Original Article

Competency-based teacher education (CBTE): A training module to improve knowledge, attitude, and practices (KAP) of school teachers on learning disabilities in children

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Abstract

Introduction: Inclusive education is a new approach towards a system of educating children with disabilities and learning difficulties with that of normal ones within the same crown. Competency-based teacher education (CBTE) is a framework in which teachers demonstrate their learned knowledge, attitude, and skills in order to achieve specific predetermined "competencies" for a specific course or at a specific educational institution. Children with learning disabilities have significant impairment in reading, writing, and mathematics in spite of normal intelligence and sensory abilities. **Aim:** The aim of the study was to evaluate the effectiveness of competency-based teacher education (CBTE) training module on knowledge, attitude, and practices (KAP) of school teachers regarding learning disabilities in children. **Materials and Methods:** This was a Quasi experimental study carried out in the month of December 2020 using one group pretest and posttest design. Thirty-five school teachers from a private school were randomly selected as study subjects who were handling classes for primary school students at Kolar. School teachers who had prior exposure in special schools and who had already worked as a counsellor were excluded from this study. Data were collected via a self-administrated method with structured questionnaires consist of 150 items including sociodemographic profile, knowledge, attitude, and practice of teachers regarding learning disabilities in children; the data were analysed using descriptive and inferential statistics. **Results:** The findings indicated that mean post-test knowledge score was 35.89, attitude score was 170.66, and practice score was 69.60. The effectiveness of CBTE training module was found to be statistically significant at $P < 0.05$ in terms of mean scores enhancement in knowledge, attitude, and practices. In terms of correlation between knowledge, attitude, and practices of school teachers on learning disabilities in children, it was found that there was a highly positive correlation between attitude and practice with $r = 0.884$, and knowledge and practice with $r = 0.905$. **Conclusion:** The CBTE training module is an effective method in enhancing the knowledge, changing the desirable attitude, and developing good skills of school teachers regarding the identification and management of learning disabilities.

Keywords: Awareness, attitude, learning disorder, opinion, school educator

Introduction

A learning disability (LD) is a neurological disorder that affects a child from learning or significantly impairs the learning process. "Essentially, learning disabilities are mostly in reading, writing and math."[1] Often, learning differences do not become obvious

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until a child reaches school age. Even then, difficulties may be subtle and hard to recognize. According to the National Institutes of Health, learning disability symptoms include the following: problems reading and/or writing, problems with math, poor memory, problems paying attention, trouble following directions, clumsiness, trouble telling time, and problems staying organized. Competency-based teacher education (CBTE) empowers teachers to understand the competencies they need to master to achieve their goals in terms of identifying children with learning disabilities. Progress through learning processes without time constraints. Explore diverse learning opportunities in handling the children with learning disabilities at the classroom level. A child with a learning disability processes information differently from other children and has difficulty in performing specific tasks.[2] Learning disability also causes difficulty in organizing information received, remembering them, and expressing information, and therefore affects a person's basic function such as reading, writing, comprehension, and reasoning.[3] Learning disabilities are common and affect approximately 5%–15% of young people around the world. They are considered an "invisible disability."[4] According to the Learning Disabilities Association of Ontario, "Learning Disabilities refer to a variety of disorders that affect the acquisition, retention, understanding, organization or use of verbal and/or non-verbal information. These disorders result from impairments in one or more psychological processes related to learning, in combination with otherwise average abilities essential for thinking and reasoning"[5] The National Joint Committee on Learning Disabilities states that "Learning Disabilities" is a general term that refers to a heterogeneous group of disorders manifested by significant difficulties in the acquisition and use of listening, speaking, reading, writing, reasoning, or mathematical skills. These disorders are intrinsic to the individual, presumed to be due to central nervous system (CNS) dysfunction and occur across the life span. Problems in self-regulatory behaviours, social perception, and social interaction may exist with learning disabilities but do not, by themselves, constitute a learning disability.[6]

Need for the Study

Learning disabilities in children can range from mild to severe. Some children have mild learning disabilities that may only affect them in certain academic activities. Other children have severe learning disabilities that can affect them not only in their academic work but also across social and home activities. Some school children may have more than one learning disability.[4]

