

## **Statement of Editorial Purpose**

TEST Engineering & Management magazine's purpose is to provide a forum for the exchange of state-of-the-art ideas and information among reliability/qualification testing professionals who perform physical and mechanical testing and/or environmental simulation. We specifically seek to inform and educate our subscribers through technically bylined articles written by those who work hands-on in the field, and through material generated by the editorial staff. We seek to deal with areas of the physical and mechanical testing and environmental simulation test industry that are emerging, controversial, not sufficiently understood, and/or little-discussed, some at a tutorial level. In addition, we channel news of the industry and offer discussions of state-of-the-art test equipment and techniques. We direct our publication to test engineers, managers, scientists, executives, consultants, educators, technical marketers, test technicians, and service engineers whose work relates to physical and mechanical testing and environmental simulation itself, or the production of equipment, instruments, and/or components for such testing.

**—Eve Mattingley-Hannigan  
Editor and Publisher**



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# Exploring Specific Learning Difficulties in Primary Schools: An Empirical Research

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## I. Introduction

Specific learning difficulty is one of the problems often encountered in the educational world. Such difficulty concerns students' inability to complete academic tasks accurately. Larsen (2002) says that specific learning difficulty is a condition experienced by students in states of being hindered, being too late, and being left behind in the mastery of reading, writing, and mathematical/arithmetical abilities. Students with learning difficulty are those actually experiencing difficulty in doing specific or general academic tasks because of neurological dysfunctions, basic psychological processes, or other causes so that their learning achievement is low in level and they risk becoming class repeaters. Kauffman (2008) informs that the prevalence of specific learning difficulty varies greatly in the range from 1% to 30%. In general, prevalence of specific learning difficulty undergoes increases from year to year.

The purpose of the identification related to such difficulty is generally to gather information of whether a child has specific learning difficulty or not. Surely, a child could be said to have specific learning difficulty when compared with another child of the same age. According to Endang Warsigi Ghozali (2003), the result of such identification would undergo a follow-up assessment, of which the result would be used as the basis for the construction of a learning program that is in accordance with the abilities and inabilities of the child with specific learning difficulty.

In consideration of the experts' opinions above, academic assessment in the education of children with specific learning difficulty is, among others, curriculum-principled assessment, which is assessment activity done in an effort to know the ability already possessed, the hindrance/difficulty experienced, the background concerning why the hindrance/difficulty in learning appears, and the learning need of the child concerned in the matter of certain lesson material in existence in the scope of the school curriculum. The academic assessment is primarily focused on three matters, namely, assessments of, respectively, students' reading, writing, and mathematics/arithmetical.

In the case of specific learning difficulty, the portrait of education in the city of Sleman in the 2013/2014 term, specifically at the level of primary education, shows that, at state and private SDs (*sekolah dasar* 'primary schools') that are inclusive schools, the number of students who are repeaters is quite large (based on data from *Dinas Pendidikan* or Regional Office of Education in Sleman, 2014). The implication of the phenomenon becomes quite interesting because it is not in line with the policy of evenly distributing educational opportunities. In other words, the presence of repeaters causes the classroom seats that could be occupied by new students or by students promoted to a higher grade become more limited in number. This surely influences the level of educational efficiency. It, therefore, could be concluded that the problem of specific learning difficulty that impacts on students' academic achievement in particular and general ways results in impact in the form of insufficient educational efficiency and effectiveness.

With the above discussion as background of the problem used as basis, the research objectives to be attained were (1) identifying forms of specific learning difficulty in reading, writing, and mathematics/arithmetical and (2) getting a model of assessment which could be used in handling students with specific learning difficulty in class. The scope of the research is educational impairment in the form of learning difficulty which is not caused by physical limitations (like abnormality or developmental retardation) and is experienced by the students concerned in the education which is regular in nature at inclusive primary schools.

