

How training affects preservice kindergarten teachers' knowledge, attitude, and self-efficacy toward adopting inclusive education in Hong Kong

A Project entitled

How training affects preservice kindergarten teachers' knowledge, attitude, and self-efficacy toward adopting inclusive education in Hong Kong

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How training affects preservice kindergarten teachers' knowledge, attitude, and self-efficacy toward adopting inclusive education in Hong Kong

Declaration

I, XXX, declare that this research / project report represents my own

work under the supervision of *Dr. Lam Ho Cheong*, and that it has not been submitted

previously for examination to any tertiary institution.

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Abstract

This study aims to examine the relationship between the training received by preservice kindergarten teachers and their knowledge, self-efficacy, and attitudes toward handling SEN students in inclusive education in Hong Kong in the future. This study recruited thirty pre-service kindergarten teachers who received special education training in the university and thirty pre-service kindergarten teachers who didn't receive the training. They are invited to complete a questionnaire referenced from knowledge of inclusive education scale (Gehrke & Cocchiarella, 2013; Nketsia & Saloviita, 2013), scale of teachers attitudes toward inclusion (STATIC) (Sharma, Loreman, & Forlin, 2012) and teacher attitude toward inclusion scale (TAIC) (Cochran, 1997). From the analysis, the results indicated that the training received by pre-service kindergarten teachers can elevate their knowledge and self-efficacy levels to handle students with special learning needs while also fostering a more positive attitude towards inclusive education. Another group of pre-service teachers who didn't receive training showed inadequate knowledge, lower confidence, and a comparatively negative attitude towards inclusive education. This essay also included the implications of improvements that can be made by universities and the government, as well as the limitations of this study.

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Glossary

EduHK= The Education of University in Hong Kong

ECE = Early Childhood Education

SEN= Special Educational Need

IEP = Individualized Educational Plan

M= Mean

SD= Standard Deviation

Chapter 1: Introduction

Special education needs (hereinafter referred to as SEN) include autism spectrum disorder, intellectual disability, attention-deficit/ hyperactivity disorder, specific learning difficulties, speech and language impairment, mental illness, physical disability, hearing impairment, and visual impairment (Education Bureau, 2021).

The inclusive education of SEN children in mainstream schools is becoming increasingly common in the world (Lee, Yeung, Tracey & Barker, 2015). The number of SEN students is increasing in Hong Kong (Li & Cheung, 2021). However, the Hong Kong Education Bureau remained to implement integrated education in mainstream childcare centres and kindergartens rather than inclusive education to help mild-grade disabled children integrate into mainstream education in the future (Lai & Gill, 2019). Integration in early childhood education (hereinafter referred to as ECE) in Hong Kong is not tailored for moderate and severely intellectually disabled children (Lai & Gill, 2019). Indeed, inclusive education is mutually beneficial to children with and without all types of disabilities who learn together in an inclusive environment (Lai, 2018). One of the most vital factors in successfully adopting inclusive education is teachers (Metsala & Harkins, 2020). Many universities offer courses to enhance teacher preparedness in educating SEN students. It is valuable to examine how training affects the different aspects of preservice teachers toward implementing inclusive education in the future in Hong Kong.

Chapter 2: Literature Review

a) Inclusive education

Inclusive education is regarded as the best educational approach for all students and also students with special education needs (Loreman, Sharma, & Forlin, 2013). Inclusive education refers to all students, regardless of their differences in gender, culture, ability, and language to learn in an inclusive and least restricted environment near their neighbourhood (Savolainen, Engelbrecht, Nel, & Malinen, 2011; Metsala & Harkins, 2020; Loreman, Sharma, & Forlin, 2013; Chao, Chow, Forlin & Ho, 2017). In this education, teachers see the differences of individuals as chances for enhancing learning instead of regarding the differences as problems (as cited in Chao, Chow, Forlin & Ho, 2017). Inclusive education can unleash all students' full potential, and they all have equal educational opportunities (Chao, Chow, Forlin & Ho, 2017).

b) Special education training

Special education training refers to attending all the one-year in-service compulsory courses for recognition of special child care workers of the Social Welfare Department for ECE bachelor students in the universities in Hong Kong. Students taking these courses will have a deeper understanding of teaching strategies for SEN students and SEN students' needs and characteristics and how to design individualized educational plans and curriculum, current pre-primary education services for SEN children in Hong

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Kong, and means to collaborate and communicate with parents of SEN students. The level of support and training received by teachers were the essential factors that led to better teaching for SEN students (Jung, Cho, & Ambrosetti, 2011). However, it is not compulsory for all ECE bachelor students to have this recognition of special childcare work before they become kindergarten teachers. With the increasing amount of SEN students in mainstream classrooms (Li & Cheung, 2021), it is worth analyzing how the training affects the pre-service kindergarten teachers' knowledge, self-efficacy, and attitudes toward inclusive education.

c) Knowledge of adopting inclusive education and its relation with training

The knowledge of adopting inclusive education includes understanding the social, behavioural, and cognitive characteristics of SEN students, skills in designing learning plan that suits their needs and teaching strategies related to SEN children, and modification of the curriculum, pedagogical methods, and environment (Lee, Yeung, Tracey & Barker, 2015; Forlin, Sharma & Loreman, 2014). Some research found that pre-service teachers show a gap between their teaching skills and their knowledge of inclusive education (Alsarawi & Sukonthaman, 2021). A study reveals that many pre-service teachers did not feel prepared sufficiently to teach SEN students in mainstream classrooms (as cited in Yu & Park, 2020). A study analyzing the perception of pre-service teachers of inclusive education highlighted that pre-service teachers who

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attended inclusive education training and acquired basic knowledge of inclusive education are more confident in teaching SEN students (Yuen, 2015). The above implies that training affects the understanding of pre-service teachers in handling SEN students in the inclusive classroom. However, there is limited information on the effect of training on the knowledge of ECE pre-service teachers adopting inclusive education.

d) The attitude of adopting inclusive education and its relation to training

Cook (2002) indicated that the positive attitudes of pre-service teachers toward inclusion are one prerequisite for successful inclusion (as cited in Yu & Park, 2020). An article showed that pre-service teachers regard educating SEN students as an extra duty and hold a negative attitude toward inclusive education (as cited in Marin, 2021). Many pre-service teachers consider teaching SEN students challenging in adopting inclusive practices and providing behavioural or instructional support for SEN students (Yu & Park, 2020).

