

# *A Needs Analysis of Instructional Materials on Early Literacy Dyslexia Student in Regular-Inclusive school*

Yuliyati, Mudjito, Murtadlo, Ima Kurrotun Ainin

Universitas Negeri Surabaya  
Surabaya, Indonesia  
yuliyati@unesa.ac.id

**Abstract**—*The purpose of this study is to create instructional materials for dyslexic students' early literacy. Four-D Thiagarajan development research methods (Define, Design, Development, Dissemination) were implemented in 3 years. The first stage of Define includes 5 activities for needs analysis, namely: front-end analysis; student analysis, task analysis, concept analysis, and specifying instructional objectives. Subjects in this research are student and teachers of regular inclusive schools. Data are collected by questionnaires, interviews, observations, and document review. Moreover data are analyzed by interactive techniques. Define's stage result showed that: (1) front-end analysis: dyslexia's student's early literacy teaching materials are incompatible, (2) student analysis: Dyslexia's students experienced attention, memory, perception, thinking, language disorder, especially read and write (poor phonological Awareness, problems in speaking, reading, Spelling, decoding, and encoding); (3) task analysis: integration of dyslexia problems on 5 basic foundations of literacy: phonological awareness, phonic/alphabet, fluency, word study, and comprehension; (4) concepts analysis teaching materials: phonic analysis, decodable text, fluency, word study, and comprehension that is focused on the difficulties; (5) specifying instructional objectives: purpose formulation is to integrating learning assignments with teaching material's concepts based on Curriculum 13 (Themes, Basic Competencies, Icons).*

**Keywords**— *needs analysis; dyslexia; teaching materials; early literacy; regular-inclusive school*

## I. INTRODUCTION

In each Regular inclusive School there are dyslexic students specified reading difficulties who strive to be skilled in language especially early literacy (read-write) due to the incompleteness aspects of early childhood development. That matter causes dyslexic student to experienced obstacles pre-academic omission; adition; inversion; substitution; reversal; spatial; lateralisasi. Texas Education Agency [1] explained that "Dyslexia" means a disorder of constitutional origin manifested by a difficulties in learning to read; write; or spell; despite conventional instruction; adequate intelligence; and sociocultural opportunity. "Related disorders" include disorders similar to or related to dyslexia; such as developmental auditory imperception; dysphasia; specific developmental dyslexia; developmental dysgraphia; and developmental spelling disability.

The prevalence of dyslexia varies widely between countries in the world one from five students; or 15-20% of the population; has a language based learning disability. Dyslexia is the most common of the language based learning disabilities. Nearly the same percentage of males and females have dyslexia [2].

Dyslexia International-Literacy estimates 10 percent or more of the population; depending on the orthographic system; type and level of dyslexia; assessed reading age; and method of sampling used. Based on these criteria Jap; Borleff; Maassen; [3] determined students at risk for Dyslexia in Indonesian primary schools are 17.3% of first-year students and 14.1% of second-grade students. This shows that dyslexic students need to be given special treats with teaching materials that match their needs.

For this reason; it is necessary to develop early literacy teaching materials for dyslexia students who are suitable for their learning difficulties. According Department of Education and Culture [4] All materials used to support the learning process are referred to as teaching materials. Dyslexia early literacy teaching materials in Indonesian are important because teaching materials supporting early dyslexia literacy skills in regular-inclusive primary schools are generally not yet available because they are not widely available in the market or the prices are not yet affordable. Teaching materials that have been developed by researchers and observers of dyslexia in the form of modules / books / media are partial; not yet integrating the material in the curriculum 13.

The main problem of dyslexia in the development of early literacy rooted from the lack of mastery of phonological awareness. According Elliot & Grigorenko [5] Pnonological deficit theory explains that phonological awareness is the best predictor of important reading skills.

The importance of phonological processing capabilities for successful literacy acquisition is undeniable even if the impact is seen as two-way. If the phonological processing deficit is considered a cause; then it still reflects the symptoms at the cognitive level; which is secondary to processing information deficits at a more fundamental level [5]. So it can be concluded that phonological awareness is the basic foundation

that must be mastered by dyslexic students. If this basic foundation has not been mastered; the academic readiness of dyslexic students has not yet been formed. This means that they will not be able to master academic materials which results in failing at school. Therefore; this early literacy problems must be resolved through learning by providing materials / teaching materials and strategies that match the characteristics and causes of learning barriers.

In accordance to that; the International Dyslexia Association [6] sets the standard Structured Language Teaching for dyslexia; covered: 1. phonology; 2. phonics and word studies; 3. fluent; automatic Reading of Text; 4. Vocabulary; 5. Text Comprehension; and 6. Handwriting; Spelling; Written Expression.