In USA on enrolment of the school year 2019–20, the number of students, aged 3–21 years, who received special education services under the Individuals with Disabilities Education Act (IDEA) was 7.3 million, or 14% of all public-school students. Among students receiving special education services, the most common category of disability (33%) was specific learning disabilities.[6] A specific learning disability is a disorder in which one or more of the basic psychological processes involved in understanding or using spoken or written language that may manifest itself in an imperfect ability to listen, think, speak, read, write, spell, or do mathematical calculations. Thirty-three percent of all students who received special education services had specific learning disabilities, and 19% had speech or language impairments.[7]

In North America the Learning Disabilities Statistics 2020 states that around 5%–9% of the population has a learning disability; dyslexia is the most common learning disability, affecting over 15% of children; students with LDs are three times more likely to drop out of school; and 14% of all public school students receive special education services.[8] The prevalence of specific learning disabilities in India was 15.17% in sampled children, whereas 12.5%, 11.2%, and 10.5% had dysgraphia, dyslexia, and dyscalculia, respectively. Studies have reported 1%–19% of schoolgoing children in India have a LD. This study suggests that the prevalence of specific learning disabilities (SLDs) is at the higher side of previous estimations in India.[9] Prevalence of SLDs in India ranges from 5% to 15% in various studies. There appears to be a gender predilection, with boys being more affected than girls. Comorbidities include attention deficit hyperactivity disorder (ADHD), autism spectrum disorder, conduct disorder, depressive disorder, anxiety disorder, and other behavioural and emotional disorders. Seven point five percent of children were at risk of SLD in this study with a male preponderance.[10] Students of today are the budding futures of all nations. In human resource development, education plays a very important role. Hence there is an urgent need to increase awareness regarding LDs of children among parents and teachers. The LDs of children should be identified at the earliest and managed scientifically so that we can lead the children towards a very successful future.[11] The aim of the study was to develop a CBTE training module on learning disabilities in children in order to improve the knowledge, attitude, and practices of school teachers. The objectives of the study were stated as follows: To assess the existing knowledge, attitude, and practices of school teachers regarding learning disabilities in children by using structured questionnaires; to evaluate the effectiveness of CBTE training module on knowledge, attitude, and practices of school teachers regarding learning disabilities in school children by comparing the differences between pre-test and post-test scores; to estimate the correlation between knowledge, attitude and practices of school teachers on learning disabilities in children. The hypothesis of this study was H1: There will be statistically significant difference between the mean pre- and post-test knowledge, attitude, and practice scores of school teachers regarding LDs in children; H2: There will be a statistically significant relationship between knowledge, attitude, and practice of school teachers towards learning disabilities in children.

Materials and Methods

Study setting

The study was conducted on school teachers at Mother Theresa High School, Kolar.

Study duration

The study was done from December 05, 2020 to December 21, 2020.

Study design

A quasi-experimental study with evaluative research approach with one group pre-test and post-test research design was adopted.

Sample size and sampling

The samples were chosen by using the stratified random sampling method to choose the school, and then the samples were chosen by using the probability random sampling method with the sample size of 35 school teachers as per the Rules of Thumb, with approximately around 10% of the population that fulfils the selection criteria with the extension of support from their principal.

Criteria for sample selection

The inclusion criteria for participation were teachers who taught the students from Pre KG to 10th standard, who were working in Mother Thresa High School and the teachers who were available and willing to participate in the study. The exclusion criteria for the study were the teachers who had previous experience in special schools and who had already worked as a counsellor.

Data collection tool

A structured questionnaire was designed by the investigator himself in the English language. The following tools were used to collected data: Part A: Socio demographic profile (18 questions); Part B: Consists of Structured Questionnaires (140 questions) further classified into three different sections. Section-A was a Structured Knowledge Questionnaire on Learning Disabilities in Children (50 multiple choice questions). The score interpretation was as follows: A score of 1 was given to the correct answer and a score of 0 was given to the wrong answer/incorrect response. The maximum possible score was 50. The level of knowledge was interpreted as inadequate knowledge (<50%), moderately adequate knowledge (51%–75%), adequate knowledge (>75%), Section-B was 5-point Likert scale on attitude of teachers in taking care of children with learning disabilities at school (50 items). The level of attitude score was interpreted as highly favourable attitude (81%–100%), favourable attitude (61%–80%), moderately favourable attitude (41%–60%), and unfavourable attitude (20%–40%). Section-C was a rating scale on practices toward the management of children with learning disabilities in classrooms at school under inclusive education (40 items). The level of practice score was interpreted as poor practice (below average, 0%–25%), satisfactory practice (average, 26%–50%), good practice (51%–75%), and excellent practice (75%–100%).

