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Evaluating the effect of a teacher training programme on the primary teachers' attitudes, knowledge and teaching strategies regarding special educational needs

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ABSTRACT

Research has consistently stressed that regular school teachers are important in determining the success of implementing inclusive education. It was also found that teachers' attitudes, their knowledge about special educational needs (SEN) and teaching strategies are prerequisites for implementing inclusive education successfully. This study examines the effects of an in-service teacher training programme on regular primary school teachers' attitudes and knowledge about SEN and about teaching strategies. A pre- and post-test control group design study was set up ($N_{\text{experimental group}} = 33$, $N_{\text{control group}} = 34$), comprising 11 public primary schools. The training programme consisted of 32 hours face-to-face training sessions, covering topics about attitudes and knowledge about SEN and about teaching strategies. In order to establish the effects of the training programme, attitudes and knowledge were measured at two moments: before and after the training programme was performed. The outcomes of ANCOVA revealed significant positive effects of the training programme on most dependent variables (attitudes, knowledge about SEN and about teaching strategies) with medium to large effect sizes. Implications for future research and practice are discussed.

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Including students with special educational needs (SEN) in regular classrooms has become a global trend. International policies have continually strived for the inclusion of such students, starting with the Warnock report (1979) and followed by the Salamanca statement (UNESCO, 1994). Most recently, Article 24 of the UN Convention on the Rights of Persons with a Disability (United Nations, 2006) guarantees that all children, regardless of ability or disability, have a basic right to be educated alongside their typically developing peers in a local school. Thus, a large number of countries now provide a better education for students with SEN.

Indonesia has also followed this international trend. Under inclusion policies like the National Education System Act No. 20/2003, each Compulsory Education Unit is obliged to educate students with SEN and provide them with adequate support. Along with nine years of compulsory basic education for children starting at the age of seven, the rights of all children to an education are now protected. As a result, a growing number of children with various types of special needs are now included in regular classrooms. Among the most common types of special needs encountered in Indonesian

primary schools are attention deficit/hyperactive disorder (AD/HD), dyslexia, mild intellectual disabilities, mild autism spectrum disorders (ASD) as well as hearing and visual impairment (Directorate of Special Education, Indonesia, 2009).

A number of researchers have revealed that teachers play a significant role in educating students with SEN (Avramidis & Norwich, 2002; Forlin, 2001). It is also known that teachers' attitudes are important in relation to inclusive education (Chalmers, Hoover, & Olson, 1997). Teachers who are favourably disposed to this tend to be more willing to use effective teaching strategies, whereas teachers with less positive attitudes can undermine the efforts of inclusion (Gal, Schreur, & Engel-Yeger, 2010; Worrell, 2008). Research on teachers' attitudes, however, has shown mixed results. While some studies revealed teachers were in favour of inclusive education (Abbott, 2006; Avramidis, Bayliss, & Burden, 2000; Avramidis & Norwich, 2002; Marshall, Ralph, & Palmer, 2002), others showed different results (Alghazo, Dodeen, & Algaryouti, 2003). A recent review of literature on teachers' attitudes demonstrated that teachers held a neutral attitude towards inclusive education (De Boer, Pijl, & Minnaert, 2011). In this review, it was also stipulated that, in practice, teachers in that review had serious reservations about inclusive education. It has been argued that such attitudes relate to teachers' lack of competence and confidence in teaching students with various types of special needs.

Previous studies found that teachers' reservations towards inclusion can be explained in relation to both their lack of knowledge as well as lack of experience of working with children with SEN (Avramidis et al., 2000; Rose, 2001). In this current study, attitude was defined as 'an individual's viewpoint or disposition toward a particular "object" (a person, a thing, an idea, etc.)' (Gall, Borg, & Gall, 1996, p. 273). Attitudes are considered to have three components: (1) cognitive, (2) affective and (3) behavioural (Eagly & Chaiken, 1993); each component is defined independently. Knowledge refers to descriptive knowledge and procedural knowledge (Anderson, 1981). Descriptive or declarative knowledge describes how things are, including the process, attributes and relationships between things, whereas procedural knowledge relates to how to perform or operate things. In the context of inclusive education, declarative knowledge covers knowledge about students with SEN, such as characteristics, causes and prevalence. Procedural knowledge relates to teaching strategies associated with successful inclusion, like differentiation, cooperative learning, peer support, activity-based learning, classroom management and social skills (Florian, 2009; Janney & Snell, 1996; Scott, Vitale, & Masten, 1998; Scruggs & Mastropieri, 1994).

