

## Self-Efficacy Belief as a Practical and Parsimonious Evaluation Criterion in School Leadership Training

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### Abstract

Training evaluation is often neglected in educational leadership trainings due to many constraints surrounding it. One such constraint is difficulty in identifying and utilizing a parsimonious, result-oriented and psychometrically sound evaluation criterion. This study utilized self-efficacy beliefs as a practical and parsimonious evaluation criterion to explore the effectiveness of the aspiring school leaders' (ASL) preparatory training in developing their self-efficacy beliefs in school leadership. The study measured the changes in the post-training self-efficacy beliefs of the ASLs as the indicator of training effectiveness. The Principal Self Efficacy Scale (PSES) was used on a sample of 226 ASLs to identify their beliefs in their abilities to accomplish aspects of school leadership. Generally, the findings of the Mc Nemar Bowker Test revealed that the training was not effective in enhancing the self-efficacy beliefs of the ASLs. Further analysis revealed a pattern which indicated those with lower self-efficacy benefited more from the training. This evaluation method utilizing self-efficacy beliefs was found to be useful with respect to theory and practice in other fields and is still largely unexplored and not given due consideration in leadership trainings. This research attempted to fill this void in school leadership especially in the Malaysian context.

**Keywords:** Training and development, School leaders, Leadership preparatory training, Training Evaluation, Training Effectiveness.

### 1. Introduction

Training and development is an expensive investment but is essential to the growth and development of any organization (Foxon, 1993; Noe, 2005). An effectively implemented training will have positive effect on behavioral change, performance and productivity by utilizing human resources (Buckley & Caple, 2000; Noe, 2005; Tannenbaum, Cannon-Bowers, Salas, & Mathieu, 1993). Although training evaluation models abound, comparatively less attention is paid by organizations to systematically evaluate training effectiveness (Alvarez, Salas & Garofano, 2004; Goldstein, 2002; Kirkpatrick, 1994; Southern Regional Educational Board, 2006; Truelove, 2006). This lack of assessment may be partly due to the inability of the organizations to skillfully utilize the models to evaluate their training programs (Hancoun & Saks, 1998; Goldstein, 2002). Therefore, most organizations consider training as a costly and unnecessary investment as they are unaware of what to evaluate and unclear of how training evaluation could contribute towards the overall performance of the organization (Bramley, 1996; Cheng & Ho, 2001).

Training effectiveness is done via a training evaluation study, which involves comparing post-training performance to a specified criterion or standard. There is not a single, all-encompassing, universally accepted training effectiveness criterion as different training has different goals and processes, and thus different measures of training effectiveness (Tannenbaum et al., 1993). Research shows that although there are many training evaluation models, organizations still regard training evaluation as difficult as there are many issues and constraints surrounding training evaluation (Goldstein, 2002; Haccoun & Saks, 1998; Truelove, 2006). The effectiveness of the training depends on the outcome criteria used for evaluation (Haccoun & Saks, 1998; Tziner, Fisher, Senior & Weisberg, 2007). The validity and reliability of the measurement scale used becomes questionable when the required standard criterion of quality is not adequately specified as it may involve both objective and subjective measures (Phillips, 1997). This is especially true in management trainings particularly as the subjective outcome such as behavior cannot be quantified (Cheng & Ho, 2001; Truelove, 2006). This is a measurement issue and there continue to be a vacuum in this area as it is under-researched.

In Malaysia, there is a huge increase in the government allocation for training and development in recent years which indicates the growing importance placed on the development of human resources (Tenth Malaysia Plan, 2010). This is in line with the development at the global front where a number of forces such as globalization, technology, political and economic changes with various other factors, bring with it a massive non-optional change that effect society on the whole (Noe, 2005; Kanter, 1996). Embracing and managing these forces of change which is essential for the survival of organizations in this global era is certainly well anticipated by the Malaysian Government. This is very evident with the various policies and programs implemented over the years, current and new projects that are introduced taking into account the goals and aspirations of the National Vision Policy, in order to have a competitive edge in the global market (Haslinda & Mahyuddin, 2009; Ho, 2004).