Richardson (1998) mentioned that there are several key factors that can change attitudes toward SEN students. For example, training, shared mission, willingness to change, and collaboration are also crucial (as cited in Jung, Cho, & Ambrosetti, 2011). Many researchers mentioned that after pre-service teachers take a special education course, they develop positive attitudes toward handling SEN students (as cited in Yu & Park,

2020). Another study mentioned that insufficient training in inclusive education of SEN students is one of the determining points for the negative attitude toward inclusive education (Yan, 2012; Killoran, Woronko, & Zaretsky, 2013; Varoce & Boyle, 2014). However, there are mixed findings on pre-service teachers' attitudes affected by training courses. An article highlighted that pre-service teachers who participated in special education training did not change their attitudes toward SEN children (as cited in Yu & Park, 2020). Another study reveals that Hong Kong teachers' attitudes have improved after taking training about inclusive education but they did not express overly positive attitudes toward including SEN students in mainstream classrooms (Forlin, Loreman, & Sharma, 2014). Beacham and Rouse (2012) also revealed that the dispositions of pre-service teachers toward inclusion are not reinforced by special education courses.

e) Teachers' self-efficacy in handling SEN students and its relation to training

Dellinger, Bobbett, Olivier, and Ellett (2008) mentioned that the self-efficacy of teachers refers to the belief in their capabilities in teaching with a specific level of quality (as cited in Li & Cheung, 2021). The sense of teachers' self-efficacy is vital for determining the effectiveness of teaching in inclusive settings (Metsala & Harkins, 2020). Teachers who have low self-efficacy are more likely to classify SEN students as complicated to teach than teachers who have high self-efficacy (Jung, Cho, &

Ambrosetti, 2011). When teachers are more confident in their competence in increasing the performance and motivation of students in teaching, the quality of teaching is better.

It leads to amplifying the learning performance of students (Li & Cheung, 2021). It implies that teachers' self-efficacy highly affects the learning of SEN students.

Many researches suggest that many factors affect the self-efficacy of pre-service teachers in inclusive education. For example, undergraduate training, motivation toward inclusion, the experience of inclusive education, and the gender of students and teachers (as cited in Lee, Cheung, & Chen, 2019). Research about comparing self-efficacy in the inclusive setting of special education teachers, primary school teachers, and secondary teachers also showed that special education teachers who received training have higher confidence levels in teaching SEN students than the other two types of teachers (Jung, Cho, & Ambrosetti, 2011). It implies that course for training teachers is an essential element in enhancing teacher self-efficacy. However, there is a lack of research on the effect of training on improving the efficacy of pre-service teachers in the kindergarten setting.

Chapter 3: Research Purposes & Research Questions

a) Research Purposes

Concerning ensuring the quality of education received by SEN students in mainstream early childhood education, there is an urgent need to continue to examine the abilities and beliefs of teachers in assisting SEN students (Zhang, 2011). Also, research reveals that there are limited studies examining the impacts of training on pre-service teachers' self-efficacy, attitudes, beliefs, and understanding toward handling SEN students in mainstream kindergartens (Yu & Cho, 2022). Thus, this paper proposes to fill the research gap by examining the relationship between training received by pre-service kindergarten teachers and their knowledge, self-efficacy, and attitudes in handling SEN students in inclusive education.

b) Research Questions

- i. How training relates with the knowledge of preservice kindergarten teachers in handling SEN students in inclusive education?
- ii. How training relates with the attitudes of preservice kindergarten teachers in handling SEN students in inclusive education?
- iii. How training relates with the self-efficacy of preservice kindergarten teachers in handling SEN students in inclusive education?

c) Hypothesis

- i. Preservice kindergarten teachers who received training have better knowledge of handling SEN students
- ii. Preservice kindergarten teachers who received training maintain a more positive attitude in handling SEN students
- iii. Preservice kindergarten teachers who received training are more confident in handling SEN students

d) Theoretical framework

In order to study the relationship between the training and knowledge, self-efficacy, and attitudes of pre-service teachers of inclusive education, the social cognitive theory will be used. According to Bandura (1986), people can learn through modelling, observation, and imitation. This theory also mentioned that individual behaviours and self-efficacy could be affected by the influence of the actions of others, individual experiences, and environmental factors (Bandura, 1986). The social cognitive theory implies that training can influence the knowledge, self-efficacy, and attitudes of pre-service teachers towards inclusive education. Findings from previous research and social cognitive theory are used to discuss the purpose and design of the research questions.

Chapter 4: Methodology

a) Participants

This study will invite sixty year-five students who are currently studying for an ECE Bachelor at the Education University of Hong Kong, including thirty of them who have taken all one-year in-service compulsory courses for recognition of special child care workers and the other thirty who did not take the aforementioned courses. As the final year students have studied the same courses of the major subject of ECE and have the experiences of practicum, it can show the differences in self-efficacy, knowledge and attitude between the group of students taking training courses related to special education and those who are not.

b) Measures

A quantitative approach will be used in this study to collect data by using an online Google form survey to conduct the questionnaires. The questionnaire consists of four parts.

Part 1: Collecting demographic data

Example:

- Indicating their year of study
- Have you taken all the one-year in-service compulsory courses for recognition of special child care workers?

