

A Comparison of Brunei and Hong Kong - SAR Student Teachers' Self-efficacy in Implementing Inclusive Education Practices: Implications for Teacher Education

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Abstract

The survey compared the scores of 159 (118 females) randomly selected Brunei and Hong Kong (Special Administrative Region) student teachers on the New General Self-efficacy Scale (NGSS); Self-efficacy in Implementing Inclusive Practices Scale (SIIPS); Sentiments, Attitudes and Concerns about Inclusive Education Scale (SACIES); and Inclusive Classroom Setting Scale (ICSS). The scales were reliable and valid for use with participants in both countries. Females scored significantly higher on NGSS than male counterparts. In addition, Brunei participants scored significantly higher on NGSS and SACIES than Hong Kong peers. Furthermore, the samples' scores differed significantly on NGSS and SACIES by participants' educational level with A-Level trainees scoring highest. Moreover, the majority of the participants generally scored high on all the scales. However, Two-Way ANOVA revealed only one independent variable (ICSS) with a significant main effect on SIIPS, the dependent variable. Also only one lower-order interaction variable (gender and educational level) had a significant joint effect on the dependent variable, SIIPS. Overall, the results indicate a need to increase self-efficacy in males and Hong Kong students. Extra attention and interventions ought to be directed to SACIES and ICSS variables. Mixed-methods research was recommended to gain more comprehensive insights.

Keywords: self-efficacy, inclusive education, inclusive class room, inclusive practices, student teachers

1. Introduction

Inclusive education refers to the notion that students with various degrees of special needs can be educated in regular schools along with their ordinary peers (Mundia, 2009). Although inclusive education has been operational for some time now in both Brunei and Hong Kong - Special Administrative Region of China (HK-SAR), there are still concerns about preparing effective teachers to meet its challenges (Bradshaw & Mundia, 2006; Forlin, 2012; Tait & Mundia, 2012). In Brunei, earlier research showed that more needed to be done to expose trainee teachers to the concept of disability and how this could be handled in classroom environments (Bradshaw & Mundia, 2005; Haq & Mundia, 2012). Mundia (2009) further proposed that school counselors could be used as resource persons to enhance the capabilities of regular teachers under the ongoing implementation of inclusive education in Brunei Darussalam. Since teaching was a demanding task that requires highly self-motivated professionals, the whole teacher education program in Brunei needed to be reformed to train people with deep interest in teaching to guarantee teacher effectiveness in using inclusive practices within inclusive settings (Mundia, 2009; Mundia, 2012a). The training of effective teachers and other professionals at universities in Brunei is now considered a very important undertaking under the ongoing tertiary education reforms (Mundia, 2012b). In addition, recent research further indicated that Brunei teachers need to know more about how to meaningfully assess students' problems and provide appropriate interventions in key subjects such as mathematics and English to resolve the students' learning problems (Mundia, 2010a; Mundia, 2012c; Hamid et al., 2013; Matzin et al., 2013; Shahrill et al., 2013). With implementation of both inclusive education and curriculum reforms, teachers in Brunei now need more diverse skills to teach effectively (Mundia, 2009; Mundia,

2010b). However, due to insufficient research, Brunei student teachers' self-efficacy in implementing inclusive education practices is not fully known. Bandura (1977) defined self-efficacy (SE) as the cognitive belief that one is competent at a particular task. Legge et al. (2005) and Hill (2009) differentiated self-efficacy from self-esteem (having positive and negative feelings about one's ability), achievement motivation (one's need or desire to be competent and do well), and general self-confidence (positive and negative perceptions of oneself). Instead, these authors argue that self-efficacy focuses on thought processes, actual self-perception of current competence, and is situation specific. Legge et al (2005) and Hill (2009) believe that several factors contribute to self-efficacy including: (1) one's own past performance; (2) verbal feedback and persuasion; (3) the observation of others' performance; (4) realistic or appropriate goal setting; and (5) positive and constructive feedback. Part of the problem in Brunei may be attributed to lack of suitable research instruments to use in assessing the needs of both trainee and serving teachers (Mundia, 2010c; Mundia 2011a). Western research instruments that are reliable, valid and unbiased for use in Brunei still need to be identified. Furthermore, some student teachers also have psychological and academic problems of their own such as anxiety, depression, stress, and mental health issues (see Mundia, 2010d; Mundia, 2010e; Mundia, 2011b; Haq & Mundia, 2013) that may impact negatively on their self-efficacy. There are some concerns that these problems are often not resolved adequately and satisfactorily by trainee teachers due to limitations in their coping abilities and this tends to harm further their self-efficacy (see Mundia, 2010f). It appears that self-efficacy might also be facilitated if teachers had the ability or capacity to provide counseling services to students with high support needs (see Shahrill & Mundia, 2014). In Brunei, recent research has shown that trainee teachers of both genders have the will to work together amicably (Mahalle et al., 2014). In view of this, it might be easy for serving teachers without counseling skills to make referrals of needy students to colleagues with such skills.