In this endeavor, the education sector has a vital role to play as the "development of education in Malaysia, is directly interwoven in the planned national development agenda of the nation" (Bajunid, 2000, p. 50). The National Education Blueprint (NEB) 2013-2025 clearly identifies the important roles of school leaders in leading and managing the school organization to cope with future challenges to take the national education to greater access and heights (Kementerian Pelajaran Malaysia, 2012). Consequently, the principals' leadership has a critical and tremendous role in this effort to ensure improved, excellent and effective schools. Therefore, professional preparatory training and development of school leaders are essential for school effectiveness. This is because research on effective schooling and on the importance of preparation of school leadership (Caldwell & Spinks, 1988; Fullan, 1991) are all underpinned on the assumptions that effective leadership creates effective schools (Edmonds, 1979; Hoy & Miskel, 2001; Sergiovanni, 1984; Thody, 1998). Understanding the current challenges that the school leaders' face and the future demands that they have to meet, trainings of these leaders are of ultimate importance. Hence, quality training programs that are suitable and which are designed specifically to support them to meet the educational challenges are extremely vital (Chan & Sidhu, 2009; Darling-Hammond, La Pointe, Meyerson, Orr, & Cohen, 2007; Wallace Foundation Report, 2008).

## 2. Literature Review

### 2.1 Training and development of school leaders

A review of literature from different perspectives showed that school leaders' preparatory programs had been greatly criticized by researchers in this area (Creighton & Jones, 2001; Levine, 2005; Mitgang, 2012). A report entitled "Educating School Leaders" by Levine (2005) provided a thorough analysis of school leaders' preparatory programs. Although there are some critics to Levine's (2005) report but mostly agree to his reasons that training programs often are inadequately prepared and supported for aspiring school leaders to take on the challenging task of school leadership (Chapman, 2005; Darling-Hammond et al, 2007; Wallace Foundation Report, 2008). This statement also holds true in the Malaysian context. The common reasons identified by Levine (2005) were also evident in the limited number of studies done on school leaders' preparatory training, specifically, 'The National Professional Qualification for Educational Leaders' (NPQEL) in Malaysia (Educational, Planning and Research Department, 2006; Bishen Singh, 2009; Moidunny, Othman, & Ariffin, 2009; Joned & Lee, 2006). The most common themes that emerged as reasons for the criticism of school leaders' preparatory training included (1) weak or low selection and recruitment criteria, (2) irrelevant curricula (disconnection between theory and practice), (3) inadequate clinical practice, (4) weak faculty (teaching staff) and weak instructional practices (Levine, 2005; Mitgang, 2012). Although much attention has been given to the importance of school leaders' preparatory programs in equipping school leaders with the knowledge and skills necessary to effectively lead schools, many critics from the education community believe that preparation programs do not have the ability to prepare and support aspiring school leaders (ASL) for the demands of leadership in contemporary schools. This issue has become a major international concern and underdeveloped training evaluation is cited as one of the primary reason for the lack of occurrence of meaningful redesign of the preparatory training until today.

Most of the training evaluation studies had framed their studies by utilizing the well-known and well-accepted Kirkpatrick's (1994) four levels training evaluation model (Haccoun & Saks, 1998). The Kirkpatrick's (1994) four frame evaluation model specified four types of output indicators at increasing level of complexity; Level 1- reaction, Level 2- learning, Level 3-behavior and Level 4-result. Ideally, training should be evaluated at all the levels to identify at which level the training has been effective. Complex research design and adequate financial resources will be needed to evaluate at a higher output levels (Haccoun & Saks, 1998; Imants, Van Putten & Leijh, 1994). Traditional training evaluation designs that utilize rigorous experimental designs with control groups or longitudinal time series are neither easy nor realistic to conduct in practice. Therefore, difficulty in identifying and utilizing a parsimonious and result-oriented evaluation criterion (Haccoun & Saks, 1998; Imants et al., 1994; Phillips, 1997) had also led to most training evaluation to

be done at the Level 1 and 2 of Kirkpatrick's (1994) model. Evaluations at deeper levels such as on the impact of learning and job performances are largely not done (Goldstein, 2002).