Research showed that teachers' attitudes are influenced by information and knowledge they have about including students with SEN in regular classrooms (Batsiou, Bebetos, Panteli, & Antoniou, 2008; Sledge & Morehead, 2006). The more knowledge teachers have about SEN students, the more positive their attitude towards the inclusion of such students (Ghanizadeh, Bahredar, & Moeini, 2006). From another research finding, it is also known that teachers' less positive attitudes and lack of knowledge accounted for a limited use of effective teaching strategies within inclusive settings (Kuyini & Desai, 2007). Hence, it can be concluded that positive attitudes and knowledge about SEN and teaching strategies are imperative for teachers to effectively support the inclusion of students with SEN in regular schools.

It is argued that teachers' attitudes and knowledge of special needs and relevant teaching strategies are influenced by the training they received (eg Avramidis & Kalyva, 2007; Avramidis & Norwich, 2002; Ellins & Porter, 2005). In recent years, certain teacher training programmes which focus on inclusive education have been offered to primary school teachers. However, limited studies have evaluated the effectiveness of such training programmes in changing teachers' attitudes and knowledge about SEN and inclusion. A recent review of 13 international studies on pre- and in-service training programmes revealed that the majority of studies was of short-term duration and specified the type of SEN in the training content (Kurniawati, De Boer, Minnaert, & Mangunsong, 2014). The review showed that the studies were stand-alone, offering either coursework or combination of coursework and field experience. The effectiveness of these was measured by the effect size on pre- and post-training data and showed that the highest effect size mean was found for knowledge, followed by attitude. However, only a few studies used a control group, had a follow-up session or measured student outcomes.

While in developed countries such as the Netherlands, training programmes on inclusive education were prepared for pre- and in-service teachers (Pijl, 2010); in Indonesia, such programmes were only given to existing special education teachers, who were responsible for such students either in special or inclusive schools. Consequently, regular education teachers may be supporting students with SEN in their classroom without adequate preparation in this field. Following the movement towards inclusive education, the Indonesian Government has espoused the importance of equipping regular school teachers with knowledge and teaching strategies in order to work with diverse types of special needs. The government has organised in-service courses which focus on preparing regular education teachers to support SEN students in inclusive settings. Since 2003, and with the support from local and international NGOs, in-service training programmes have been offered to more than 2000 teachers across six provinces ('Inclusive Education: Opportunities for Vulnerable Children (OVC)', 2013). However, there is currently little evidence as to the effectiveness of such training programmes, particularly in terms of the impact on teaching practice. A preliminary study on inclusive education in Indonesia has revealed that although teachers were more in favour of inclusion after the training programme, they were less confident and willing to accommodate students with SEN using effective inclusive teaching strategies (Kurniawati, Minnaert, Mangunsong, & Ahmed, 2012). This emphasises the need for an empirical study of feasible in-service training programme to support teachers in accommodating SEN students in the classroom. This current study was set up to fill this gap of knowledge by evaluating the effectiveness of an in-service training programme on primary teachers' attitudes towards inclusive education as well as their knowledge about SEN and about teaching strategies.

Method

Design and procedure

A pre- and post-test control group design study was set up to examine the impact of the training programme on teachers' attitudes, teachers' knowledge about SEN and about teaching strategies related to inclusive education. The measurements were administered anonymously to the group as a pre-test before the first session of the training (Time 1). To determine the extent of change from the baseline measure, the post-test was carried out after the last session (Time 2). To maintain anonymity, pre- and post-tests were matched using the last digits of each participant's year of birth and the house number of each participant's address.