Data collection

On day 1 (05.12.2020), the pre-test was processed by making all the selected 35 school teachers assemble in the classroom. The teachers were divided into three different groups and the knowledge questionnaire was given to one group, attitude questionnaire to the second group, and practice questionnaire to the third group and vice versa until all the teachers have finished the pretest. Confidentiality and anonymity were maintained during the process of data collection. Participants were informed that the research would not reveal any identifying information. A teaching session on learning disabilities was then conducted using a power point presentation (PPT) through lecture-cum-discussion with the aid of a laptop and a liquid crystal display (LCD) on learning disabilities in children and its management at the classroom level by utilizing the CBTE training module for about 90 minutes, followed by clarification of doubts and add-on inputs with discussion toward the session. With this, the CBTE training module was emailed to all the teachers who had participated in the session, and they were requested to read and be updated for further learning process. A reminder was given to all the school teachers to join for post-test after 15 days on December 21, 2020. On day 15, the post-test was done to all the school teachers by following the same procedure as done for the pre-test. Furthermore, the pros and cons of the CBTE training module and the session were elicited.

Data analysis

Overall, the process of data collection and the implementation of the module was for around 150 minutes. Later, the data was coded and subjected to statistical analysis by using the Statistical Package for the Social Sciences (SPSS) version 23.0 (IBM) software to analyse the data with descriptive and inferential statistics like frequency, percentage, mean, SD, paired *t* test, and Pearson coefficient of correlation.

Ethical issues

Formal permission was obtained from the institutional central ethics committee of the university (SDUAHER/KLR/R and D/48/2017-18 dated 07-07-2017) and the concerned approval was taken from the authority of the school. The investigator explained the purpose of the study and before the study participants filled out the questionnaire, their informed written consent was obtained. The data were collected directly with the school teachers.

Figure 1 discusses about the percentage distribution of pre-test and Post-test level of knowledge regarding learning disabilities in children among the school teachers, which states that (23%) of the school teachers had inadequate knowledge majority of them (74%) had moderately adequate knowledge, and only (03%) had adequate knowledge, where as in post-test (03%) of the school teachers had inadequate knowledge majority of them (80%) had moderately adequate knowledge, and only (17%) had adequate knowledge on learning disabilities in children.

Figure 2 depicts the percentage distribution of school teachers' Pre-test and Post-test attitudes towards children with learning disabilities, showing that the majority of school teachers,(49%), had moderately favourable attitudes and (40%) of them had favourable attitudes, but none of the school teachers had highly

favourable and (11%) had unfavourable attitude, where as in Posttest showing that (17%) of them had a highly positive attitude where majority of them, (74%), had a favourable attitude, only (9%) had a moderately favourable attitude, and none of them had an unfavourable attitude towards children with learning disabilities.

Figure 3 describes the percentage distribution of Pre-test and Posttest level of practice regarding learning disabilities in children among the school teachers. Predominantly (69%) of the school teachers had average level of practice, (31%) had poor level of practice, while none of them had either good or excellent level of practice, where as in Post-test greater number of the school teachers (71%) of them had satisfactory level of practice, (39%) of them had good level of practice, and none of the school teachers had poor level of practice as well as excellent level of practice in managing the children with learning disabilities.

The study results [Table 1] describes the frequency and percentage distribution of sociodemographic variables of school teachers, (14, 40%) were in the age group of 31-40 years. In terms of gender majority 27 (77.1%) were females. Regarding educational qualification, most of the teachers (27, 77.1%) were undergraduates. 29 (82.9%) of them belonged to the Hindu religion. Regarding place of residence, most of them were from urban area (26, 74.3%). All of the study participants were working in private schools. 31 (88.6%) were from a nuclear family. 18 (51.4%) of the school teachers were permanent employees. 24 (68.6%) of the teachers were handling the upper primary group of students. In terms of total years of experience as teachers, 12 (34.3%) have 6-10 years of experience. Regarding the specific role which they possess other than teaching, most of them were 30 (85.8%) had been class teachers and subject teachers.