## II. Literature Review

### Learning Assessment

Manning (2001) opines that, in the effort to accomplish the assessment, the activity of identifying the child with specific learning difficulty is done for five purposes, namely, (1) screening, (2) referral, (3) classification, (4) planning the learning, and (5) monitoring learning progress. There are several steps in identifying a child with specific learning difficulty. According to Munawir Yusuf (2007), in identifying children of school age who do not go to school yet or

already drop out of school, the school concerned needs to conduct data compilation in society in collaboration with the *kepala desa/lurah* ('village chief') concerned, heads of local RT (*rukun tetangga* 'neighborhood community') and RW (*rukun warga* 'residents' community'), and Posyandu (*pos pelayanan terpadu* 'integrated medical service post'). If, in the data gathering, a child with specific learning difficulty is discovered, then the following process is of talking about it with parents, the school committee, and the local village authorities to decide the follow-up action. Moreover, the current trends of learning enhancement could be viewed into the use application of digital tool together with the careful instruction (Anshari et al., 2017).

Patto (2003) opines that, in the case of children who have already entered school and are still students at school, such identification is done by going through several steps, the first of which is collecting data of the children. In this step the teacher gets data of the condition of all students in the classroom, based on symptoms observed on the students. The mathematical reasoning should be pointed out in line with achieving the learning enhancement (Atmotiyoso and Huda, 2018; Moxsin et al., 2018; Othman et al., 2016; Pardimin et al., 2018). The progressive point of application model of k-means clustering refers to give insights into promotion strategy of vocational high school (Abadi et al., 2018a). Marnat (2003) opines that a teacher who would make an academic assessment should deeply understand the curriculum content concerning the hierarchical sequence (or vertical sequence) and the breadth of the curriculum content (or the horizontal series) related to the school subject that is going to be accessed. If, for example, a teacher would make an assessment on a child in Grade 4 concerning mathematical skill, then the said teacher should understand the curriculum content concerned both vertically and horizontally. The simple measurement should be conducted (Abadi et al., 2018b). Without the deep understanding of the curriculum content concerned, it is not possible that the assessment could be done. In this writing, curriculum (or academic) assessment becomes the main subject of discussion.

According to Loughlin (2003), assessment, in relation with children with specific learning difficulty, is a process of systematically using relevant instruments to know children's learning behavior for placement and learning purposes. It is important to take a beneficial value of digital information age (Abadi et al., 2018c). All information individually related to the children should be gathered and, therefore, educational assessment for children with specific learning difficulty is an interdisciplinary one involving various professions like those of speech development experts, psychologists, and others. Lerner (2007) states that, in assessment, evaluation is done at the time the child with specific learning difficulty is not yet given any lesson or after from the result of detection it is found that the child concerned is assumed to be one with specific learning difficulty. Neither is assessment a test but a test is part of assessment. This should be prioritised accordingly (Abadi et al., 2018d). In line with the previous discussion, Marnat (2003) defines assessment as follows: assessment refers to the gathering of relevant information to help an individual make decisions and, in addition, assessment in educational settings is a multifaceted process that involves far more than the administering of a test.

The discussion above explains that assessment is an effort to gather relevant information in order to understand and determine an individual's condition, and this needs a proper assessment with hierarchy approach (Abadi et al., 2018e). In the field of educating children with specific learning difficulty, assessment is a variety of complicated processes used to complement results of tests given to students (Susilowati et al., 2018a). The test instrument should be properly implemented in following the guideline and rule (Aminudin et al., 2018a). Compared with the terms *diagnostic test* and *evaluation*, the term *assessment* possesses a meaning which is different and far broader. The portion of strategic enhancement refers to expand the professional skills together with creative thinking value (Aminudin et al., 2018b; Susilowati et al., 2018b). On the other hand, Marnat (2003) opines that in the assessment process there are four important aspects which should be clarified in relation with the condition of an individual,

namely, (a) what abilities or skills are already possessed, (b) what hindrances or difficulties are experienced, (c) why those hindrances or difficulties are experienced, and (d) what needs (in the matter of education and learning) ought to be fulfilled.

### III. Learning Difficulty

In relation with specific learning difficulty, it is mentioned in *Individuals with Disabilities Education Act* (IDEA) issued in 2007 that specific learning disability is a disorder in at least one basic psychological process involved in understanding or using spoken or written language manifested in imperfect ability in hearing, speaking, reading, writing, spelling, or doing mathematical calculations (Lerner, 2007). That definition is inapplicable on children with learning problems and especially those caused by visual or auditory disability, motor disability, mental retardation, or emotional disturbance or by a detrimental condition in the cultural or economic environment (Graziano, 2004).