Research shows that usually, educational management training programs are evaluated at Level 1 by utilizing "happiness ratings" or "satisfaction sheets" which assess the subjective appraisal of the training by the trainees (Imants et al., 1994). This subjective appraisal of training is regarded as a very poor indicator of training effectiveness as (Alliger & Janak, 1989; Imants et al., 1994; Joyce & Showers, 1988; Truelove, 2006). There are also questions as to what extent are the information collected at the reaction level (Level 1) are of value and related to the other three levels (Hancoun & Saks, 1998; Kirkpatrick, 1994) as it was repeatedly found that the affective reaction measures rarely show variance as trainees usually react positively to their training experiences (Hancoun & Saks, 1998; Alliger & Janak, 1989). Therefore, acknowledging this limit, training evaluations that depend solely on affective reaction measurement had been recognized as an unacceptable estimate of training effectiveness (Alliger & Janak, 1989; Noe & Schmitt 1986; Warr & Bunce, 1995). Yet, until now post-training reaction evaluation remains as one of the most acceptable measure of training effectiveness (Hancoun & Saks, 1998). This is because there are evidences that training reaction may actually play a much complex role indirectly to the other levels (learning and behavior) based on Kirkpatrick's model if "utility" based reaction measure is used (Alliger & Janak, 1989). For example, higher level correlations with learning or outcome measures was also found with the usage of "utility" reaction measure in a study by Alliger, Tannenbaum, Bennet, Traver and Shotland (1997).

However, the complex role of reaction to other levels of training; such as learning and behavior are under-researched (Hancoun & Saks, 1997). Therefore researchers had proposed more 'reaction level' measures are designed to include "utility" measures that allow extraction of more meaningful information. One such "utility" measure proposed is self-efficacy as self-efficacy is a strong predictor of transfer and it is a stable predictor of behavior and performance in training and organizational effectiveness (Gist & Mitchell, 1992; Hancoun & Saks, 1998; Mathieu, Tannennbaum & Salas, 1992).

## 2.2 Self-Efficacy as an Evaluation Criterion

Changes in post-training self-efficacy are considered as an important outcome of training and one potential indication of training effectiveness (Gist, 1989; Tannenbaum & Yulk, 1992). Self-efficacy can also be incorporated easily into post-training self-report type of evaluation to yield more meaningful insights about the effectiveness of training programs (Hancoun & Saks, 1998). Literature suggests that evaluation of training should not only focus or be based on evaluation models (Imants et al., 1994). Evaluation utilizing a cognitive approach whereby measuring the changes in sense of efficacy beliefs of the school leaders is an appropriate criterion for the evaluation of the training program (Bandura, 1997; Imants et al., 1994; McCormik, 2001). This practical and parsimonious criterion for evaluation can actually predict training transfer that subsequently predicts training effectiveness.

Traditional evaluations of training programs have relied heavily on purely pedagogical approach (Haccoun, & Saks, 1998) and this is still ongoing. This study attempted to move away from the norm and evaluate the training effectiveness from a psychological aspect by measuring changes in self-efficacy beliefs as the training outcome variable as it is a potential indicator of training effectiveness (Gist, 1989; Tannenbaum & Yulk, 1992). Therefore, this study hoped to ascertain the effectiveness of the training by using the self-efficacy beliefs as an assessment criterion in the overall evaluation.

## 2.3 Research Question

Are there any differences between the pre-training and post-training level of self-efficacy beliefs (instructional leadership, management skills and moral leadership) of the NPOEL aspiring school leaders in school leadership?