2. Objectives of the Study

The overall goal of the present study was to identify areas needing psychological and educational interventions to help the student teachers to improve their self-efficacy in implementing inclusive education in Brunei and Hong Kong. Based on this, the specific purpose of the present study was three-fold, namely to:

- 1) Measure student teachers' general self-efficacy; specific self-efficacy in implementing inclusive practices; sentiments, attitudes and concerns about inclusive education; and views on inclusive classroom settings;
- 2) Compare the student teachers' scores on the above variables by gender, country, and participants' educational level; and
- 3) Determine the amount of general self-efficacy; concerns about inclusive education; and inclusive classroom views in student teachers with different levels of self-efficacy in implementing inclusive practices.

3. Method

The study used the field survey approach to investigate the problem. This research design differs from the postal, online and telephone surveys in that investigators went out in the field (relevant educational institutions in the present study) to collect the data either personally or using research assistants. The rationale and justification for employing this research strategy was two-fold. First, we wanted to involve as many trainee teachers in the study as possible. Second, it was then possible to give on-the-spot assistance to respondents who needed help to complete the data collection instruments correctly thereby increasing the number of usable returns.

4. Sample

Participants in the study were drawn randomly from within all student teachers in two universities (one in Brunei and the other in Hong Kong). Initially, a total of 167 questionnaires were distributed to chosen student teachers but only 159 submitted properly completed and usable protocols. The remaining 8 students were excluded from the study for a variety of reasons including declining to participate in the study by not returning the questionnaires, completing the scales incorrectly by endorsing item scales with central and extremity response biases, and having many missing values. The participants' bio-data (gender, educational level, and age) are presented in Table 1.

Table 1. Participants' demographic data (N=159)

Variable	Group	Frequency	%		
Gender	All females	118	74		
	All males	41	26		
	Brunei females	70	44		
	Brunei males	14	9		
	HK females	48	30		
	HK males	27	17		
Age		Mean	SD		
	All participants	23.786	3.450		
	All females	23.237	3.095		
	All males	25.365	3.941		
	Brunei students	21.892	1.975		
	HK students	25.906	3.522		
Qualification		Frequency	%	Brunei	HK(SAR)*
	A-Level/Cert Ed	92	58	80	12
	Undergrad. Degree	12	8	1	11
	Honors degree	35	22	3	32
	Postgraduate/Masters	18	11	0	18
	Others	2	1	0	2

* HK(SAR) = Hong Kong Special Administrative Region of China)

5. Instruments

We used five instruments to collect research data and these were: the researcher-constructed demographical questionnaire that collected biographical data (gender, age and educational level); the New General Self-efficacy Scale, NGSS (Chen et al., 2001); original and longer version of Self-efficacy in Implementing Inclusive Practices Scale, SIIPS (Deppeler, Loreman, & Sharma, 2005; Sharma, Loreman, & Forlin, 2012); Sentiments, Attitudes and Concerns about Inclusive Education Scale, SACIES (Loreman et al., 2007), and Inclusive Classroom Setting Scale, ICSS (self-constructed by the researchers with items adapted from Loreman et al., 2007). The NGSS is an 8-item (5-point Likert-type scale) that measures self-efficacy in any area of specialization. Similarly, the SIIPS (29 items) and the SACIES (23 items) are all 5-point Likert-type scales measuring concepts depicted or embedded in their titles. However, the ICSS (12 items) is a bi-polar adjective scale with the following extreme ends: 1 None and 9 Extensive. This scale measures the participants' views about the inclusive classroom environment. The descriptive statistics and reliability coefficients for the four rating inventories are presented in Table 2.