In outline, Kauffman (2008) classifies specific learning difficulty into two types, namely, learning difficulty related to development and academic learning difficulty. The learning difficulty related to development includes motor and perceptual disturbance, difficulty in learning language and communication, and difficulty in learning social behavioral adjustment.

#### Reading difficulty (dyslexia)

It is highly varied but all varieties point at the possible occurrence of brain function disturbance. Kauffman (2008) states that there are four groups of the characteristics of difficulty in learning to read, namely, the groups related to, respectively, (1) reading habits, (2) word recognition errors, (3) comprehension errors, and (4) occurrences of miscellaneous symptoms.

Assessment of difficulty in learning to read could be done by means of formal and informal instruments. The teacher could use an informal instrument as basis in giving remedial teaching. The process should go through an entire assessment procedure context with understanding skills to solve the problem (Aminudin et al., 2018c). The moral values in this occurrence are

necessary to expand the way of communicating with others wisely and properly (Aminin et al., 2018). Informal assessment could be used to identify the occurrence of various errors in reading aloud and reading for understanding.

There are two groups of models of the teaching of reading, namely, the group for children in general and that for children with specific reading difficulty. The strategic attainment of solving problem should do with the wise initiative of what to do properly in line with the prime guideline (Anggraeni et al., 2018; Wulandari et al., 2018). According to Kauffman (2008), the models of the teaching of reading to children in general are, among others, those respectively using the basic reading, phonic, linguistic, SAS, alphabetic, and language-experience methods. The remedial teaching models are, among others, those respectively using the Fernald, Gillingham, and Glass-Analysis methods.

Prior to doing the assessment, a teacher should first understand the scope of the reading skill as object of assessment. Hays (2007) opines that there are five aspects related to the reading skill, namely, (a) phonemic awareness, (b) understanding of alphabetic principles, (c) accuracy and fluency in word reading, (d) vocabulary mastery, and (e) reading comprehension. These five aspects of the reading skill operate in order of mention, meaning that the skill related to any aspect preceding another is a prerequisite of the skill related to the latter aspect.

In this writing, examples of assessment of each aspect of the reading skill are explained. By studying the examples, teachers hopefully could develop by themselves a guide to assessment in accordance with their respective needs concerning the assessment type: (1) assessment of phonemic awareness; (2) assessment of alphabetic principles awareness; (3) assessment of reading accuracy and fluency; and (4) assessment of reading comprehension (Graziano, 2004).

#### Difficulty in learning writing (dysgraphia)

It covers writing by hand or beginning writing, spelling, and expressive writing. According to Sumarmo Markam (2009), there are various factors influencing the ability of writing by hand, namely, motor, behavioral, and perceptual factors,

memory, ability of accomplishing cross-modal perception, dominance of hand use, and ability of understanding instructions.

The assessment of dysgraphia (difficulty in learning writing) uses formal and informal assessment instruments. Sumarmo Markam (2009) opines that the process of assessing dysgraphia (difficulty in learning writing) consists of assessing difficulty in writing by hand (beginning writing), assessing difficulty in spelling, and assessing difficulty in expressive writing.

### **Dyscalculia (difficulty in learning mathematics/arithmetic)**

It is identified in children having the following characteristics in the learning: (1) visual-motor association disorder; (2) spatial relation understanding disorder; (3) visual perception abnormality; (4) lack of perseverance; (5) difficulty in recognizing and understanding symbols; (6) disorder in deep bodily understanding; and (7) difficulty in understanding language and reading (Graziano, 2004). There are several general errors made by children with specific difficulty in learning mathematics, namely, errors in understanding symbols, place values, and calculations, wrong process use, and unreadable or illegible writing.

Graziano (2004) opines that there are several principles of mathematics teaching and remedial model, namely, (1) the necessity of preparing children for learning mathematics, (2) moving from the concrete to the abstract, (3) sufficient opportunity for exercise and repetition, (4) generalization to various new situations, (5) starting with students' strengths and weaknesses, (6) the necessity of building a strong foundation concerning concepts and mathematical skills, (7) provision of balanced mathematics-related programs, and (8) calculator use to grow mathematical reasoning.