Part 2: Knowledge scale

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Questions will be designed by referencing and combining the scale designed by Gehrke and Cocchiarella (2013) and Knowledge on Inclusive Education Scale designed by Nketsia and Saloviita (2013) (as cited in Pasha, Yousaf & Ijaz, 2021). The scale aims to measure knowledge of inclusive education of pre-service teachers. The scale includes twenty-three items. For example, "I am able to describe the characteristics of an effective inclusion structure." (as cited in Alsarawi & Sukonthaman, 2021) 'I know how to design an individualized education plan', etc. It is a 4-point Likert-type scale (4 = strongly agree, 3 = agree, 2 = disagree, 1 = strongly disagree). Higher scores on this scale imply higher knowledge of inclusive education.

Part 3: Self-efficacy scale

Questions will be designed by referencing the efficacy of the inclusive education scale (Sharma, Loreman, & Forlin, 2012) to measure the preservice teachers' efficacy in adopting inclusive practices. A 6-point Likert-type scale is provided for respondents to answer. Higher scores imply stronger agreement with the item. Higher scores on this scale imply higher teacher efficacy.

Part 4: Attitude scale

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Questions will be designed using the Scale of Teachers Attitudes Toward Inclusion

(STATIC) (Cochran, 1997) to measure the attitudes of preservice teachers toward adopting inclusive practices. Respondents need to answer on a 7-point Likert-type scale.

Higher scores imply more support for inclusive education.

All questions are conducted in English without Chinese translation. This ensures the participants were not misled by the translation and enhances the reliability of the result.

● Procedures

Participants were recruited through social media or emails in February 2024. They signed the consent form and voluntarily completed an online Google form survey from February to March 2024. All data will be kept confidential.

● Data Analysis

In this part, SPSS will be used to analyze the data collected from the questionnaire, and an independent-sample t-test will be used to analyze the differences in knowledge, self-efficacy, and attitudes between two groups of preservice teachers.

Chapter 5: Results

Sixty participants were divided into two groups based on the demographic data collected.

Group 1: take all one-year in-service compulsory courses for recognition of special child care workers; **Group 2:** didn't take the aforementioned courses.

In this study, comparisons will be used to identify the differences between two groups of people in knowledge, attitude, and self-efficacy by an independent T-test to show the effect of training on them.

Table 1: Demographic Results

Variable	Group 1	Group 2
Number	30	30
Year of study	Year 5	Year 5
Did you received the training on the One-year In-service Course in Special Child Care Work recognised by the Social Welfare Department	Yes	No
Did you have any teaching experience (For example: block placement)?	Yes	Yes

a) Knowledge of pre-service kindergarten teacher of inclusive education

In the knowledge part of the questionnaire, there are 23 questions to estimate the inclusive education knowledge level of the participants. The scores of some questions that are written negatively are reversed when calculating the scores.

Table 2: Result of knowledge level of inclusive education scale of two groups

	Group 1	Group 2
N	30	30
Mean	3.16	2.76
SD	.162	.194

Table 3: Independent-sample t-test of knowledge level of inclusive education scale of two groups

		F	Sig	t	df	Sig (1-sided p)
Knowledge score of participants	Equal variances assumed	1.746	.192	8.791	58	<.001

The result between the two groups is significant. From Table 2, the result of the knowledge scale of Group 1 is $M=3.16$, $SD=.162$. The result of the knowledge scale of Group 2 is $M=2.76$, $SD=.194$. The mean score of Group 1 is higher than Group 2 ($3.16>2.76$). It showed that the knowledge level of Group 1 was higher than that of Group 2. An independent-sample t-test is carried out to show the comparison of the knowledge levels of the two groups. From Table 3, the p-value was $<.05$. It indicated a significant effect of training on the knowledge of inclusive education.

Table 4: Different Areas of Knowledge of inclusive education scale

		Questions
Area 1	Philosophy of Inclusive education and related policy guidelines	1,4,11,12
Area 2	Knowledge related to SEN students' characteristics	2, 15
Area 3	Teaching strategies & assessment methods & features of developing inclusive learning environment	3, 6, 8, 9, 10,13,14
Area 4	Roles of collaborating with different stakeholders	5, 7
Area 5	knowledge related to training received in universities	16-23

Table 5: Result of different areas of the knowledge level of the inclusive education scale

		Area 1	Area 2	Area 3	Area 4	Area 5
Group 1	Mean	3.24	3.16	3.22	3.62	3.05
	SD	.258	.330	.253	.364	.323
Group 2	Mean	3.18	2.80	2.35	3.38	2.72
	SD	.274	.501	.297	.409	.238
P-value of independent samples T-test		.115	<.001	<.001	.011	<.001

Table 6: Independent-sample t-test of different areas of knowledge level of inclusive education scale of two groups

		F	Sig	t	df	Sig (1-sided p)
Area 1	Equal variances assumed	.388	.536	1.211	58	.115
Area 2		5.599	.021	3.343	58	<.001
Area 3		.745	.392	12.151	58	<.001
Area 4		.077	.783	2.336	58	.011
Area 5		.406	.527	4.551	58	<.001

The questions covered five areas which are shown in Table 4 (Gehrke & Cocchiarella, 2013; Nketsia & Saloviita, 2013; Kuyini & Desai, 2007). An independent-sample t-test was carried out to compare the knowledge levels of two groups in different areas.

Area 1 Philosophy of Inclusive education and related policy guidelines

Table 5 shows that the mean score of Group 1 ($M = 3.24$, $SD = .258$) was slightly higher than Group 2 ($M = 3.18$, $SD = .274$) in area 1 ($3.24 > 3.18$). Table 6 showed that the p-value was $.115 > .005$. There was no significant difference between the two groups in area

1. It implied that the training slightly affected Group 1's knowledge of inclusive education about the philosophy of inclusive education and some related policies. It led to similar results for the two groups in area 1.