In order to participate in the study, schools were required to meet the following criteria: (1) regular public primary school and (2) located in one of the two districts and less than 15 km from the training centre. A total number of 20 regular primary schools were invited to participate in this study. Eleven schools with a total number of 111 teachers were willing to participate (response rate 55%). They were then asked to supply a list of teachers who were willing to participate in the study on a voluntary basis. All 67 participating teachers were randomly assigned to an experimental group ($N = 33$) and a control group ($N = 34$), whereby teachers from the same school were appointed into different groups.

Participants

The study took place in schools, where inclusive education was introduced in early 2005. All participants were classroom teachers without having educational background in special education. Most teachers had a large classroom size with a total student population of more than 30 people and lacked service support from special school teachers. They attended in-service trainings related to special education, which mainly focused on theoretical knowledge rather than practical experience of working with students with SEN. Eighty-eight per cent of the experimental group and 82% of the control group were female. Twenty participants (61%) in the experimental group and 23 (68%) in the control group were over 40. Forty-eight per cent of the participants in the experimental group indicated having had 20 years or more teaching experience ($N = 16$), and 59% ($N = 20$), while participants of the control group

Table 1. Characteristics of participants.

	EG* (<i>n</i> = 33)	CG (<i>n</i> = 34)	χ^2	<i>df</i>	<i>p</i>
Gender					
Male	4	6	.40	1	.53
Female	29	28			
Age					
≤40 years old	13	11	.36	1	.55
>40 years old	20	23			
Education					
High school and diploma	3	4	.13	1	.72
University	30	30			
Training in special education					
No	20	26	1.96	1	.16
Yes	13	8			
Teaching experience					
≤20 years	17	14	.72	1	.40
>20 years	16	20			
Teaching experience of students with SEN					
No	18	27	4.70	1	.03**
Yes	15	7			
Total student per class					
≤30 students	2	1	.38	1	.54
>students	31	33			

Notes: *EG = experimental group; CG = control group.

***p* < .05.

had similar experience. A chi-square analysis indicated a significant difference between the experimental group and the control group on the variable of teaching experience of SEN students (see details in Table 1).

Training programme

In order to answer the research question, we adapted a training programme which was developed by Srivastava, De Boer and Pijl (2016a). The training programme focused on inclusive principles and practices. In particular, the following topics were addressed during the training sessions: (1) an overview of the development of special education, including a review of the debates and philosophical underpinnings of inclusive education within international and local perspectives, (2) an overview of five types of special needs (AD/HD, dyslexia, intellectual disabilities, ASD as well as physical and sensory disabilities), (3) curriculum-based assessment, (4) teaching strategies in special education and (5) individual education programmes (IEPs). The training programme included lectures, group discussion and viewing videos on related topics. Participants also had the opportunity to listen to a guest lecturer working in an inclusive school. A pack covering a timetable of the programme and reading materials on training topics covered was distributed to all the participants.

The training programme comprised 32 hours of face-to-face sessions, and was spread across four Saturdays in April and May 2013. On the first day of training programme, the first two sessions presented inclusive education in terms of development, law and philosophy from international and Indonesian perspectives, while the remaining sessions presented information about AD/HD and dyslexia. The second day of the training programme looked at intellectual disabilities, ASD as well as physical and sensory disabilities, while the third and fourth days' activities were aimed at explaining assessment, teaching strategies in special education and writing up an IEP. The fourth day also included a guest speaker who shared her experiences working with SEN students in an inclusive primary school. Teachers were also expected to work on a number of activities in small groups of five or six participants; each group required writing up an IEP based on study cases.

Validity of the training programme

In order to ensure the appropriateness of the content validity, the training programme was reviewed by three experts – one in educational psychology and teacher training development, two in psychology, special education and teacher training development – before it was implemented. Comments were given on goals, duration and methods, while their suggestions for arranging more group discussions, providing study cases and resources on special needs as well as inviting a guest lecturer were taken into account in the final design of the training programme.