## 3. Methodology

### 3.1 Sample of the study

The final sample of the study consisted of 226 ASLs who participated in the NPOEL training in Malaysia. These ASLs underwent the NPOEL preparatory training for the duration of five months which was conducted by the National Educational Leadership Institution. The ASLs are those who held senior management positions in schools such as Senior Assistants of Academic, Senior Assistants (Students' Affairs), Senior Assistants (Co-Curricular) and Afternoon Supervisors.

### 3.2 Instrument

The study utilized the Principal Self Efficacy Scale (PSES) developed by Tschannen-Moran and Gareis (2005) which consisted of 18 items. The PSES section was used to identify aspiring school leaders' beliefs in their abilities to accomplish aspects of school leadership. The PSES assessed the school leaders' judgment of their own ability and capability to manage the school organization, lead instruction, and establish a learning environment (Tschannen-Moran & Gareis, 2005). The PSES measured self-efficacy beliefs based on three sub-factors namely, Efficacy for Management, Efficacy for Instructional Leadership, Efficacy for Moral leadership.

### 3.3 Data Analysis

The primary aim of the Research Question in this study was to gauge if the ASLs reported any statistical significant differences or changes in the level of their self-efficacy beliefs before and after their preparatory training. This research question was analyzed using the pre-training and post-training responses of the 226 ASLs to the 18 items in the PSES questionnaire. The McNemar Bowker Test was employed to gauge the differences between the pre-training and post-training changes in the self-efficacy of the participants.

McNemar Test is a useful technique introduced by McNemar in 1947 and is the most appropriate technique to investigate the differences in two categorical responses from among subjects in a group at two points in time (Berenson & Koppel, 2005). However, a general lack of awareness of its value and practical power, the McNemar Test had not received due recognition especially in the educational and organization behavior fields (Berenson & Koppel, 2005). This study utilized the McNemar Bowker Test (1948) which is an extension of McNemar Test to more than two categories. McNemar Bowker Test was found to be the best, straightforward technique to test for significant changes in related propositions when the categorical responses possess more than two categories (Berenson & Koppel, 2005).

## 4. Discussion

Table 1.0 shows the overall findings of the McNemar Bowker Test for the differences between the pre-training and post-training level of self-efficacy beliefs of the NPQEL aspiring school leaders in school leadership for all the three sub-factors of PSES (Efficacy for Management, Efficacy for Instructional Leadership, Efficacy for Moral leadership).

**Table 1.0:** McNemar and McNemar Bowker Test for PSES according to the three sub-factors

	McNemar / McNemar Bowker Test		
	Value	df	Sig
<b>Efficacy for Management</b>			
Q51 Handle the time demands of the job	2.731	2	0.255
Q59 Maintain control of own daily schedule	3.111	3	0.375
Q60 Shape the operational policies and procedures to manage school	5.200	2	0.074
Q63 Handle paperwork required for the job	16.164	2	0.000
Q65 Cope with the stress of the job	2.582	3	0.461
Q66 Prioritize among competing demands of the job.	-	-	0.033
<b>Efficacy for Instructional Leadership</b>			
Q49 Facilitate student learning in school	16.429	3	0.001
Q50 Generate enthusiasm for a shared vision for the school	6.000	3	0.112
Q52 Manage change in school	7.629	3	0.067
Q54 Create a positive learning environment in school	1.242	2	0.537
Q55 Raise student achievement on standardized achievement test.	7.263	3	0.064
Q57 Motivate teachers	3.000	2	0.223
<b>Efficacy for Moral Leadership</b>			
Q53 Promote school spirit among a large majority of the student population.	3.061	3	0.382
Q56 Promote a positive image of your school with the media	22.469	3	0.000
Q58 Promote the prevailing values of the community in school.	12.000	2	0.002
Q61 Handle effectively the discipline of students in school	5.429	3	0.143
Q62 Promote acceptable behavior among students	3.153	3	0.369
Q64 Promote ethical behavior among school personnel	-	-	0.635