As the prevalence of the disturbance due to difficulty in learning tends to increase, many researchers make studies related to its assessment and intervention. Results of research by Fletcher et al. (2002) indicate that assessment done to students with learning difficulty ought to use an approach involving three components, namely,

exclusion, discrepancy, and heterogeneity. This approach emphasizes assessment efforts in the direction of developing a plan of intervention. It is also mentioned that the assessment done in such research need not involve an IQ test because results of such a test do not sufficiently contribute to the planning of the intervention that would be done.

Sternberg (2004) specifically mentions in relation with his research that there are some reasons why IQ scores do not give sufficiently adequate meaning for the identification of the disturbance by students' learning difficulty. That finding is in line with results of research done by Truscott (2006) indicating that the classification of disturbance by learning difficulty leaning on IQ test results would be influenced by the Flynn effect. Therefore, assessment of disturbance by learning difficulty based on IQ scores is not sufficiently significant. Thus, IQ test results could not be used as instrument for detecting the disturbance by learning difficulty. Therefore, neither did the research concerned here use the IQ test as instrument for identifying children with specific learning difficulty.

Lerner (2007) develops as a result of his research an instrument for the diagnosis of disability due to specific learning difficulty and calls it the Learning Disability Evaluation Scale (LDES). The instrument uses an observation technique to get a diagnosis of learning difficulty and consists of 88 statement items with scales based on the definition of learning difficulty from IDEA (Individuals with Disabilities Education Act). Kauffman (2008) in research has tried out a series of tasks that could reveal the occurrence of disability due to learning difficulty. Using the tasks as basis, he has constructed an instrument called the Test of Written Expression (TOWE). This instrument is especially intended to reveal the disturbance due to difficulty in learning writing.

Hallahan et al. (2008) state that intervention of learning difficulty should use the principle of PPI (*Program Pendidikan Individual* 'Program of Individual Education'). It is done to guarantee that each child with specific learning difficulty has one individualized program to make their respective

specific needs meet. In implementing the PPI principle, the Directorate of PSLB (*Pembinaan Sekolah Luar Biasa* 'Special School Development') (2007) explains that inclusive education has the implication that the school running it should accommodate all children regardless of their physical, intellectual, social, emotional, or language-related conditions or other conditions, including those of children with disabilities, gifted and talented children, child workers and street urchins, children in isolated regions, children from language and ethnic minority groups, and children that are unfortunate and shunned by the groups in society.

### **Inclusive Education Context**

The basis for inclusive education consists of (1) a legal one, which refers to a spiritual one consisting of (a) *ayat* ('verse') 9 of *Surat* ('Letter/Message') An Nisa in the Islam holy book, namely, Al Qur'an, which says that people should be fearful of Allah if they leave behind them children who are weak and whose welfare they are worried about and they should be with *taqwa* ('belief, fear, pleas for mercy') towards Allah and they should say words of truth; (b) *ayat* 32 of *Surat* Az Zuhuf, whose content is that Allah has determined the life of human beings in the world and Allah has raised a part of them a few degrees higher over another part in order that a part of them can benefit from each other; (2) the juridical basis consisting of (a) UU (*Undang-Undang* 'Law') No. 20 in 2003 concerning the protection of children's rights; (b). PP (*Peraturan Pemerintah* 'Government Regulation') No.19 in 2004 concerning the standard of national education; and (c) *Deklarasi Bandung* ('Declaration of Bandung') in 2004 concerning moving to inclusive education, (3) UU No. 20 in 2003 concerning System of National Education, where the part referred to as *ayat* ('paragraph') 1 of *Pasal* ('Chapter') 5 says that each citizen of the state has equal right to have educational service, (4) the explanatory part of *Pasal 15*, which states that special education is the education for learners with handicaps or learners with extraordinary intelligence conducted inclusively or as special educational unit at the primary and secondary educational levels and *ayat 1* of *Pasal 45* says that each formal or non-formal educational unit makes

available the facilities and resources meeting the needs of education in accordance with the physical growth and development and the intellectual, social, emotional, and psychological intelligence of learners, and (5) Minister of National Education's Regulation No. 70 in 2009 concerning inclusive education for learners with handicaps and those with special intelligence and/or aptitude potential.