Measures

A four-part questionnaire was used to collect data from the participants for the study. Each part is elaborated in greater detail below:

Part 1: demographic information

This part of the questionnaire included demographic questions about gender, age, highest level of education, previous training related to inclusive education, total number of years in teaching, teaching experience in inclusive settings and average class size.

Part 2: attitudes towards inclusive education

Attitudes of participants were assessed using the attitude scale of (Kurniawati et al., 2012). Following the adaptation of this attitude scale, statistical analysis failed to confirm three distinct components of attitudes, ie cognitive, affective and behavioural. It was found that a majority of items of cognitive component loaded on the same factor with affective component. Therefore, this scale designed to measure teachers' attitudes towards inclusion consisted of two components, the cognitive-affective and the behavioural.

The scale included 31 items. Teachers were asked to indicate their degree of agreement using a four-point Likert scale, ranging from one (strongly disagree) to four (strongly agree). Higher scores on the scale indicated more favourable attitudes towards the inclusion of students with SEN. The mean score of each participant was included in the analysis as a dependent variable. Examples of items and reliability coefficients for the cognitive-affective and behavioural components are presented in Table 2.

Part 3: knowledge about SEN

Participants' knowledge about SEN was measured by a survey instrument comprising four vignettes (Srivastava, De Boer, & Pijl, 2016b) relating to AD/HD, dyslexia, intellectual disabilities and ASD. For each vignette, participants were asked to rank their level of knowledge about a particular type of SEN in terms of characteristics and teaching strategies. Participant responses ranged from one (strongly disagree) to four (strongly agree). Higher scores on the scale indicated a greater level of knowledge about each type of SEN. The mean score on each vignette of each participant was included as a dependent variable in the analysis.

As the original scale was available in English, it was translated into Bahasa Indonesia (the official language in Indonesian educational settings). It was then reviewed for content and face validities by two experts. The scale was also administered as a proof trial to three primary school teachers, who provided information about the readability and clarity of the items and the ease of use of the rating scale. Their comments and suggestions were all incorporated into the final scale. Examples of items and reliability coefficients for each vignette are presented in Table 2.

Part 4: knowledge about teaching strategies

Teachers' knowledge about teaching strategies was measured using the 25-item test based on the list of teaching strategies of Florian (2009). This measure asked teachers to indicate how familiar they were with each item on a scale, ranging from one (not familiar) to three (very familiar). The scale was judged by experts as being valid and reliable for use with Indonesian teachers. Again, the scale was

Table 2. Example of items per scale and reliability scores on all scales.

Scale	No. of items	Example of item(s)	α
Attitude			
Cognitive-affective	19	Inclusive education ensures academic progress for all students, regardless of their ability	.90
Behavioural	12	I feel confident to be able to support the social development of students with SEN in my class I am willing to adjust teaching methods to accommodate the learning needs of students with SEN	.92
Knowledge about SEN			
AD/HD	11	Satrio can learn together with his classmates Satrio has normal intelligence	.63
Dyslexia	5	Arka should be given individual attention to read	.71
Intellectual disabilities	8	Arka reads fluently If Putra is given concrete experiences for concepts, he will learn better	.72
ASD	5	Small group teaching will benefit Putra Tasks can be broken into small steps for Kevin Kevin learns with repetition	.69
Knowledge about teaching strategies	25	On a scale of one–three, rate the extent to which you are familiar with these strategies • Adapt the curriculum • Peer collaboration	.94

piloted by three primary school teachers. A higher score on the scale indicated that a respondent was more familiar with inclusive teaching strategies. The mean score of each participant was included in the analysis as a dependent variable. Examples of items and reliability coefficients for this measure are presented in Table 2.

Training evaluation. A feedback form was given after the training sessions to evaluate how useful teachers found the training content and how appropriate was the method and duration of the training programme. Teachers were asked to rate the five-item questions on a scale ranging from one (strongly disagree) to four (strongly agree), with higher scores indicating the training programme was more useful and appropriate.