The findings of the McNemar Bowker Test showed that out of eighteen items from the three sub-factors of PSES, only five items were found to show significant differences in the pre and post-training level of self- efficacy beliefs. The items that showed differences were item 63 - handling paperwork required for the job (M= 0.000, p < 0.05) and item 66-prioritize among competing demands of the job (M= 0.033, p < 0.05) from the efficacy for management sub-factor; item 49 - facilitate student learning in school (M= 0.001, p < 0.05) from the efficacy for instructional leadership sub-factor and two items from the efficacy from moral leadership sub-factor; which was item 56 - promote a positive image of your school with the media (M= 0.000, p < 0.05)) and item 58 - promote the prevailing values of the community in school (M= 0.002, p < 0.05). Therefore, from this findings it was concluded that the differences between the pre- training and post-training level (changes) in the self-efficacy beliefs of the aspiring school leaders were on the whole, not significant for all the three sub-factors of PSES namely Efficacy for Management, Efficacy for Instructional Leadership, Efficacy for Moral leadership.

Although the overall changes in the pre-training and post-training level of self-efficacy beliefs were not statistically significant, some interesting findings were noted from the five items (items 49, 56, 58, 63 and 66) of the PSES which were found to be significant. For example, item 63 Table 1.1 shows the results of the pre and post cross tabulation for the handling paperwork required for the job (item 63 of the PSES questionnaire). Results of McNemar Bowker analysis for handling paperwork required for the job (item 63) showed significant differences (M= 0.000, p < 0.05) in the pre and post training level of self- efficacy beliefs of the participants.

**Table 1.1:** Results of the pre and post cross tabulation of handling paperwork required for the job - item 63 of PSES)

Pre63N * Post63N Crosstabulation					
Count		Post63N			Total
		1.00	2.00	3.00	
Pre63N	1.00	1	0	0	1
	2.00	0	35	52	87
	3.00	3	21	114	138
Total		4	56	166	226

  

Chi-Square Tests			
	Value	df	Asymp. Sig. (2-sided)
McNemar-Bowker Test	16.164	2	.000
N of Valid Cases	226		

Results of the McNemar Bowker analysis for handling paperwork required for the job (item 63) showed that 89.3% of the participants reported good improvement and maintenance of their self-efficacy beliefs. This is evidenced by their greatly increased perception of their level of post-training self-efficacy beliefs for handling paperwork required for the job. A total number of 202 (89.3%) participants had shown either improvement or maintenance of their self- efficacy beliefs in handling paperwork required for the job. Only a total of 24 (10.6%) participants reported decreased in their level of post-training self-efficacy for this item. For example:

Cells (1, 1), (2, 2), (2, 3) and (3, 3) shows improvement or maintenance of self- efficacy post-training.

$$= 1 + 35 + 52 + 114 = 202 / 226 \times 100$$

$$= 89.3\%$$

Cells (3, 1) and (3, 2) shows decrease of self-efficacy in post-training.

$$= 3 + 21 = 24 / 226 \times 100$$

$$= 10.6\%$$

It can be concluded that results of the McNemar Bowker analysis for paperwork required for the job (item 63) showed that participants with perception of lower self-efficacy prior to the training benefited more from the training. The above method of analyzing and calculation of percentages of changes were also used for all the other items in the PSES which were found to be significant in the McNemar Bowker analysis (refer table 1.3). The findings of percentage of changes showed that, the conclusion for item 63, can also be extended to each of the significant item (items 49, 56, 58, 63 and 66) of PSES (refer Table 1.3).

Table 1.2 shows the results of the pre and post cross tabulation for item 59 - maintain control of own daily schedule. Results of McNemar Bowker analysis for maintaining control of own daily schedule (item 59) showed no significant differences (M= 0.375, p > 0.05) in the pre and post training level of self- efficacy beliefs of the participants.