Table 2. Reliability of the data collection instruments (N=159)

Scale	Items	Mean	SE mean	SD	Alpha
New General Self-Efficacy Scale (NGSS)	8	23.767	0.597	7.535	0.959
Self-efficacy in Implementing Inclusive Practices Scale (SIIP)	29	127.239	1.163	14.639	0.938
Sentiments, Attitudes and Concerns about Inclusive Education Scale (SACIES)	23	57.854	0.597	7.448	0.757
Inclusive Classroom Setting Scale (ICSS)	12	43.723	1.727	18.039	0.910

The correlations in Table 3 may be interpreted in many ways. The low and non-significant correlations suggest that the scales are measures of different constructs and do not replicate each other. For these scales, the correlations provide good quantitative evidence for the scales' discriminant validity. The low but significant correlations imply that the scales (to a small extent) might be overlapping and measuring the same construct but the amount of duplication or common variance (r^2) is little and negligible. The paired scales can thus be said to have satisfactory discriminant validity and low convergence validity. In addition, the questionnaire scores used in the present study were considered to have had good ecological validity in that all data were collected in the participants' respective university environments.

Table 3. Convergence and discriminant validity of the data collection instruments (N=159)

	Scale	1	2	3
1.	NGSS ^a	1		
2.	SIIPS ^b	0.149	1	
3.	SACIES ^c	0.592 **	0.105	1
4.	ICSS ^d	0.134	0.322 *	-0.037

^aNew General Self-efficacy Scale

^bSelf-efficacy in Implementing Inclusive Practices Scale

^cSentiments, Attitudes and Concerns about Inclusive Education Scale

^dInclusive Classroom Setting Scale

* $p < .05$ (2-tailed)

** $p < .01$ (2-tailed)

6. Data Analysis

The quantitative data were analyzed by both descriptive statistics (frequencies, percentages, mean standard error of the mean, standard deviation, and quartiles) and inferential statistics (t-tests for independent samples incorporating ANCOVA F, Pearson's correlations, One-Way ANOVA, and Univariate Analysis of Variance or Two-Way ANOVA), and non-parametric statistics (chi-square). The rationale and justification for using these techniques is two-fold. First, the procedures were deemed to be appropriate for addressing the research objectives. Second, the data were obtained from a random sample and there was no violation of the statistical assumptions.

7. Procedures

Prior to collecting the data, the participants were told about the purpose and objectives of the study. No deception was involved in the study. In addition, the participants were told both verbally and in writing about the ethical conditions or requirements for being involved in the study. The discussion on this topic centered on issues of voluntary participation, privacy, anonymity, confidentiality, physical and psychological harm, debriefing, and informed consent. Students were given ample time to reflect on and withdraw from the study if they felt uncomfortable with the research's purpose and objectives. The participants voluntarily agreed to participate in the study. With regard to English language problems, the meanings of difficult English words, sentences and phrases on the instruments were verbally explained to the participants. Furthermore, students at the participants' university take most courses in English language and have participated in many research studies that required them to complete self-report scales / questionnaires in English. The researchers therefore deemed it not necessary to translate the instruments into Bahasa Melayu (Brunei's mother tongue and official language). The study met the ethical requirements for using human participants in research stipulated by the participants' university, the Government of Brunei, and the Helsinki Declaration.

8. Results

The findings of the study are presented below according to the three main objectives of the investigation.