The present study [Table 2] reveals the overall distribution of pre-test and post-test scores, mean, SD of knowledge, attitude, and practice regarding learning disabilities in school children among school teachers where the mean knowledge score and SD in pre-test is 30.97 and 5.33, respectively, with the range and variance as 18 and 28.44. Similarly for attitude the mean score and SD was 144.03 and 25.56, respectively, with the range 87 and variance 653.44, whereas for the practice the mean score was 55.83 and SD was 14.62, with the range 40 and variance 213.97. The table also reveals with the post-test knowledge mean score is 35.89 with SD as 4.41 and range value as 17 and variance as 19.49. The post-test attitude mean score is 170.66 and SD is 18.95 as well as the practice mean score is 69.60 with SD as 9.63.

The current research [Table 3] discusses the effectiveness of CBTE training module by comparing the differences between pre-test and post-test scores on knowledge, attitude, and practices of school teachers regarding learning disabilities in school children by using paired t test, where there was a gradual enhancement in the post mean scores of knowledge, attitude, and practices. The paired t test values were statistically significant at $P<0.05$, which proves that the CBTE training module is very effective for the school teachers.

The [Table 4] describes the relationship between post test knowledge, attitude, and practice scores of school teachers on learning disabilities in school children by using Pearson's coefficient of correlation, which states that there is no correlation between knowledge and attitude, and between practice and knowledge, but the data showed that there is a highly positive correlation between attitude and practice at $P<0.05$.

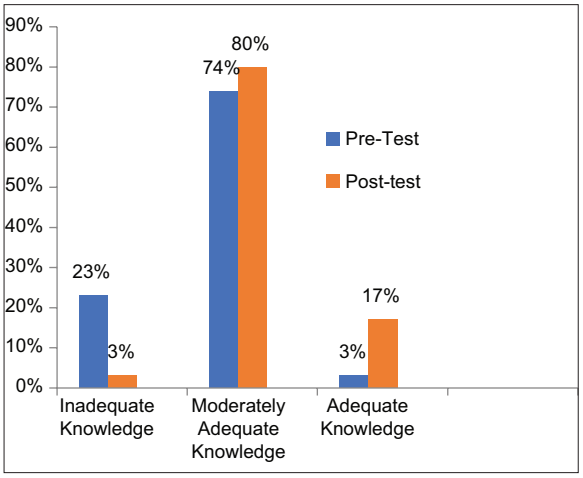

Figure 1: Distribution of awareness scores regarding learning disabilities in children

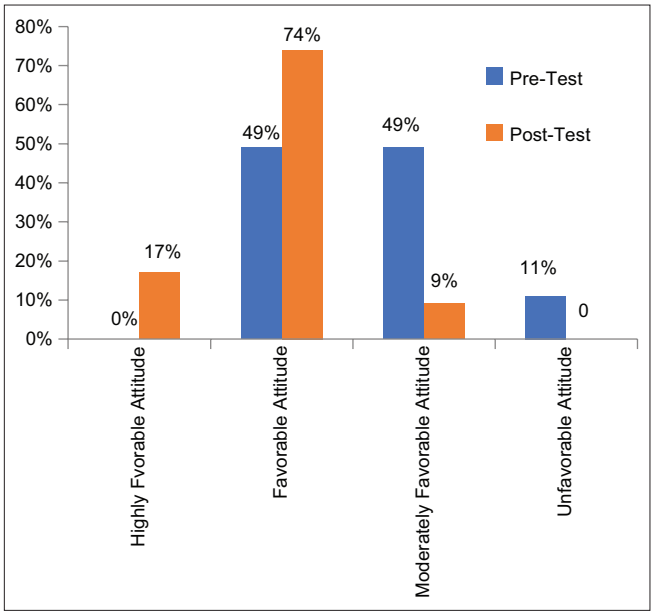

Figure 2: Distribution of attitude scores of school teachers regarding learning disabilities in children

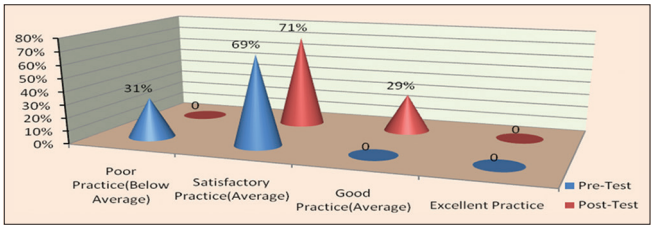

Figure 3: Dissemination of practice scores of school teachers regarding managing children with learning disabilities at the classroom level