**Table 1.2:** Results of the pre and post cross tabulation for maintaining control of own daily schedule - item 59 of PSES)

Pre59N * Post59N Crosstabulation					
Count					
		Post59N			Total
		1.00	2.00	3.00	
Pre59N	1.00	3	1	0	4
	2.00	3	40	42	85
	3.00	2	39	96	137
Total		8	80	138	226

  

Chi-Square Tests			
	Value	df	Asymp. Sig. (2-sided)
McNemar-Bowker Test	3.111	3	.375
N of Valid Cases	226		

Results of McNemar Bowker analysis for maintaining control of own daily schedule (item 59) showed that 80.5% (182) of the participants reported improvement and maintenance of their self-efficacy beliefs. However, only 19.0% (43) reported good improvement whereas a large percentage of 61.5% (136) maintained their self-efficacy before and after the training for this item (maintain control of own daily schedule). A total of 19.5% (44) of participants reported decreased in their level of post-training self-efficacy for this item.

For example, Cells (1, 1), (1, 2), (2, 2), (2, 3) and (3, 3) shows improvement or maintenance of self- efficacy post-training.

$$= 3 + 1 + 40 + 42 + 96 = 182 / 226 \times 100$$

$$= 80.5\%$$

Cells (3, 1), (3, 1) and (3, 2) shows **decrease** of self-efficacy in post-training.

$$= 3 + 2 + 39 = 44 / 226 \times 100 = 19.5\%$$

On the whole, results of the McNemar analysis for maintaining control of own daily schedule (item 59) showed that comparatively the percentage of those who reported improvement (19.0%) was slightly lower by 0.5% (1) than those who did report any improvement (19.5%). Therefore, it can be concluded that the percentage of improvement for this item 59 (maintain control of own daily schedule) was negative. The above method of analyzing and calculation of percentages of changes were also used for all the other items in the PSES which were found to be not significant. The findings showed that, the conclusion for item 59, can also be extended to each of the non-significant items (items 50, 51, 52, 53, 54, 55, 57, 59, 60, 61, 62, 64, 65) of PSES (refer Table 1.3).

In conclusion, although there was no significant statistical differences between the pre- training and post-training level (of changes) in the self- efficacy beliefs of the participants for most of the items tested, but some general conclusions were drawn from the analysis of the percentage of changes for all the items (as described for items 63 and 59 above). Table 1.3 below shows the overall analysis of the McNemar Bowker Test results for all the 18 items of PSES which reveals the level of changes in the self- efficacy beliefs of the participants before and after the training.

**Table 1.3:** Overall analysis of the McNemar Bowker result for level of self-efficacy before and after the training

Item / Description	Positive Change (+)	Maintain/ No Change (~)	Total Improvement (Positive + Maintain)	Negative Change (-)	McNemar - Bowker Test Sig. value( $\alpha$ ), P = 0.05
I/49. Facilitate student ...	27.4% (62)	61.5% (139)	88.9%	11.1% (25)	<b>0.001</b>
I/63. Handle paperwork ...	23.0% (52)	66.4% (150)	89.4%	10.6% (24)	<b>0.000</b>
I/56. Promote a positive image...	34.1% (77)	51.8% (117)	85.9%	14.1% (32)	<b>0.000</b>
I/58. Promote the prevailing ...	23.9% (54)	62.8% (142)	86.7%	13.3% (30)	<b>0.002</b>
I/66. Prioritize among....	18.1% (41)	71.7% (162)	89.8%	10.2% (23)	<b>0.033</b>
<hr/>					
I/50. Generate enthusiasm for a shared vision..	20.8% (47)	65.5% (148)	86.3%	13.7% (31)	<b>0.112</b>
I/51. Handle the time demands..	16.4% (37)	69.5% (157)	85.9%	14.1% (32)	<b>0.255</b>
I/52. Manage change in school..	20.4% (46)	67.7% (153)	88.1%	11.9% (27)	<b>0.054</b>
I/53. Promote school spirit..	15.5% (35)	69.5% (157)	85.0%	15.0% (34)	<b>0.382</b>
I/54. Create a positive learning environment..	15.5% (35)	70.4% (159)	85.9%	14.1% (32)	<b>0.537</b>
I/55. Raise student achievement	20.9% (47)	65.0% (147)	85.9%	14.1% (32)	<b>0.064</b>
I/57. Motivate teachers..	18.6% (42)	67.7% (153)	86.3%	13.7% (31)	<b>0.223</b>
I/59. Maintain control of own daily schedule...	19.0% (43)	61.5% (139)	80.5%	19.5% (44)	<b>0.375</b>
I/60. Shape the operational policies/procedures..	21.2% (48)	63.8% (144)	85.0%	15.0% (34)	<b>0.074</b>
I/61. Handle effectively the discipline..	18.1% (41)	67.3% (152)	85.4%	14.6% (33)	<b>0.143</b>
I/62. Promote acceptable behavior..	14.1% (32)	72.6% (164)	86.7%	13.3% (30)	<b>0.369</b>
I/64. Promote ethical behavior..	16.8% (38)	68.6% (155)	85.4%	14.6% (33)	<b>0.635</b>
I/65. Cope with the stress..	19.5% (44)	66.4% (150)	85.9%	14.1% (32)	<b>0.461</b>