Analysis

This study was carried out to determine the effects of an in-service training programme on teachers' attitudes and knowledge about SEN and about teaching strategies. In order to answer the research question on teachers' attitudes, we conducted an analysis of covariance (ANCOVA). In this, post-test scores of the attitude components (ie the cognitive-affective component and the behavioural component) were included as dependent variables. At the same time, the variable 'condition' (ie experimental or control group) was used as a between-subjects factor. In the analysis, we controlled for the pre-test scores. The variable 'teaching students with SEN' was included as a covariate due to a significant difference between two conditions (see Table 1). The same procedure was also applied for the other four dependent variables of knowledge about SEN (eg AD/HD, dyslexia, intellectual disabilities and ASD) and knowledge about teaching strategies.

Given the sample size, the assumptions for equality of variance were checked using a Bootstrap test prior to the analysis. For all statistical analyses, the alpha-level was set at $p < .05$. Partial eta square served as an indicator of effect size, which is judged to be small at .01, medium at .06 and large at .14 (Cohen, 1988).

Table 3. Means and SDs on attitudes, knowledge about special educational needs and about teaching strategies ($N = 33_{\text{experimental group}}, N = 34_{\text{control group}}$).

Variable	Condition ^c	Time 1		Time 2		Adjusted scores ^d	
		<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SE</i>
Cognitive-affective ^a	EG	2.84	.53	3.24	.33	3.21	.06
	CG	2.70	.41	2.75	.32	2.78	.06
Behavioural ^a	EG	3.31	.43	3.26	.38	3.14	.05
	CG	2.99	.28	2.91	.35	3.03	.05
AD/HD	EG	3.07	.35	3.09	.27	3.04	.04
	CG	2.90	.22	2.87	.25	2.92	.04
Dyslexia ^a	EG	3.41	.40	3.32	.36	3.30	.06
	CG	3.33	.39	3.21	.35	3.23	.06
Intellectual disabilities ^a	EG	3.19	.34	3.20	.24	3.13	.04
	CG	2.90	.22	2.85	.23	2.93	.04
ASD ^a	EG	3.10	.47	3.15	.35	3.08	.05
	CG	2.86	.31	2.84	.31	2.91	.05
Teaching ^b strategies	EG	2.25	.44	2.43	.41	2.44	.07
	CG	2.28	.43	2.19	.50	2.18	.07

^aMeans are based on a four-point scale.

^bMeans are based on a three-point scale.

^cEG = experimental group; CG = control group.

^dAdjusted post-test scores (Time 2).

Results

Descriptive statistics

Descriptive statistics showed that the experimental group of teachers had higher scores than the control group on all variables at post-test (Time 2). On Time 2, the overall mean scores of the experimental group for the cognitive-affective and behavioural components were 3.24 and 3.26, respectively, indicating teachers' 'agreement' with the inclusion of students with SEN. Similar results were also found for teachers' knowledge about SEN: their mean scores for AD/HD, dyslexia, intellectual disabilities and ASD fell between responses 3 and 4, indicating their level of knowledge was 'good'. For knowledge about teaching strategies, the overall mean scores of the experimental group leaned more towards response 2, indicating that teachers were familiar with teaching strategies for students with SEN (see details in Table 3).

Effects of the training programme on attitudes

The results of the ANCOVA showed a significant difference between the two conditions on the cognitive-affective component, $F(1, 63) = 29.38, p < .01, \eta^2 = .32$. This means that teachers who received the training programme held more positive attitudes on the cognitive-affective component towards inclusive education after the training sessions than teachers in the control group.

On the behavioural component, the findings revealed no significant difference between two conditions on post-test scores, $F(1, 63) = 1.97, p > .05, \eta^2 = .03$. This outcome indicates there was no significant difference between teachers' attitudes on the behavioural component in the experimental group and the control group after the training sessions.