Area 2 Knowledge related to SEN students' characteristics

Area 3 Teaching strategies & assessment methods & features of developing inclusive learning environment

Area 4 Roles of collaborating with different stakeholders

Area 5 knowledge related to training received in universities

According to Table 5, the mean score of Group 1 is higher than Group 2 in area 2, 3, 4, 5 (Area 2: $M = 3.16 > 2.80$), (Area 3: $M = 3.22 > 2.35$), (Area 4: $M = 3.62 > 3.38$), (Area 5: $M = 3.05 > 2.72$). From Table 6, the p-value of area 2, 3, 4, 5 were $< .05$ respectively. It suggested that these differences in these areas are very likely not occurring by chance. Thus, training significantly affected the knowledge of these four areas. It led to big differences in the mean score of the two groups in these four areas.

b) Self-efficacy level of pre-service kindergarten teacher of inclusive education

The questions in the questionnaire refer to the efficacy of the inclusive education scale (Sharma, Loreman, & Forlin, 2012). There are twenty questions in the questionnaire. Participants need to answer on a 6-point Likert-type scale. Participants who get higher points indicate higher self-efficacy in implementing inclusive education.

Table 7: Result of self-efficacy level of inclusive education scale of two groups

	Group 1	Group 2
N	30	30
Mean	4.23	3.89
SD	.472	.296

Table 8: Independent-sample t-test of the self-efficacy level of inclusive education scale of two groups

		F	Sig	t	df	Sig (1-sided p)
Self-efficacy score of participants	Equal variances assumed	2.647	.109	3.292	58	<.001

From Table 7, the mean score of Group 1 ($M=4.23$, $SD=.472$) was higher than Group 2 ($M=3.89$, $SD=.296$) ($4.23>3.89$). It signified that Group 1, who received training, had higher self-efficacy towards adopting inclusive education than Group 2, who didn't receive training. An independent-sample t-test was carried out to show the comparison of the self-efficacy levels between the two groups. The p-value of the results was $<.05$ in Table 8, and it signified that there was a significant difference between the two groups. It implied that training affects the self-efficacy of the participants in handling SEN students.

Table 9: Different Areas of self-efficacy of inclusive education scale

		Questions
Area 1	Teaching & assessment methods	1-6, 14, 20
Area 2	Classroom management of inclusive education	7-12
Area 3	Understanding of laws and policies related to inclusive educations	19
Area 4	Collaboration with parents & professional	13, 15-18

Table 10: Result of different areas of the self-efficacy level of the inclusive

education scale

		Area 1	Area 2	Area 3	Area 4
Group 1	Mean	4.37	4.14	4.23	3.77
	SD	.482	.523	1.10	1.04
Group 2	Mean	3.90	3.59	2.97	3.23
	SD	.352	.410	.85	.774
P-value of independent samples T-test		<.001	<.001	<.001	.014

Table 11: Independent-sample t-test of different areas of self-efficacy level of

inclusive education scale of two groups

		F	Sig	t	df	Sig (1-sided p)
Area 1	Equal variances assumed	1.285	.262	4.285	58	<.001
Area 2		.331	.567	4.580	58	<.001
Area 3		4.824	.032	4.978	58	<.001
Area 4		3.269	.076	2.253	58	.014

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The questions can be divided into four areas, which are shown in Table 9. An independent-samples t-test was carried out to show the comparison of the self-efficacy level of two groups in different areas.

According to Table 10, The mean score of Group 1 in all four areas related to self-efficacy of inclusive education was higher than Group 2 (Area 1: $M=4.37>3.90$, Area 2: $M=4.14>3.59$, Area 3: $M=4.23>2.97$, Area 4: $M=3.77>3.23$). From Table 11, the p-value of the independent samples t-test in these four areas was $<.05$ respectively. It demonstrated that Group 1 had a higher self-efficacy level in terms of their ability of teaching and assessing students in inclusive learning, classroom management, relevant policies of inclusive education and collaboration of different stakeholders involved than Group 2.

c) **Attitude level of pre-service kindergarten teacher of inclusive education**

The questions are referencing the Scale of Teachers Attitudes Toward Inclusion (STATIC) (Cochran, 1997). There are 14 questions in this part of the questionnaire (Cochran, 1997). Participants need to answer on a 7-point Likert-type scale. The scores of some questions that are written negatively are reversed when calculating the scores.

Table 12: Result of attitude level of inclusive education scale of two groups

	Group 1	Group 2
N	30	30
Mean	4.72	3.66
SD	.423	.384

Table 13: Independent-sample t-test of attitude level of inclusive education scale of two groups

		F	Sig	t	df	Sig (1-sided p)
Attitude score of participants	Equal variances assumed	.465	.498	9.893	58	<.001

From Table 12, it is shown that the mean score of Group 1 ($M=4.72$, $SD=.423$) was higher than Group 2 ($M=3.66$, $SD=.384$) ($4.72>3.66$). It implied that Group 1, who received training, held a more positive attitude towards inclusive education than Group 2, who didn't receive training. An independent t-test was used to compare the attitude level of the two groups in Table 13. The p-value was $<.05$. It is suggested that these differences are very likely not occurring by chance. It indicated that there is a significant effect of cultivating attitudes by training.