Generally, between 85%-89% of participants reported total improvement (positive change or maintenance) of self-efficacy beliefs. Although there was not much difference in terms of percentage of total improvement (positive change and maintenance) between the items that were significant and not significant, however, in terms of percentage of positive change there was a difference. Overall, the percentage of those who reported positive change (level of post-training self-efficacy reported higher than pre-training level of self-efficacy beliefs) was lower compared to those who maintained their level of self-efficacy beliefs before and after the training. Even among the items that were found to have significant change (items 49, 63, 56, 58 and 66), the percentages of those who maintained their pre and post-training level of self-efficacy were higher compared to those who reported positive change. In items that were significant, approximately 12% of positive change was reported. This number was only slightly higher than those items that were found to be non-significant (items 50, 51, 52, 53, 54, 55, 57, 59, 60, 61, 62, 64, 65) whereby only 7% of positive change was reported. This indicated that a high percentage of those who reported a low level of pre-training self-efficacy beliefs, also reported a low level of self-efficacy beliefs in post-training. Similarly, those who reported higher pre-training self-efficacy beliefs also reported higher post-training self-efficacy beliefs.

Therefore, it was inferred that the training while effectively managed to maintain the self-efficacy beliefs of the participants in a positive way, also brought about a moderately low positive effect on their level of self-efficacy beliefs. A small percentage of participants with perception of lower pre-training self-efficacy prior to the training benefited more from the training. Those with higher pre-training self-efficacy beliefs did not benefit much as their post-training self-efficacy beliefs was either lower or maintained their pre-training self-efficacy beliefs.

The findings of the McNemar Bowker Test showed that only five items out of eighteen items of the PSES, were found to show significant differences in the pre and post-training level of self-efficacy beliefs. On the whole, the differences (changes) between the pre-training and post-training levels in the self-efficacy beliefs of the ASLs were not significant for all the three sub-factors of PSES namely efficacy for instructional leadership, efficacy for moral leadership and efficacy for management aspect of the job. Although there was no significant statistical differences between the pre-training and post-training level (of changes) in the self-efficacy beliefs of the participants but some general conclusions were drawn from further analysis of the McNemar Bowker test results on the percentage of changes. Overall, the percentage of those who reported positive change (level of post-training self-efficacy reported higher than pre-training

level of self-efficacy beliefs) was lower compared to those who maintained their level of self-efficacy beliefs before and after the training. Therefore, it was inferred that the training while effectively managed to maintain the self-efficacy beliefs of the participants in a positive way, also brought about a moderately low positive effect on their level of self-efficacy beliefs. A small percentage of participants with perception of lower self-efficacy prior to the training benefited more from the training. Those with higher pre-training self-efficacy beliefs did not benefit much as their post-training self-efficacy beliefs were either lower or they maintained their pre-training self-efficacy beliefs.

