context characteristics. Content refers to what will be included in professional development activities (Guskey, 2000; Sparks & Hirsh, 1997; Sparks, 2000; Ganser, 2000; Reed, 2000; Inquiry and National Education Standards, 2000). Process refers to how activities are planned, organized, carried, and followed up (Ganser, 2000; McCarthy & Riley, 2000; National Staff Development Council, NPEAT, 2000; Cobb, 2000). The context of professional development refers to the organization, system, and culture in which the professional development activities are implemented (Guskey, 2000; NCES, 1998; Ganser, 2000; NPEAT, 2000; Villa et al, 1996). Overall, they improve the quality of schools and prepare and support educators to help all students achieve high standards of learning and development (Moore, 2000).

In summary, the professional development of teachers is a key factor in ensuring that reforms at any level are effective. Successful professional development opportunities for teachers have a significant positive effect on students' performance and learning. Thus, when the goal is to increase students' learning and to improve their performance, the professional development of teachers should be considered a key factor, and this at the same time must be featured as an element of a larger reform. With regard to possibilities for future studies, there are other factors that might shape how teachers think about their ability to perform the task of teaching. It is encourages future researcher to study about what teachers believe to be their capability in some dimensions of teaching might be at variance with what they are really able to teach. The link between teachers' conceptions of teaching efficacy and their teaching practices could be confirmed by direct observation in future studies.

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