The development of inclusive education in Indonesia as a form of governmental commitment in implementing inclusive education for children with special needs has been underway since in 2002 the government officially began running a tryout project in nine different provinces in possession of resource centers and since then more than 1500 handicapped students have been going to regular schools and by 2005 the number has risen to 6000 or 5.11% of the population of children with special needs. By 2007, it has risen further to 7.5% or 15.181 distributed as students at 796 inclusive schools consisting of 17 TKs (*taman kanak-kanak* 'kindergartens'), 648 SDs, 75 SLTPs (*sekolah lanjutan tingkat pertama* 'junior high schools'), and 56 SLTA (*sekolah lanjutan tingkat atas* 'senior high schools'). (Ekadjatmika Sukarsa, 2007).

To encourage more widespread inclusive education implementation, in 2004 in Bandung a national workshop was held and it resulted in what is called *Deklarasi Bandung* ('Declaration of Bandung') previously mentioned, whose contents, among others, make an appeal to the government, educational institutions, other related institutions, the business and industrial world, and society in general for the ability to guarantee that every handicapped child and other children with special needs (including children with specific learning difficulty) get equal access in all aspects of life and are humanely treated in every way.

Though the development of inclusive education in this country has been sufficiently gratifying and has received appreciation and expressions of enthusiasm from various circles, and especially from educational practitioners, so far at the level of its implementation in the field it is still confronted with various issues and problems. According to research by Munawir

(2005) on 12 schools holding inclusive education in the *kabupaten* ('regency') and city of Surakarta, on the whole at present there are five groups of issues and problems concerning inclusive education at school level that need to be carefully examined and anticipated in order that they do not become hindrances or make the inclusive school implementation become biased or even cause inclusive education itself to fail. These five groups of issues and problems are respectively related to the comprehension, implementation, school policy, learning process, and teacher condition in relation with inclusive education.

#### IV. Methodology

The research was descriptive-explanatory in nature in an effort to get a detailed and comprehensive picture in identifying the disturbances by the specific learning difficulty in the academic field of students at inclusive SD and the model of their assessment. The research subjects were SD students from 15 state and private inclusive SDs in a *kecamatan* ('subdistrict'), namely, Kecamatan Gamping, Kabupaten Sleman. The population consisted of all the students in Grades I up to VI at all the schools used as locations of the research. By means of stratified random sampling, students of Grades III and IV with learning obstacles and low-level achievement were selected as sample. The determination of Grades III and IV was based on the understanding that the academic learning difficulty category is usually undiagnosed until children are in Grade II or after that (Graziano, 2004).

The research was conducted from April through to October 2017. The techniques used to collect data were observation, interview, documentation, and formal and informal testing. In form, the procurement of data was an assessment of specific learning difficulty. The data obtained were presented in the form of tables, figures, and narration. After the data were presented, the researcher made quantitative and qualitative analyses.

#### V. Results

The research results in the field indicated that of the 465 students in Grades III and IV from five

inclusive SDs in Kecamatan Gamping, Kabupaten Sleman, namely, SD Turusan II, SD Tegalyoso I, SD Gamping I, SD Muhammadiyah Dukuh, and SD Patran, up to 85 students have specific learning difficulty disturbances in the category of dyslexia, dysgraphia, and or dyscalculia. In other words, the students with specific learning difficulty consisted of 29.65 % of all the students in Grades III and IV in the five SDs. The percentage of students identified as those with specific learning difficulty varied in magnitude from school to school.

The results of the research indicate that, out of 465 students, 85 (18.27 %) are identified as those with specific difficulty in learning reading, writing, and mathematics/arithmetic. Male students with specific learning difficulty are greater in number compared with female ones (with their respective percentages being 55.3 % and 44.7 %). The distribution of the types of specific learning difficulty is shown as follows: 26 (22.10 %) have dyslexia (difficulty with reading); 23 (19.55 %) have dysgraphia (difficulty with writing); and 36 (30.60 %) have dyscalculia (difficulty with mathematics/arithmetic).