The overall findings of this study that there were no significant differences (changes) in the pre-training and post-training levels in the self-efficacy beliefs, was not supported by Freeman's study (2009) which found that pre-training self-efficacy to be significantly related to changes in the post-training self-efficacy. However, the conclusion drawn from the percentage of changes from McNemar Bowker test results in this study, supported Freeman's (2009) findings that individuals with lower pre-training self-efficacy benefited more from the training as evidenced from the increase in their post-training self-efficacy beliefs (even though not statistically significant). This was also supported by Saks (1995) and Eden and Aviram (1993).

This study's findings also supported McCormick and Taguma's (2007) findings, that there were no significant changes in the pre and post-training on leadership self-efficacy (LSE) at the group level. However, in McCormick and Taguma's (2007) study when analysis was done at sub-group level, those with low pre-training self-efficacy reported a significantly higher change compared to those with high pre-training self-efficacy. Those with high pre-training self-efficacy beliefs, on the other hand, reported a lower post-training self-efficacy. McCormick and Taguma's (2007) attributed their findings to the 'behavioral plasticity effect'. As discussed previously within the review of literature, their findings demonstrated the influence of 'behavioral plasticity effect', which may mask significant change in leadership training when measured at group level, appearing to have no impact, when in fact there was a significant impact. Could the findings of this study which found similar results as McCormick and Taguma's (2007) study be due to the 'behavioral plasticity effect'? There seem to be a possibility for it as it is consistent with the behavioral plasticity effect theory which stated that those who had lower pre-training self-efficacy improved more than those with higher pre-training level. The influence of 'behavioral plasticity effect' as those who reported lower pre-training self-efficacy belief were more likely to be influenced by external sources (e.g. factors in the training) than those with high self-efficacy beliefs. Whereas, the realization that the complexity of the leadership task was more challenging than what they had initially believed among those with initial high self-efficacy could have dampened their initial high self-efficacy belief and lowered their post self-efficacy beliefs (McCormick & Taguma's, 2007).

This possibility can be explored further as there seem to be differences in the opinions among researchers regarding the ability of those with low self-efficacy beliefs. For example, Hill, Smith and Mann (1987) stated that individuals with low self-efficacy would limit their ability to benefit directly from a training experience as they are less likely to be able to adapt to new situations, cope with demands and manage challenges (Gist, Schwoerer & Rosen, 1989). On the other hand, Guthrie and Schwoerer (1994) stated those with a high self-efficacy have positive attitude about their ability and would perform well in training.

In summary, the non-significant findings of the study between the pre-training and the post-training self-efficacy did not support any of the previous studies. However, the conclusion drawn from the analysis of percentages of changes in the pre and post training self-efficacy revealed a pattern whereby those with lower self-efficacy benefited more from the training. This was supported by Freeman's (2009), McCormick and Taguma (2007), Saks (1995), and Eden and Aviram (1993). It is not confirmatory but highly suggestive as advocated by McCormick and Taguma (2007) and Eden and Aviram (1993) that the 'behavioral plasticity effect' could be at play here. This possibility can be further explored.

## 5. Implication of the Study

Self-efficacy is an important criterion to measure prior to training and it can also provide vital information about training effectiveness. The study's findings built a base of knowledge that relates training evaluation and training effectiveness. This is given the fact that training evaluation is a difficult, time-consuming and expensive. The study implied the importance of utilizing a parsimonious and effective training evaluation criterion to ensure training effectiveness. This study implied that leadership studies should shift its paradigm on training evaluation and move from purely pedagogical approach to psychological approach. Bandura's (1986) framework 'triadic reciprocal causation' model which is a well-supported concept by a large body of empirical research and recognized by researchers in other fields, should also be utilized in leadership studies. Evaluation utilizing a cognitive approach whereby measuring the changes in sense of efficacy beliefs of the school leaders is an appropriate criterion for the evaluation of the training program. Self-efficacy as an effective training evaluation criterion was validated in this study.



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