Effects of the training programme on knowledge about SEN

The results of the ANCOVA showed a significant difference between the two conditions on AD/HD, $F(1, 63) = 4.38, p < .05, \eta^2 = .07$, intellectual disabilities, $F(1, 63) = 14.05, p < .01, \eta^2 = .18$, and ASD, $F(1, 63) = 5.98, p < .05, \eta^2 = .09$. For dyslexia, the results indicated no significant difference between the conditions, $F(1, 63) = .67, p > .05, \eta^2 = .01$. These results suggest that teachers' knowledge about AD/HD, intellectual disabilities and ASD in the experimental group was higher after the training sessions than that for the control group.

Effects of the training programme on knowledge about teaching strategies

The results of the ANCOVA revealed that teachers' knowledge about teaching strategies was significantly different between conditions, $F(1, 63) = 6.28, p < .05, \eta^2 = .09$. This outcome indicates that participants' knowledge about teaching strategies in the experimental group was higher after the training sessions compared to teachers in the control group.

Training evaluation

Following the training programme, participants were asked to evaluate its appropriateness. Of the 33 participants, 91% ($N = 30$) indicated that the training programme improved their knowledge about SEN, and 42% ($N = 14$) of the participants strongly agreed their knowledge about teaching strategies increased after receiving the training programme. In addition, when asked for suggestions about the training programme, 70% of the participants ($N = 23$) expressed a need to continue the training programme, and 24 ($N = 8$) of the total participants hoped to have an opportunity to gain direct contact with students with SEN.

Discussion

This current study was aimed at measuring the effectiveness of a teacher training programme to promote positive attitudes of regular primary school teachers towards inclusive education as well as to increase their knowledge about SEN and about teaching strategies. Based on the findings, we conclude that teachers hold significantly more positive attitudes on the cognitive-affective component after the training programme compared to teachers in the control group. Besides this, teachers' knowledge about AD/HD, intellectual disabilities and ASD was found to be higher after the training programme compared to those in the control group. Similar results were also found in relation to teachers' knowledge about teaching strategies, indicating that their knowledge increased after the training programme. We did not find a significant effect of the training programme on the behavioural component of attitude and knowledge about dyslexia. Based on the effect sizes, we conclude that the training programme had a medium to large size effect on teachers' attitudes and their knowledge about SEN and about teaching strategies.

A remarkable result was the non-significant outcome on teachers' behavioural component of attitudes. A small decrease in this component score was found at the second measure of teachers in the experimental group. There are some possible explanations for this lack of significance. Firstly, it is possible that improving knowledge and cognitive-affective component of attitudes is insufficient to improve the behavioural component. It has been suggested that if teachers are to be more willing to accommodate the learning needs of students with SEN, they must not only have relevant teaching strategies and knowledge but also confidence to be more proactive in implementing inclusion (Forlin, Loreman, Sharma, & Earle, 2009). This also suggests a need for studies to evaluate the impact of training programme on other important constructs which might relate closely to teachers' behaviour, like self-efficacy (Palmer, 2006). Secondly, this non-significant effect might also be linked to the fact that implementing inclusive education in Indonesian schools is only recent. As such, teachers appear to hold concerns in relation to factors like large classroom size, limited teaching and learning facilities and an increase in workload. In the study of Oswald and Swart (2011), it was reported that although participants were more positive towards inclusion and gaining knowledge to deal with students with SEN after receiving relevant training programmes, they were still concerned about the availability of resources and support services. In line with this, the planned behaviour theory states that behaviour is preceded by an intention. The stronger one's intention, the greater the likelihood someone will act on that intention (Ajzen & Fishbein, 1980). However, the person's decision to perform a particular behaviour could be influenced by internal factors, such as knowledge and ability, or external factors, such as time

and opportunity (Ajzen & Madden, 1986). This underlines the importance of addressing such factors in order to support teachers in educating students with SEN.