Table 1: School Teachers background characteristics

Sociodemographic Variables	Frequency (f)	Percentage
Age in years		
<30 years	08	22.9
31-40 years	14	40.0
41-50 years	09	25.7
>50 years	04	11.4
Gender		
Male	08	22.9
Female	27	77.1
Educational status/qualification		
Diploma	02	05.8
Under graduate	27	77.1
Post graduate	06	17.1
Marital status		
Married	30	85.7
Unmarried	05	14.3
Divorce	-	-
Widowed	-	-
Religion		
Hindu	29	82.9
Muslim	02	05.7
Christian	04	11.4
Any others	-	-
Place of residence		
Rural	04	11.4
Urban	26	74.3
Semi-urban	05	14.3
Type of school		
Government	-	-
Private	35	100
Grant in aid	-	-
Type of family		
Nuclear	31	88.6
Joint	04	11.4
Extended	-	-
Type of employment		
Contract basis	03	08.6
Probation	05	14.3
Temporary	09	25.7
Permanent	18	51.4
Monthly income (in Rs.)		
<20,000	03	08.6
20,001-30,000	10	28.6
30,001-40,000	11	31.4
>40,000	11	31.4
Involved with group of students/taking classes	04	11.4
Lower primary	24	68.6
Upper primary	07	20.0
Both	-	-
Other than primary class		
Location of school		
Urban	35	100
Rural	-	-
Semi-urban	-	-
Presently, what specific role do you possess other than teaching?		
Class teacher	-	-
Subject teacher	05	14.2
Both a and b	30	85.8
Any other means specify	-	-

Contd...

Table 1: Contd...

Sociodemographic Variables	Frequency (f)	Percentage
Have you attended any training/workshops on management of learning disabilities in children?		
Yes	-	-
No	35	100
If yes, specify the media/mode of training	-	-
Total years of experience as a teacher:		
<5 yrs	10	28.6
6-10 yrs	12	34.3
11-15 yrs	09	25.7
>15 yrs	04	11.4
Do you have previous exposure on learning disabilities as part of the curriculum?		
Yes	-	-
No	35	100
During your service, have you identified any child with learning disabilities?		
Yes	-	-
No	35	100
Any experience in teaching children with learning disabilities/specific learning disability		
Yes	-	-
No	35	100

Discussion

According to the study's objectives, the results showed that the CBTE training module was effective in comparing the differences between pre-test and post-test scores on school teachers' knowledge, attitudes, and practises regarding learning disabilities in students. This was done using a paired t test, and the results showed that there was a gradual improvement in the post-mean scores on these factors. Additionally, the paired t test values were statistically significant. This finding is supported by a similar study conducted by Moharana K. on the effectiveness of guidelines on knowledge and attitude of trainee school teachers towards identification and management of children with specific learning disabilities.[12] The findings revealed that the data were analysed using repeated measures analysis of variance (RMANOVA) to compare pre-test and post-test knowledge questionnaire and attitude scale score over the time period; the *P* value was significant at 0. 001. The pre-test knowledge mean score was 2.77, standard deviation (SD) was 2.224, post-test-I on day seven mean score was 44.48 and SD was 0.799; posttest-II on day sixty mean score was 44.90 and SD was 0.313. The paired differences between the pre-test and post-test I on the seventh day of knowledge demonstrated the knowledge acquired and the value was 41.71; the paired differences between the post-test on the seventh day of knowledge and on the sixty-first day of knowledge demonstrated the knowledge gained and the value was 0.42. The *P* value was significant at 0.001. This indicated that the guidelines for trainee school teachers toward identification and management of children with SPLD was effective in improving the knowledge and attitude significantly over the time period.[12]

Another similar study was carried out by Nisha *et al*.[13] revealed that the finding of the experimental group of teacher's pre-test knowledge and mean score was 16.6 (41.50%) and level of knowledge was inadequate. In post-test, knowledge score was 33.3 (83.25%). The level of knowledge was adequate in the experimental group. Similarly in the control group, pre-test knowledge mean score was 17.2 (43.00%) and post-test knowledge mean score was 19.1 (47.75%). When contrasting the experimental and control groups, in the pretest, there was no significant difference between the experimental and control groups but after self-instruction module, a significant difference between said groups was observed. Teachers gained knowledge above 41.75% on learning disabilities after administration of the self-instruction module. This 41.75% of knowledge gain was the net benefit of this study which indicated the effectiveness of self-instructional module on learning disabilities in the experimental group than control group.[13] Hence the hypothesis (H1) that there is a statistically significant difference between the mean pre- and post-test knowledge, attitude, and practice scores of school teachers regarding learning disabilities in children was accepted as per the study's findings.