General self-efficacy; specific self-efficacy in implementing inclusive practices; sentiments, attitudes and concerns about inclusive education; and inclusive classroom setting views

The overall mean scores, standard errors of the means and standard deviations for the whole sample on the four

scales are presented in Table 2. However, the median scores and coefficients of skewness (not included in Table 2) were as follows: NGSS (Mdn = 24.000; Skew = -0.052); SIIPS (Mdn = 129.000; Skew = -0.210); SACIES (Mdn = 57.000; Skew = 0.228); and ICSS (Mdn = 50.000; Skew = 0.438). Although the raw scores were not standardized, a direct comparison of the means and medians reveals that only the mean for the SACIES scale was slightly larger than its median counterpart. The differences between the means and the medians were small and insignificant. In addition only scores for two scales (NGSS and SIIPS) were left or negatively skewed but the skew coefficients were small. These statistics imply that the majority of the participants scored around these scales' two central tendency measures (mean and median).

Comparison of the student teachers' scores on the four scales by gender, institution, and participants' educational level

As reported in Table 4, the two genders' scores differed significantly only on the NGSS scale where females scored higher than their male counterparts.

Table 4. Means, standard deviations and T-values by gender (N=159)

Scale †	Females (n=118)		Males (n=41)		ANCOVA F	T (df= 157)	P-2 tailed (Effect Size)
	Mean	SD	Mean	SD			
NGSS	24.644	7.403	21.243	7.428	0.000 <i>ns</i>	2.531	0.012 ** (0.039)
SIIPS	127.533	14.861	126.243	14.236	0.254 <i>ns</i>	0.484	0.629 (0.001)
SACIES	58.144	7.752	56.439	6.800	3.834*	1.250	0.213 (0.010)
ICSS	49.330	23.300	52.341	16.707	7.738**	-0.762	0.447 (0.004)

† For full scale names see bottom of Table 3

* $p < .05$ (2-tailed)

** $p < .01$ (2-tailed)

ns = not significant

Only two significant differences were obtained by country on the NGSS and SACIES scales. For both of these, Brunei students scored much higher than their Hong Kong peers (see Table 5).

Table 5. Means, standard deviations and T-values by institution (N=159)

Scale †	Brunei (n=84)		HK-SAR (n=75)		ANCOVA F	T (df= 157)	P-2 tailed (Effect Size)
	Mean	SD	Mean	SD			
NGSS	29.904	4.034	16.893	3.512	0.326 <i>ns</i>	21.566	0.000 ** (0.748)
SIIPS	129.226	14.673	124.933	14.425	0.121 <i>ns</i>	1.856	0.065 (0.021)
SACIES	62.833	5.801	51.960	4.491	2.191 <i>ns</i>	13.099	0.000 ** (0.522)
ICSS	50.773	25.327	49.360	17.099	10.111 **	0.407	0.684 (0.001)

† see Table 3 for full scale names

** $p < .01$ (2-tailed)

ns = not significant

In terms of the participants' educational levels, two significant differences were obtained on NGSS and SACIES scales (Table 6). In both of these instances, student teachers with A-Level (Year 13) educational background scored much higher than fellow trainee with higher entry qualifications

Table 6. Means, standard deviations and F-values by educational level (N=159)

Scale †	A-Level n=92 Mean (SD)	Undergraduate n=12 Mean (SD)	Honors n=35 Mean (SD)	Masters n=18 Mean (SD)	Others n=2 Mean (SD)	F (df = 4;158)	P (2-tailed)	Eta Squared
NGSS	28.206 (5.927)	16.750 (6.062)	17.828 (4.630)	16.000 (3.678)	18.000 (1.414)	37.216	0.000 **	0.492
SIIPS	128.260 (15.510)	131.666 (13.005)	124.342 (13.281)	125.777 (13.837)	114.500 (2.121)	1.152	0.334	0.029
SACIES	61.315 (6.881)	57.000 (6.281)	52.342 (3.984)	51.611 (5.054)	44.500 (4.949)	21.646	0.000 **	0.360
ICSS	50.934 (24.735)	45.333 (22.463)	48.685 (16.003)	52.555 (14.971)	43.500 (24.748)	0.312	0.870	0.008

† see Table 3 for names of scales

** p < .01

Multivariate relationship between eleven independent variables and one dependent variable

Table 7 shows the relationship between seven single independent variables, two lower-order (two-factor) interaction variables, and one higher-order (three-factor) interaction variable with self-efficacy in implementing inclusive practices as the dependent variable. The analysis yielded only one significant main or separate effect (ICSS, p < .01) and one significant lower-order interaction or joint effect (gender and educational level, p < .05).