Table 14: Different Areas of the attitude of the inclusive education scale

		Questions
Area 1	Teacher perceptions of students with mild to moderate disabilities	1-6
Area 2	Beliefs about the efficacy of inclusion	7-10
Area 3	Perceptions of professional roles and functions	11-14

Table 15: Result of different areas of attitude level of inclusive education scale

		Area 1	Area 2	Area 3
Group 1	Mean	4.29	4.68	5.18
	SD	.712	1.08	.703
Group 2	Mean	4.24	2.63	4.12
	SD	.525	.507	.822
P-value of independent samples T-test		.379	<.001	<.001

Table 16: Independent-sample t-test of different areas of attitude level of inclusive education scale of two groups

		F	Sig	t	df	Sig (1-sided p)
Area 1	Equal variances assumed	9.25	.003	.310	58	.379
Area 2		14.711	<.001	9.419	58	<.001
Area 3		.884	.351	5.399	58	<.001

The questions can be categorized into three areas (Cullen, Gregory & Noto, 2010)

(Table 14). An independent-sample t-test was used to compare the attitude levels of two groups in these three areas, as shown in Table 16.

Area 1: Teacher perceptions of students with mild to moderate disabilities

From Table 15, the mean score between the two groups in area 1 was similar. The mean score of Group 1 was slightly higher than Group 2 in area 1 ($4.29 > 4.24$). From Table 16, the p-value was $.379 > .05$. There was no significant difference between the two groups in area 1. It implied that the attitude of teachers' perceptions of students with mild to moderate disabilities between the two groups was similar. It also signified that there is a slight effect of training in cultivating attitude about area 1.

Area 2: Beliefs about the efficacy of inclusion & Area 3: Perceptions of professional roles and functions

From Table 15, the mean score of Group 1 was higher than Group 2 in area 2 and area 3 (Area 2: $4.68 > 2.63$; Area 3: $5.18 > 4.12$). The mean scores indicated that Group 1 have a more positive attitude than Group 2 regarding beliefs about the efficacy of inclusion (area 2) and perceptions towards professional roles and functions (area 3). The p-value is $> .05$ in area 2 and area 3, which are shown in Table 16, and they are very likely not occurring by chance. Therefore, there was a significant influence on the attitude of training in these two areas of Group 1. It led to big differences in the mean scores of the two groups in area 2 and area 3.

Chapter 6: Discussions

a) Relationship of training and knowledge of pre-service kindergarten teachers

The results showed a comparison between two groups of participants in terms of knowledge related to adopting inclusive education. The knowledge level of Group 1 ($M=3.16$) is higher than that of Group 2, which didn't receive training ($M=2.76$) ($3.16>2.76$). It implied that the pre-service kindergarten teachers acquired better knowledge in handling SEN students after receiving training, which aligns with hypothesis 1.

The area 1 is about the philosophy of Inclusive education and related policy guidelines (questions 1, 4, 11, 12). The mean score of Group 1 is 3.24, and Group 2 is 3.18. The mean score of this area was similar between the two groups. It signified that the knowledge level of area 1 of the two groups is similar. Around 60% of participants who received training do not agree that they have received instruction on ways of implementing an effective inclusion structure in the university training. Although Group 1 had received training, the reason the participants made this statement may be the content of the training. The content of the training may not include all aspects of inclusive education, and the curriculum just briefly introduces a few philosophies and teaching strategies related to inclusive education. It led to Group 1 not having a clear and complete understanding towards inclusive education and ways of implementing an

effective inclusion structure. It also implied that the training still needs improvement to provide better courses for our future teachers.

Besides, there is a significant effect on the knowledge of training in other aspects. The mean score shows a big difference between the two groups in areas 2, 3, 4 and 5. Pre-service teachers in Group 1 can develop a deeper understanding of different aspects, such as students' characteristics, teaching methods, classroom management skills and inclusive education principles to assist students with diverse needs in the lectures and school attachment. From the survey, around 65% of participants from Group 2 disagreed or strongly disagreed that "differences between students are viewed as resources to support learning in inclusive education". In comparison, nearly 80% of participants from Group 1 agreed or strongly agreed with this statement. Around 50 % of participants from Group 2 agreed or strongly agreed that "inclusion is only about including students with disabilities". In comparison, around 90% of participants from Group 1 disagreed or strongly disagreed with this statement. It demonstrated that Group 2 have an unclear understanding of inclusive education. The quality of teaching of pre-service teachers who received training will be better as they can be aware of the needs of students of all abilities and provide help accordingly in the future. Moreover, Group 1 may have a clearer understanding related to the professionals involved in the inclusive education learnt in the course and understand ways of cooperating with the parents and

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professionals. Compared to Group 1, Group 2 does not have in-depth knowledge of this aspect and lacks information on these areas.

To conclude, the training positively affected Group 1's knowledge of inclusive education. Training is valuable and essential for pre-service kindergarten teachers to enhance their understanding of inclusive education.

b) Relationship of training and self-efficacy of pre-service kindergarten teachers

The results showed a comparison between two groups of participants regarding the self-efficacy aspects of adopting inclusive education. The self-efficacy level of Group 1 ($M=4.23$) is higher than that of Group 2 ($M=3.89$) ($4.23>3.89$). It indicated that the pre-service kindergarten teachers have more confidence in handling SEN students after receiving training, which aligns with hypothesis 2. Previous research also highlighted that pre-service teachers will have greater self-efficacy when they acquire enough training (Li & Cheung, 2021). Another previous research also pinpointed that teachers with a low sense of self-efficacy will demonstrate anxiety and oppose including SEN students in their classrooms (Sharma, Loreman & Forlin, 2012). When the pre-service teachers learn the necessary skills and knowledge in the training, they feel more well-prepared to assist SEN students in the classroom. For instance, they can believe in their ability in designing IEP, applying appropriate teaching strategies, and teaching

materials, creating an inclusive learning environment after they attended the classes of special education. Over 70 % of participants from Group 2 indicated that they disagreed or strongly disagreed with the statement "I am confident in designing learning tasks so that the individual needs of students with disabilities are accommodated" in the questionnaire. Therefore, training has an effect on influencing participants' self-efficacy so as to enhance pre-service kindergarten teachers' confidence level in teaching SEN students and carrying out inclusive learning in school. In addition, training also helps pre-service teachers develop a stronger belief of their roles in inclusive classrooms of nurturing SEN children according to their needs.