Implications

The findings of the current study have certain implications in practice: (1) CBTE training module helped to crystalize cognitive and metacognitive skills and changed some irrational beliefs embraced by teachers on identifying these children with learning disabilities; (2) It also helped the school teachers practice classroom management strategies in handling children with learning disabilities and also teaching them with their peers in the same classroom; (3) Prevention of dropout of students with learning disability from school was a major implication of this study since the National Education Policy 2021 emphasized that these school children should be treated under inclusive education; (4) Teachers of primary schools, especially of this category, need training programs continuously that will help them to identify children with learning disabilities at an early age itself, which in turn will protect the children from emotional deprivation; (5) Making school teachers understand the different types of learning disabilities and their characteristics helps them pinpoint the problems that are faced by the children and help teachers find an appropriate treatment program for them; (6) The school and administrative authorities should address the needs for professional development and training of teachers in integration of instructional methods for children with learning disabilities which will enhance the development of children with learning disabilities; (7) Recommend and design a competent curriculum on learning disabilities for the school teachers under their educational program in order to meet the challenges under professionalism and a response to the ethics of responsibility for the future; (8) Training programs should be pursued by all school teachers by enriching the knowledge and skills needed to heighten their competency and productivity.

Limitations

Time restrictions prevent moving on with data collecting and CBTE training module implementation. Only one school was chosen for the study, and the sample size was limited to allow for generalization of the results. Refusal of permission from some schools was an unexpected problem during our study process.

Table 2: Dissemination of knowledge, attitude, and practice outcomes on the pre- and post-tests

	Pre-test						Post-test					
Study variable	**Max. score**	**Min. score**	**Range**	**Mean**	**SD**	**Variance**	**Max. score**	**Min. score**	**Range**	**Mean**	**SD**	**Variance**
Knowledge scores	39	21	18	30.97	5.33	28.44	40	23	17	35.89	4.41	19.49
Attitude scores	173	86	87	144.03	25.56	653.44	209	147	62	170.66	18.95	359.23
Practice scores	73	33	40	55.83	14.62	213.97	88	56	37	69.60	9.63	92.87

Table 3: Impact of the CBTE training module

Study variables	Pre-Test Mean	Post-Test Mean	Enhancement	Paired *t*-test value	df	Level of significance
Knowledge	30.97	35.89	4.92	6.724	34	0.000 (S), $P<0.05$
Attitude	144.03	170.66	26.62	5.983	34	0.000(S), $P<0.05$
Practice	55.83	69.60	13.77	5.228	34	0.000 (S), $P<0.05$

S: Statistically significant at $P<0.05$

Table 4: Assessment of correlation between study variables

Study Variables	Post-Test Mean	SD	Pearson's Correlation *r*	Level of Significance
Knowledge vs Attitude	33.03	4.41	0.031	No correlation, 0.859 (NS), $P>0.05$
	170.66	18.95		
Attitude vs Practice	170.66	18.95	0.884 **	Highly positive correlation, 0.000 (S), $P<0.05$
	69.60	9.63		
Practice vs Knowledge	69.60	9.63	0.021	No correlation, 0.905 (NS), $P>0.05$
	33.03	4.41		

S: Statistically significant at $P<0.05$, NS: Not significant at $P>0.05$

Conclusion

The study revealed that the level of knowledge, attitude, and practices regarding learning disabilities in children was found to be satisfactory among school teachers. Thus, it concluded that CBTE training module is needed to provide teachers with adequate information on learning disabilities in children, and it is very effective in improving the teachers knowledge, changing their attitude, and adopting practices in handling children with learning disabilities in school.

Declaration of study subject's consent

The authors certify that they have obtained all appropriate informed consent forms. In the form the study subject(s) has/have given his/her/their consent for his/her/their images and other information to be reported in the journal. The study subjects understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

Acknowledgement

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Nil.

Conflicts of interest

There are no conflicts of interest.

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