Table 7. Univariate analysis of variance using self-efficacy in implementing inclusive practices (SIIP) as a dependent variable (N=159)

Source	Sum of Squares (Type III)	df	Mean Square	F	Sig.	Partial Eta Squared
Age	31.834	1	31.834	0.174	0.677	0.001
NGSS	10.848	1	10.848	0.059	0.808	0.000
SACIES	0.097	1	0.097	0.001	0.982	0.000
ICSS	3953.166	1	3953.166	21.647	0.000 **	0.133
Gender	148.592	1	148.592	0.814	0.369	0.006
Ed Level†	462.393	4	115.598	0.633	0.640	0.018
Country	28.124	1	28.124	0.154	0.695	0.001
Gender * Ed Level	1809.981	3	603.327	3.304	-0.022*	0.066
Gender * Country	168.991	1	168.991	0.925	0.338	0.007
Ed Level * Country	435.201	2	217.601	1.192	0.307	0.017
Gender * Ed Level * Country	85.972	1	85.972	0.471	0.494	0.003
Error	25749.427	141	182.620			
Total	2606645.000	159				

Model: F (18,159) = 785.144, P < .01; R Squared = 0.990 (Adjusted R Squared = 0.989)

† EdLevel = Educational Level

* P < .05 (two-tailed)

** P < .01 (two-tailed)

General self-efficacy; concerns about inclusive education; and inclusive classroom views in student teachers with different levels of self-efficacy in implementing inclusive practices

According to Table 8, there were more students of both genders whose total scores were within the bottom and top categories of the score distributions for the four scales. In this table, a participant was placed in the bottom category if her / his total score fell in the 1st quartile of the score distribution. Participants were put in the middle and top groups if their total scores were in the 2nd and 3rd quartiles respectively. However, we noted a big difference in the way these frequencies were unevenly distributed by country (see the pattern or trend in Table 8). Brunei participants scored mostly in the high group on all the four scales. On the other hand, Hong Kong student teachers mostly scored low on two variables (NGSS and SACIES) but high on the other two scales (SIIPS and ICSS).

Table 8. Frequency of cases by scale, score categories, gender and county (N=159)

Scale †	Score categories	All females	All males	All Brunei	All HK(SAR) ^a	All groups
		F	F	F	F	F
NGSS	Bottom	28	19	1	46	47
	Middle	25	9	6	28	34
	Top	65	13	77	1	78
SIIPS	Bottom	21	10	16	25	41
	Middle	26	12	21	17	38
	Top	61	19	47	33	80
SACIES	Bottom	32	11	3	40	43
	Middle	24	15	11	28	39
	Top	62	15	170	7	77
ICSS	Bottom	36	5	23	18	41
	Middle	28	11	22	17	39
	Top	54	25	39	40	79

† for scale names see Table 3

^a HK(SAR) = Hong Kong (Special Administrative Region of China)

Relationship in performance between NGSS, SACIES, and ICSS versus performance in SIIPS

We obtained two significant differences in Table 9. The number of participants who scored in the top levels of SIIPS and NGSS was much higher than the frequencies for the other score categories. This pattern was also observed between ICSS and SIIPS (see Table 9).

Table 9. Frequency of cases by score categories in NGSS, SACIES and ICSS Vs SIIPS (N=159)

Scale †	Score categories	SIIPS score categories			Chi-square (df= 4)	P (2-tailed)
		Bottom	Middle	Top		
NGSS	Bottom	11	7	29	24.691	0.000**
	Middle	18	10	6		
	Top	12	21	45		
SACIES	Bottom	15	8	20	2.889	0.577
	Middle	8	10	21		
	Top	18	20	39		
ICSS	Bottom	20	9	12	16.766	0.002**
	Middle	7	11	21		
	Top	14	18	47		

† Full scales names are presented under Table 3

** p < .01 (2-tailed)

9. Discussion

The present study found a few statistically significant differences in the results. In this section, we labor to offer plausible explanations for both the main findings and associated practical implications.