In addition, Group 2 may have unclear and insufficient knowledge of the successful and effective teaching strategies of teaching SEN students and regard implementing inclusive education as complicated and cannot be implemented by their ability. Thus, this may lead to lower confidence in teaching SEN students and adopting inclusive education.

To briefly conclude, the self-efficacy of inclusive education of pre-service teachers can be enhanced by specialized training.

c) Relationship of training and attitude of pre-service kindergarten teachers

The results showed a comparison between the two groups on the attitude aspects of adopting inclusive education. The attitude level of Group 1, which received training ($M=4.72$), was higher than that of Group 2, which didn't receive training ($M=3.66$) ($4.72>3.66$). It indicated that the pre-service kindergarten teachers maintained a more positive attitude in handling SEN students after receiving training, which aligns with hypothesis 3.

Area 1: Teacher perceptions of students with mild to moderate disabilities

Two groups shared a similar mean score in area 1, which implied that they have similar perceptions of students with mild to moderate disabilities. However, the mean score of Group 1 is higher than Group 2. Pre-service teachers will develop positive attitudes when they are taking short-term training, preparatory or compulsory courses or workshops on SEN topics (Li & Cheung, 2021). A previous study revealed that pre-service teachers became more worried about the reality of their workload, large class sizes, and the resources available to support inclusive education after attending some courses on inclusion (Oswald and Swart, 2011). Nearly 50 % of participants of Group 1 agreed or strongly agreed that "students with mild to moderate disabilities should not be taught in regular classes with non-disabled students because they will require too much of the teacher's time." In fact, Group 1 may understand that inclusive education is

beneficial to all students. Group 1 makes this statement because they know the actual situation and workload of teachers in an inclusive classroom after receiving training.

Group 1 understood the difficulties teachers face in an inclusive classroom. Group 2 also showed a comparatively negative attitude in this area. Around 70% of participants from Group 2 agreed or strongly agreed or agreed very strongly that “It is seldom necessary to remove students with mild to moderate disabilities from regular classrooms in order to meet their educational needs”. They didn’t support including SEN students in mainstream classroom. The reason behind this opinion may be they do not understand the benefits of inclusive education. However, the university training still need improvement in fostering attitude of this area by developing a better supporting system for teachers in the field to rebuild the image of pre-service teacher on inclusive education. Thus, Group 1 tended to solely have a slightly better perception of SEN students than Group 2, which is shown in the result in area 1. The effectiveness of training is limited in fostering pre-service teachers' attitudes in the area of developing better perceptions of SEN students.

Area 2: Beliefs about the efficacy of inclusion & Area 3: Perceptions of professional roles and functions

Group 1 showed a more positive attitude toward handling SEN students, the effectiveness of the integration of SEN students, the outcome of inclusive education and

collaborating with professionals than Group 2. It showed that Group 1 had a better understanding of different methods to help SEN students integrate into mainstream classrooms in the aspects of social and academic after receiving training. The big difference in mean score in area 2 showed that Group 2 students doubt the effectiveness of inclusive education. Previous research indicated that the attitudes of pre-service teachers could be fostered positively in the undergraduate training of university studies (Forlin, Loreman, Sharma, & Earle, 2009). Without training, Group 2 may have misconceptions about SEN students and misunderstand the features and potential outcomes of inclusive education, thus developing a negative attitude toward handling SEN students and towards inclusive education.

To briefly conclude, the training can help shape positive attitudes of pre-service kindergarten teachers towards inclusive education.

Chapter 7: Implications

Teachers are the essential factors in implementing inclusive education (Zhu, Li & Hsieh, 2019). Teachers with qualifications related to special education with adequate resources and support can help implement inclusive education in Hong Kong (Zhu, Li & Hsieh, 2019). Regarding the results of this study, the universities and different stakeholders like the government and kindergartens should take steps to make some changes to the current training and resources provided in order to adopt inclusive education in the future or provide better education for children in the near future.

a) Amendment on the ECE curriculum

The university can include all the one-year in-service compulsory courses for recognition of special child care workers of the Social Welfare Department as compulsory courses in the ECE major. Students who take the compulsory courses for recognition of special child care workers will receive knowledge of inclusive education, teaching skills, and classroom management strategies to support SEN children in kindergarten. Previous research also pinpoints that if the negative attitude of pre-service teachers on SEN is deeply rooted, it is difficult to change after graduation (Loreman, Sharma, Forlin, & Earle, 2005). It implies the importance of offering training related to special education for pre-service teachers to foster their positive attitudes towards

students of all abilities. When all ECE bachelor students are equipped with the fundamental knowledge and skills of special education, the education field will have more qualified teachers to support SEN children in the mainstream classroom. Ultimately, the teacher quality can be improved, and children of all abilities can receive good support in both mainstream classrooms and special centres or schools. As more teachers are equipped well by training, they may maintain a more positive attitude and high self-efficacy in implementing inclusive education in the future. It can hopefully make a big step toward adopting inclusive education in Hong Kong.

b) Amendment of course content related to special education

The courses included in the one-year in-service compulsory courses for recognition of special child care workers of the Social Welfare Department cover many topics, including recognizing the needs of SEN students, ways of developing integrated learning environments and implementing differentiated instructional strategies to cater to the various learning needs in the classroom etc. However, the topics are not taught in-depth. It solely provides basic knowledge and skills for pre-service teachers. For instance, introducing some teaching strategies generally and broadly without providing enough chances for students to learn how to support different types of SEN students specifically. Nearly 50 % of participants who have taken the courses in the survey felt themselves are not well-prepared enough to teach SEN students. Thus, this is a must in

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amending the course content so as to equip future teachers with an in-depth knowledge of various kinds of SEN and comprehensive skills in teaching and classroom management related to all types of special needs and inclusive learning, even skills in collaborating with parents and professionals like therapists and social workers. For instance, course lecturers can provide more practical knowledge like case studies related to SEN children in real life to allow students to know more about the real situations in a kindergarten setting and ways to assist SEN children's learning and handling it.