In the current study, we did not find any significant effect of the training programme on teachers' knowledge about dyslexia. The results also showed that teachers under both conditions already had high mean scores at pre-training programme (Time 1) (see Table 3), indicating that they had a good base of knowledge about dyslexia prior to the training programme. This knowledge level of teachers might be partially related to their pre-service training programmes. The curriculum for Indonesian primary education focuses, among others, on language, and it appears that the topic of dyslexia is covered in the pre-service training programme. As such, teachers may have more knowledge and feel more familiar with dyslexia. Similar outcomes were observed in teachers' attitudes and knowledge about teaching strategies at Time 1. Teachers under both conditions already have positive attitudes and a good level of knowledge. Although we controlled for teachers' experience in educating SEN students by treating the variable as a covariate, the variable might explain such positive outcomes. According to previous research, experience with inclusive education may result in a more positive attitude (Avramidis & Kalyva, 2007; Batsiou et al., 2008; Brantlinger, 1996), and increased teachers' confidence in teaching such students (LeRoy & Simpson, 1996). Contact with SEN students during field experience has also been found to result in more positive attitudes and support for inclusion (Forlin, 2003; Richards & Clough, 2004). With regard to the improvement of teachers' attitudes and knowledge, this indicates that providing more inclusive experience, either inside or outside the classroom, is essential for teachers.

The training programme was effective in improving teachers' attitudes and knowledge; however, some limitations should be considered when interpreting the outcomes. First, participation in the current study was on a voluntary basis. This may have resulted in an unrepresentative sample, comprising teachers who were highly motivated and more open to change. Thus, any generalisation of the results of this study should be approached with caution. Secondly, the survey instruments used in this study were developed to measure teachers' knowledge about SEN and about teaching strategies. It was found that although these instruments were tested for validity and reliability, the reliability score of one of the instruments, ie sub-scale AD/HD, was low ($\alpha = .63$). General use of this instrument, therefore, should only be considered after further validation studies have been conducted using larger samples with greater diversity (eg more diversity in terms of teaching experience, gender, etc.). Thirdly, the training programme discussed five types of special needs, but not all types were covered in the instruments used due to a lack of a proper instrument. The instrument used for knowledge contained no items measuring the effect of the training programme on teachers' knowledge about physical and sensory disabilities and IEP. This means that no effects were measured for these aspects. Future research on knowledge about such special needs may provide a picture of an overall effect of the training programme.

The outcomes indicated that the training programme resulted in a significant increase in teachers' positive attitudes and knowledge. However, the impact of these changes on teachers' actual teaching practice and student outcomes has not yet been examined. The study might be more informative if the actual behaviour of the participants in classrooms and how students benefit from the training programme were investigated. Additionally, the effectiveness of the training programme was examined on a short-term basis, so the question remains about the long-term effectiveness. It is highly recommended to measure teachers' classroom behaviour, students' outcome and long-term effects to establish what teachers really learned from the training programme. Follow-up sessions with more individual approach (eg coaching, mentoring) are also warranted.

The training programme evaluated in this study had significant effects on most dependent variables (attitude, knowledge about SEN and knowledge about teaching strategies) with medium to large effect sizes. The training evaluation outcomes corroborate these findings, as the majority of the teachers agreed that the training programme improved their knowledge while the duration of the training programme and method used were appropriate for them. These results indicate the potential of the training programme to influence attitudes and knowledge positively. Taking an exploratory approach, this study can be seen as a first step in offering an evidenced-based training programme in an Indonesian education setting and lays the initial groundwork for future research. A challenging

next step should be to measure possible effects on teachers' actual behaviour in class and students' outcomes after following such a training programme.

Conclusion

Attitudes, knowledge about SEN and teaching strategies of regular school teachers play a role in realising inclusive education. A growing number of teacher training programmes in special education have been developed and implemented; however, limited studies have evaluated the effectiveness of such training programmes in changing teachers' attitudes and knowledge about SEN and about teaching strategies. A pre- and post-test control group design study was set up ($N_{\text{experimental group}} = 33_{\text{teachers}}$, $N_{\text{control group}} = 34_{\text{teachers}}$), comprising 11 primary schools in total. The outcomes showed that the training programme had significant positive effects on attitudes and knowledge about SEN and about teaching strategies of regular school teachers. No significant effects of the training programme were found on the behavioural component of attitudes. To support the impact of these changes on teachers' actual teaching practice, the importance of providing long-term training programme in combination with follow-up activities has been warranted.

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