In general, an examination of measures of central tendency revealed that the participants tended to score high on the four scales. For example, two of the scales (NGSS and SIIPS) had negative coefficients of skewness while the other two (SACIES and ICSS) had large median scores. These positive attitudes are consistent with findings in Haq and Mundia's (2012) study in which trainee teachers were observed to have positive attitudes toward students with mild-to-moderate disabilities but whose attitudes to learners with severe disabilities and high support needs were questionable. This finding suggests that teacher education programs in both institutions (Brunei and Hong Kong-SAR) need to assist student teachers to increase their self-efficacy (both general and specific) in implementing inclusive education practices. The ways or means for achieving this were outside the scope and objectives of the present study but they must be found to address the problem. Findings from previous research described above (Legge et al., 2005; Hill, 2009) suggested that self-efficacy was related to: (1) one's own past performance; (2) verbal feedback and persuasion; (3) the observation of others' performance; (4) realistic or appropriate goal setting; and (5) positive and constructive feedback. These are some of the areas to which attention, psychological and educational interventions could be directed to by teacher education programs. There are a number of significant differences in the participants' performance on various scales used in the present study. The major significant differences were by gender (see Table 4), country (Table 5), and respondents' educational level (Table 6). It is hoped that the ongoing teacher education reforms in both Brunei Darussalam and Hong Kong - SAR documented in the relevant literature for previous studies (see Mundia, 2009; Mundia, 2010b; Mundia, 2012a; Mundia, 2012b; Forlin, 2012; Tait & Mundia, 2012) will address these issues to narrow the differences or gaps. In addition, this also implies that teacher education programs in the two institutions (Brunei and Hong Kong-SAR) need to design and implement training programs that can boost self-efficacy in implementing inclusive education practices in all categories of student teachers. Among all the variables investigated, ICSS was the only one that had a significant main or separate effect ($p < .01$) for explaining the student teachers' self-efficacy in implementing inclusive education practices as indicated in Table 7. However, this was associated with a small but reasonable effect size (Partial $\eta^2 = 0.133$). We also obtained one lower-order significant interaction (joint) effect between gender and educational level of the participant ($p < .05$) although it had only a tiny and non-exciting effect size. It therefore seems that any program that is intended to increase student teachers self-efficacy in implementing inclusive education practices should incorporate elements of these three variables (ICSS, gender and educational level. Evidence from the present study (Tables 8-9) also showed that teacher trainees who scored high on NGSS and ICSS scales also tended to score high on the SIIPS scale. This pattern or trend of scores suggests that general self-efficacy and positive views of the inclusive classes might be good predictors of specific self-efficacy in implementing inclusive education practices. However, the prediction aspect was not investigated in the present study. The notion of prediction was only supported by the correlation between ICSS and SIIPS in Table 3. The other variable, NGSS, was more strongly related to SACIES (Table 3). From this, it appears that increasing general self-efficacy might improve positive attitudes to and lower concerns about inclusive education in student teachers. SACIES scores were too high for Brunei student teachers (Table 5) and A-level entrants to teacher training who were mainly Bruneians (see Table 1 and Table 6).

10. Conclusion

Based on the findings from the present study, we conclude that there was overwhelming evidence to support the suggestion for increasing self-efficacy among the participants. The key intervention required needs to create and maintain positive attitudes and practical skills in student teachers for implementing inclusive education practices. We recommend further mixed-methods research to gain additional insights into the problem and its possible solutions.

11. Limitations

The present study was informed by three main limitations. First, as a survey the results cannot establish cause-and-effect relationships in the variables investigated. Second, a qualitative interview component is missing but was necessary to triangulate findings from the quantitative survey. Third, no attempt was made to obtain criterion-related validity of the scales used due to concerns that student teacher participants were too busy with examinations preparations towards the end of the semester and did not have a lot of time to complete many questionnaires at the time of data collection.

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