Moreover, universities can use different assessment methods to ensure a clear understanding of students, like exams or short-term quizzes of various types of SEN and strategies to cope with different learning needs.

Moreover, the curriculum can include more block placements related to SEN so that students can practice and apply what they have learned in the courses. Pre-service teachers can have higher self-efficacy in their ability to teach, prepare teaching materials and collaborate with parents and professionals when they gain more experience. The future teacher quality can be enhanced, and potential misconceptions or biases about inclusive learning can be reduced and more supportive of it.

c) Support from the Government

One of the factors that deterring pre-service teachers from supporting inclusive education is the workload of the inclusive classrooms (Li & Cheung, 2021).

From the survey, over 60% of participants agree that SEN children will occupy too much time with the teacher if they are in mainstream classrooms. Thus, it is recommended that the government offer subsidies for kindergartens and regulate them to hire assistant teachers with qualification of SEN for each class to alleviate the workload of class teachers. It can ensure all students receive sufficient support and the time of class teachers would not solely allocate to SEN children. Most importantly, more teachers can share the workload of designing IEPs for SEN students and learning activities for all children. The Education Bureau can also restrict the number of SEN children in a kindergarten class to prevent teachers from being overwhelmed by heavy workloads. In addition, the Education Bureau can regularly collaborate with special centres and education professionals from other countries to organize talks and workshops for teachers to enhance their knowledge and skills related to inclusive education. Teachers can learn more about inclusive education, such as how other countries implement it and the suggestions provided, gain more valuable insights, and apply them in schools later. With a better working environment and a more significant number of resources supported in the education settings, the pre-service teachers will have a greater intention to advocate inclusive learning in the future and maintain a more positive attitude toward handling SEN students in future classes.

Chapter 8: Limitation

There are two potential limitations in this study that can be addressed in future studies.

The sample size (N=60) is small since this study only recruits ECE bachelor students in EduHK. The results are not comprehensive enough to represent the self-efficacy, knowledge, and attitude of all pre-service kindergarten teachers from different universities and how trainings affect them towards inclusive education in Hong Kong. Therefore, it will be better to recruit all ECE bachelor students from all universities to investigate the effect of the courses related to special education on the aspects of self-efficacy, knowledge, and attitude toward inclusive education in future studies.

In addition, there may be other factors like the field experience and experience of teaching SEN students that affect the self-efficacy, knowledge, and attitude of participants who have received training. Therefore, the results may be affected and inaccurate in the form of quantitative research.

Chapter 9: Conclusion

This study aimed to examine how training relates to the knowledge, attitude, and self-efficacy toward adopting inclusive education of pre-service kindergarten teachers. The concerns about the needs and rights of SEN students are rising nowadays, and they shed light on promoting inclusive education in Hong Kong. From the result of this study, the training can enhance teachers' knowledge, attitude, and self-efficacy. Although inclusive education may not be adopted in the next ten years, some students with mild special learning needs still study in mainstream classrooms. It is essential to equip future teachers with the necessary skills and knowledge to teach SEN students to provide a better learning environment for all students and eventually implement a fairer and more inclusive education system in Hong Kong. Future studies may also consider the teaching experience of pre-service teachers to make the analysis more comprehensive and reliable.

(6852 words)

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Appendix

The full version of the questionnaire

How training affects preservice kindergarten teachers' knowledge, attitude, and self-efficacy toward adopting inclusive education in Hong Kong

Part 1

1. You are currently studying at

☐ The Education University of Hong Kong

2. You are currently studying

☐ Bachelor of Education (Honours) (Early Childhood Education)

3. Your year of study

☐ Year 1

☐ Year 2

☐ Year 3

☐ Year 4

☐ Year 5

4. I have received the training on the **One-year In-service Course in Special Child Care Work** recognised by the Social Welfare Department

☐ Yes

☐ No

Part 2: Knowledge Part (Gehrke & Cocchiarella, 2013; Nketsia & Saloviita, 2013)

1	2	3	4
Strongly disagree (SD)	Disagree (D)	Agree (A)	Strongly agree (SA)

Questions	SD	D	A	SA
1. I have the knowledge of the philosophy underlying inclusive education	1	2	3	4
2. I have the knowledge of characteristics of the different disability types:	1	2	3	4
3. I have the knowledge of instructional and remedial techniques recommended for	1	2	3	4

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	inclusive classrooms (such as cooperative learning formats, peer tutoring and team-teaching):				
4.	In inclusive classroom or school, everyone is made to feel welcome, regardless of their disability	1	2	3	4
5.	Inclusion requires that there is cooperation among teachers and other professionals	1	2	3	4
6.	In inclusive classroom good students are encouraged to help students with SEN	1	2	3	4
7.	Inclusion requires that teachers and parents work together	1	2	3	4
8.	Inclusion seeks to remove all forms of barriers to learning and participation for all students	1	2	3	4
9.	Inclusive teachers understand the different ways in which students respond to the same tasks	1	2	3	4
10.	Inclusion requires that teaching activities are planned with all students in mind	1	2	3	4
11.	Inclusive schools build on the differences among students in ways that value everyone equally	1	2	3	4
12.	An inclusive classroom is where difference is celebrated, embraced and valued	1	2	3	4
13.	In an inclusive classroom, differences between students are viewed as resources to support learning	1	2	3	4
14.	Inclusion is only about including students with disabilities	1	2	3	4
15.	I can identify the characteristics of an effective inclusion structure.	1	2	3	4
16.	In my university coursework, I have received instruction on how to identify an effective inclusion structure in a general education classroom.	1	2	3	4
17.	In my university coursework, I have	1	2	3	4