Research subjects show dyslexia (difficulty with reading) by behaving as follows: stuttering while reading, omitting a word or syllable, substituting a word or syllable, adding a word or syllable, self-correcting, hesitating, reading in an unusual way, exchanging letter positions, omitting a letter, inserting a word, adding a letter, pointing at each word before reading it, reading with no expression, skipping a word, sentence, or line, paying insufficient attention to punctuation, wrongly dividing a word into syllables, misspelling, using a strange voice tone and looking tense, making a wrong and meaningless pronunciation, pronouncing a word with teacher help, repeating, and moving the head instead of the eyes while reading.

The dysgraphia (difficulty with writing) identified in the research is seen from a lack of writing esthetics (as expressed by an absence of distance between sentences, words, or letters and by letter shape, letter slant, the pressure on paper, and the manner of holding the pencil), spelling difficulty (as expressed by letter subtraction,

reflecting a dialect, a reversal of letters in a word, a reversal of consonants or vowels, a reversal of syllables, and letter addition), error in word division into syllables, and no attention to difference in use between capital letters and lower-case letters .

The dyscalculia (difficulty with mathematics/arithmetic) identified is seen from a lack of understanding concerning symbols, place values, and calculations, wrong process use, and unreadable or illegible writing because of several factors, namely, (1) spatial relation understanding disorder, (2) visual perception abnormality, (3) visual-motor association disorder, (4) lack of perseverance, (5) difficulty in recognizing and understanding a symbol, (6) disorder in deep bodily understanding, and (7) difficulty in understanding language and reading. Students show lack of understanding concerning the symbols (+), (-), (x), and (:). In addition, there are students who could not yet understand place values (the placing of single digits, double digits, triple digits, four digits, and so on to refer respectively to numbers ranging from 0 to 9, from 10 to 99, from 100 to 999, from 1000 to 9999, and so on) used in mathematical operation.

## VI. Discussion

Results of the identification and the assessment model application indicate that, in the matter of reading, students with specific learning difficulty show various errors, namely, those respectively of omission, insertion, substitution, reversal, mispronunciation, change of position, no recognition of a word, and stuttering or jerky voice. Another observable error is that in reading a word because of lack of visual discrimination. Students with specific learning difficulty would, for example, read aloud the Indonesian word spelled *mengelabui* as if it were spelled *mengebui*, the former meaning something and the latter meaningless in the language concerned. The disability occurs not only in visual discrimination but also in auditory discrimination. When taking dictation, students with specific learning difficulty would make a mistake in writing words; when dictated, the words spelled *menggergaji*, *kanvas*, and *menejar*, for example, would be written

down as if they were respectively spelled *meggeraji*, *kampas*, and *megejar*, which could still be recognized as altered spellings of the same words.

In the teaching which is classical in nature, it is difficult for the teacher to sufficiently pay attention to students' individual condition. Observation results show that when the teacher gives an assignment in reading or mastering the content of some reading matter, the burden given to all the students is the same in weight in the sense of no attention being paid to individual condition. If a student is unable to finish an assignment or get a good mark, the teacher considers the student not diligent or not clever. With reference to a view from Matthew (2003), the causes of errors in reading are that (1) the reader is deficient in visual and auditory memory and in short-term and long-term memory, (2) the reader has problems in remembering data, and (3) the reader is poor in spelling.

Noticeable mispronunciations by the research subjects are (1) mispronouncing a word into a word meaning differently, (2) mispronouncing a word with the meaning still remaining clearly the same, and (3) mispronouncing a word into a meaningless one. Such phenomena happen because the student does not recognize a letter so that he or she just makes a guess, maybe because of reading too fast, because of feeling being under pressure or afraid of the teacher, or because of difference between the child's dialect and the standard Indonesian language. For example, *tukang mereparasi mesin* is read aloud as one reads aloud *tukang mereparasi misin*.

Students identified as those with dyslexia also show word pronunciation with teacher help. It happens because after some moments of waiting by the teacher, they still do not pronounce yet the words expected. According to Hallahan et al. (2005), students who need that kind of help usually has a deficiency in letter recognition or a fear of risking making an error. Such students also have insufficient self-confidence especially when faced with a reading task.

As for students who have difficulty in mathematical calculation, according to Lerner

(2007), the difficulty is caused by several factors, namely, (1) spatial relation understanding disorder, (2) visual perception abnormality, (3) visual-motor association disorder, (4) lack of perseverance, (5) difficulty in recognizing and understanding symbols, (6) disorder in deep bodily understanding, and (7) difficulty in understanding language and reading. The students show lack of understanding concerning the symbols (+), (-), (x), and (:). In addition, there are students who could not yet understand place values (the placing of single, double, triple, and four digits, for example, to refer respectively to numbers ranging from 0 to 9, 10 to 99, 100 to 999, and 1000 to 9999) used in mathematical operations.

From the results of the identification and the assessment model application to know the students with specific learning difficulty, it has been found that, in percentage, the students with dysgraphia were 84.38 %, those with dyslexia were 78.5 %, and those with dyscalculia were 38.6 %. After the results of identifying the disturbances due to the learning difficulty are obtained, an intervention is required to handle it. The designed intervention model is an Individual Educational Program (IEP) which is integrated into students' learning activity. Hallahan et al. (2005) state that the intervention made to deal with learning difficulty should use the principle of the Individual Educational Program. It is done to guarantee that each child with learning difficulty has an individualized program to put together the characteristic needs that they have. It means that the model is a means or method designed in accordance with the needs of individuals with characteristics of certain specific learning difficulty. The IEP method is integrated with the learning activity, containing a series of strategies facilitated by the teacher. In the research, the strategies of the IEP method used refer to the strategies of dealing with specific learning difficulty presented by Lerner (2007), which are related to several methods.

The various specific learning difficulty that children at inclusive SD have and the model of its identification and assessment is explained as follows.

### **The dyslexia (difficulty in reading)**

It varies greatly but all varieties point to possible disturbance of brain function. There are four groups of difficulty characteristics in learning reading, namely, those respectively concerning (1) reading habits, (2) errors in word recognition, (3) errors in comprehension, and (4) occurrences of miscellaneous symptoms.

The assessment of difficulty in learning reading could be done by means of formal and informal instruments. The teacher could use an informal instrument as basis in giving remedial teaching. Informal assessment could be used to identify various errors in reading aloud and reading for comprehension.

There are two groups of models of teaching reading, namely, that to use with children in general and that to use with children with specific learning difficulty. The models of teaching reading to children in general are, among others, those respectively related to the basic reading, phonic, linguistic, SAS, alphabetic, and language-experience methods. The models of remedial teaching are, among others, those respectively related to the Fernald, Gillingham, and Glass-Analysis methods.

Before making an assessment, a teacher should first understand the scope of the reading skill as object of assessment. Further, Graziano (2004) opines that there are five aspects of the reading skill, namely, (a) phonemic awareness, (b) awareness of alphabetic principles, (c) accuracy and fluency in word reading, (d) vocabulary mastery, and (f) reading comprehension. The five aspects of the reading skill work in order of mention, meaning that the skill related to an aspect preceding another is a prerequisite for the skill related to the latter aspect.

In this writing, examples of academic assessment done to each aspect of the reading skill are explained and, by studying those examples, hopefully teachers could develop by themselves an assessment guide in accordance with their respective needs, resulting in respective guides to (1) the assessment of phonemic awareness; (2) the assessment of awareness of alphabetic principles; (3) the assessment of accuracy and fluency in reading; and (4) the assessment of reading comprehension (Graziano, 2004).



### **Dysgraphia (difficulty in learning writing)**

It covers writing by hand or beginning writing, spelling, and expressive writing. Sumarmo Markam (2009) states that there are various factors influencing the ability of writing by hand, namely, motor, behavioral, and perceptual factors, memory, ability of accomplishing cross-modal perception, dominance of hand use, and ability of understanding instructions.

Difficulty in spelling could occur if the children concerned have memory and perception disorders, especially visual and auditory ones. Further, in order that children could write expressively, they should possess the abilities of using spoken language, reading, spelling, and writing by hand and understand the various rules that apply on a type of writing task.

### **The assessment of dysgraphia (difficulty in learning writing)**

It uses formal and informal assessment instruments. Sumarmo Markam (2009) opines that the process of assessing dysgraphia (difficulty in learning writing) consists of making respective assessments of difficulty in writing by hand (or beginning writing), difficulty in spelling, and difficulty in expressive writing.