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	received instruction on how to implement an effective inclusion structure.				
18.	In my current field experience placement, classroom teachers instruct me on how to identify an effective inclusion structure.	1	2	3	4
19.	In my current field experience placement, inclusion consists of adapting and/or modifying materials for students with special needs.	1	2	3	4
20.	In my current field experience placement, inclusion is the location where students with disabilities are receiving services.	1	2	3	4
21.	In my current field experience placement, inclusion is students with disabilities interacting with students without disabilities.	1	2	3	4
22.	Based on my current field experiences and coursework, I can identify positive outcomes of an effective inclusion structure.	1	2	3	4
23.	Based on my current field experiences and coursework, I can identify negative outcomes of an effective inclusion structure.	1	2	3	4

Part 3: Self-Efficacy Part (Sharma, Loreman, & Forlin, 2012)

1	2	3	4	5	6
Strongly disagree (SD)	Disagree (D)	Disagree somewhat (DS)	Agree somewhat (AS)	Agree (A)	Strongly agree (SA)

Questions	SD	D	DS	AS	A	SA
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1. I can use a variety of assessment strategies (e.g., portfolio assessment, modified tests, performance-based assessment, etc.).	1	2	3	4	5	6
2. I am able to provide an alternate explanation or example when students are confused.	1	2	3	4	5	6
3. I am confident in designing learning tasks so that the individual needs of students with disabilities are accommodated.	1	2	3	4	5	6
4. I can accurately gauge student comprehension of what I have taught.	1	2	3	4	5	6
5. I can provide appropriate challenges for very capable students.	1	2	3	4	5	6
6. I am confident in my ability to get students to work together <i>in pairs or in small groups</i> .	1	2	3	4	5	6
7. I am confident in my ability to prevent disruptive behaviour in the classroom before it occurs.	1	2	3	4	5	6
8. I can control disruptive behaviour in the classroom.	1	2	3	4	5	6
9. I am able to calm a student who is disruptive or noisy.	1	2	3	4	5	6
10. I am able to get children to follow classroom rules.	1	2	3	4	5	6
11. I am confident when dealing with students who are physically aggressive.	1	2	3	4	5	6
12. I can make my expectations clear about student behaviour.	1	2	3	4	5	6
13. I can assist families in helping their children do well in school.	1	2	3	4	5	6

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14. I can improve the learning of a student who is failing.	1	2	3	4	5	6
15. I am able to work jointly with other professionals and staff to teach students with disabilities in the classroom.	1	2	3	4	5	6
16. I am confident in my ability to get parents involved in school activities of their children with disabilities.	1	2	3	4	5	6
17. I can make parents feel comfortable coming to school.	1	2	3	4	5	6
18. I can collaborate with other professionals (e.g., itinerant teachers or speech pathologists) in designing educational plans for students with disabilities.	1	2	3	4	5	6
19. I am confident in informing others who know little about laws and policies relating to the inclusion of students with disabilities.	1	2	3	4	5	6
20. I am confident in adapting school-wide or state-wide assessment so that students with all disabilities can be assessed.	1	2	3	4	5	6

Part 4: Attitude Part (Cochran, 1997)

1	2	3	4	5	6	7
Disagree very strongly (DVS)	Strongly disagree (SD)	Disagree (D)	Neither agree nor disagree (NAD)	Agree (A)	Strongly agree (SA)	Agree very strongly (AVS)

Questions	DVS	SD	D	NAD	A	SA	AVS
1. All students with mild to moderate disabilities should be educated in regular classrooms with non handicapped peers to the fullest	1	2	3	4	5	6	7

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extent possible.							
2. It is seldom necessary to remove students with mild to moderate disabilities from regular classrooms in order to meet their educational needs.	1	2	3	4	5	6	7
3. Most or all separate classrooms that exclusively serve students with mild to moderate disabilities should be eliminated.	1	2	3	4	5	6	7
4. Most or all regular classrooms can be modified to meet the needs of students with mild to moderate mild to moderate disabilities.	1	2	3	4	5	6	7
5. Students with mild to moderate disabilities can be more effectively educated in regular classrooms as opposed to special education classrooms.	1	2	3	4	5	6	7
6. Inclusion is a more efficient model for educating students with mild to moderate disabilities because it reduces transition time (i.e., the time required to move from one setting to another).	1	2	3	4	5	6	7
7. Students with mild to moderate disabilities should not be taught in regular classes with non-disabled students because they will require too much of the teacher's time.	1	2	3	4	5	6	7
8. I have doubts about the effectiveness of including students with mild/moderate disabilities in regular classrooms because they often lack the academic skills necessary for success.	1	2	3	4	5	6	7
9. I have doubts about the effectiveness of including students with mild/moderate disabilities in	1	2	3	4	5	6	7

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regular classrooms because they often lack the social skills necessary for success.							
10. I find that general education teachers often do not succeed with students with mild to moderate disabilities, even when they try their best.	1	2	3	4	5	6	7
11. I would welcome the opportunity to team teach as a model for meeting the needs of students with mild/moderate disabilities in regular classrooms.	1	2	3	4	5	6	7
12. All students benefit from team teaching; that is, the pairing of a general and a special education teacher in the same classroom.	1	2	3	4	5	6	7
13. The responsibility for educating students with mild/moderate disabilities in regular classrooms should be shared between general and special education teachers.	1	2	3	4	5	6	7
14. I would welcome the opportunity to participate in a consultant teacher model (i.e., regular collaborative meetings between special and general education teachers to share ideas, methods, and materials) as a means of addressing the needs of students with mild/moderate disabilities in regular classrooms.	1	2	3	4	5	6	7

Thank you for your participation!