### **There are some characteristics of children with dyscalculia (difficulty in learning mathematics/arithmetic)**

Those are (1) visual-motor association disorder; (2) spatial relation understanding disorder; (3) visual perception abnormality; (4) lack of perseverance; (5) difficulty in recognizing and understanding symbols; (6) disorder in deep bodily understanding; (7) and difficulty in understanding language and reading. There are several principles of mathematics teaching and remedial model, namely, (1) the necessity of preparing children for learning mathematics; (2) moving from the concrete to the abstract; (3) sufficient opportunity for exercise and repetition; (4) generalization to various new situations; (5) starting with students' strengths and weaknesses; (6) the necessity of building a strong foundation concerning concepts and mathematical skills; (7)

provision of balanced mathematics-related programs; and (8) calculator use to grow mathematical reasoning.

### **VII. Conclusion**

The results indicate that, of 465 research subjects, 85 (18.27 %) are identified as those experiencing specific learning difficulty, with the male ones being greater in number compared with the female ones (their percentages being respectively 55.3 % and 44.7 %). The distribution of the types of specific learning difficulty is shown as follows: 26 (22.10 %) with difficulty in reading; 23 (19.55 %) with difficulty in writing; and 36 (30.60 %) with difficulty in mathematics. The dyslexia (difficulty in reading) identified varies greatly but all varieties point at possible disturbance of brain function. There are four groups of difficulty characteristics in learning reading, namely, those respectively concerning (1) reading habits, (2) errors in word recognition, (3) errors in comprehension, and (4) occurrences of miscellaneous symptoms. There are two groups of models of teaching reading, namely, that to use with children in general and that to use with children with specific learning difficulty. The models of teaching reading to children in general are, among others, those respectively related to the basic reading, phonic, linguistic, SAS, alphabetic, and language-experience methods. The models of remedial teaching are, among others, those respectively related to the Fernald, Gillingham, and Glass-Analysis methods. Assessment is done to each aspect of the reading skill. By studying examples of such assessments, teachers hopefully could develop by themselves a guide to assessment in accordance with their respective needs, producing respective guides to (1) assessment of phonemic awareness; (2) assessment of alphabetic principles awareness; (3) assessment of accuracy and fluency in reading aloud; and (4) assessment of reading (for) comprehension. Dysgraphia (difficulty in learning writing) covers respective difficulties in writing by hand or beginning writing, spelling, and expressive writing. There are various factors influencing the ability of writing by hand, namely, motor, behavioural, and perceptual factors, memory, ability to accomplish cross-modal perception, dominance of hand use, and ability of

understanding instructions. Difficulty in spelling could happen if the children concerned have disorders of memory and perception and especially of visual and auditory ones. Further, in order that children could write expressively, they should possess the abilities of using spoken language, reading, spelling, writing by hand, and understanding the various rules that apply on a certain type of writing task. The assessment of dysgraphia (difficulty in learning writing) uses formal and informal assessment instruments. The process of assessing dysgraphia (difficulty in learning writing) consists of making an assessment of difficulty in writing by hand (or beginning writing); an assessment of difficulty in spelling; and an assessment of difficulty in expressive writing. There are several characteristics of children with dyscalculia (difficulty in learning mathematics/arithmetic), namely, (1) visual-motor association disorder; (2) spatial relation understanding disorder; (3) visual perception abnormality; (4) lack of perseverance; (5) difficulty in recognizing and understanding symbols; (6) disorder in deep bodily understanding; and (7) difficulty in understanding language and reading. There are some general errors made by children with specific difficulty in learning mathematics, namely, errors in understanding symbols, place values, and calculations, wrong process use, and unreadable or illegible writing. Information of students' ability in the mathematical field could be known through formal and informal assessments. In certain cases, the use of both assessment types might be necessary but in other cases informal assessment might be enough. In the case of assessing specific difficulty in learning mathematics/arithmetic, there are several principles of the mathematics teaching and remedial model, namely, (1) preparing the child concerned for mathematics learning; (2) going from what is concrete to what is abstract; (3) sufficient opportunity for exercise and repetition; (4) generalization to various new situations; (5) starting with students' strengths and weaknesses; (6) necessity of building a strong foundation for mathematical concepts and skills; (7) provision of balanced mathematics-related programs; and (8) calculator use to grow mathematical reasoning.

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