II. METHOD

This research is a research development (R & D) which is done in two stages with Four-D [7] model; covering define; design; develop; and disseminate. Stage 1 define-design; determining data base problems and designing/mapping of instructional materials on dyslexic student's early literacy. Stage 2 develop- disseminate; the map of the instructional materials developed into a product draft. Needs Analysis in stage 1. Define-Design begins with theoretical studies; curriculum studies; and field studies to understand the characteristics and learning needs of dyslexic student's early literacy and mapping of teaching materials. The Define stage consists of five activities; namely: (1) front-end analysis to find the problem of developing dyslexic teaching materials; (2) student analysis to analyze the characteristics of learning difficulties in dyslexic reading; (3) task analysis to determine literacy learning tasks according to the characteristics of dyslexia; (4) concept analysis; to map the concepts of early literacy teaching materials according to the characteristics of dyslexia and curriculum; and (5) specifying instructional objectives to formulate learning objectives based on the curriculum used by the characteristics of dyslexia and the basic foundation of early literacy by integrating it as a reference for mapping material and learning activities that are suitable for dyslexia. Based on that five-step Define activity; the early literacy teaching materials was mapped as the basis for initial designing teaching materials. The subjects of this study were teachers and regular inclusive school students in Surabaya and Sidoarjo. In year 1 the activity was focused on obtaining data needs analysis. The subjects studied were determined by purposive techniques; criteria for determining regular inclusive schools were that there were students with dyslexic learning difficulties of at least 5 students. the Stage I Define research method is shown in Figure 1.

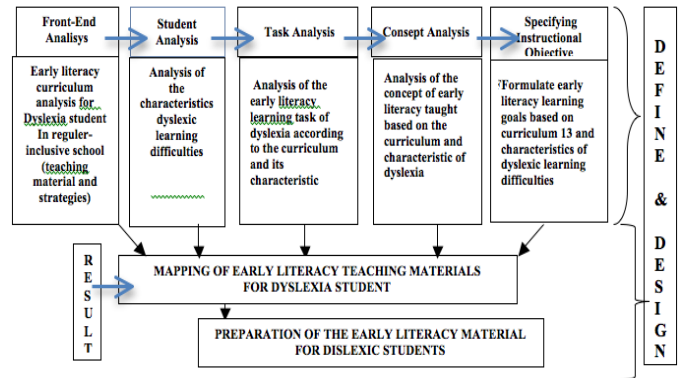


Fig1. Research Stage One : Define and Design

III. RESULT

The research result on the instructional material of dyslexia early literacy of year1 is a description of the results of the development process of Define-Design stage. Define stage includes five activities shown in table 1. described as follows.

TABLE I. RESULT OF THE RESEARCH

No.	R&D Define Stage	Results
1.	Front-End Analysis	There are + 4.2% of dyslexia students out of 1616 regular-inclusive elementary school students. Early literacy teaching materials that are suitable for dyslexic learning difficulties are not yet available. Generally teachers use regular student textbooks (Student Books and Teacher Curriculum Books 13). Students are given a repeat lesson after learning ends / is treated in the source room. Teaching materials that are needed are teaching materials that is suitable to the / learning needs of Dyslexia.
2.	Student Analysis	Dyslexia experiences: (1) impaired concentration; (2) memory impairment (visual and auditory memory); (3) perceptual disturbances (ground figure; visual auditory discrimination; reversal; inversion; spatial; and motoric; (4 ) disruption of thought processes (difficult reading comprehension; difficult expressive writing; difficulty clarifying objects in the environment; (5) barriers to the development of phonological languages; morphology; syntax; semantic; pragmatic (phonological awareness; difficult to form words; compose sentences; communicate; interpret language).
3.	Task Analysis	Dyslexia learning tasks are designed by integrating the improvement aspects of dyslexic development disorders; initial literacy materials and curriculum 13: (1) learning tasks related to the development aspects of focusing attention; memory; perception; thinking through various brain learning games and appropriate strategies; (2) learning tasks to overcome the barriers to language development; especially early literacy through systematization of material and appropriate strategies; 3) Assignments related to the Class I Basic Competency (KD) curriculum: (a) preparation for reading and writing: (b) phonic analysis (c) understanding the alphabet a-z ;; (d) study words with theme; me; my passion; my activities; my family; (e) read fluently and understand the text according to the theme with the icon Let's Look; Let's Read; Let's Try; Let's Practice; Let's Do; Let's Sing; Let's Write activities; my family; (4) reading fluently the text according to the theme with the icon Let's Look; Let's Read; Let's Try; Let's Practice; Let's Do it; Let's Sing; Let's Write; (5) expressive writing.

No.	R&D Define Stage	Results
4.	<b>Concept Analysis</b>	Improvement of developmental aspects: how to focus attention; perception; memory brain learning with literacy integration; visual and auditory discrimination. Teaching material covered: phonological awareness; alphabetic; fluency; word study; and comprehension developed through integration into BC; themes and icons.
5.	<b>Specifying Instructional Objective</b>	Phonemic awareness: skilled students of phonemic awareness through various systematic phonic analysis activities (games; singing; reading-writing practices) Alphabetic: students understand the alphabet a-z through phonic analysis; games; brain learning Fluency: Students are able to read and write through decodable text (reading aloud / together / guided / independent; singing; playing reading and writing practices word study: students master vocabulary through word games; sight words; decodable text etc. comprehension: students understand reading through several ways of reading; remediation dyslexia strategies

The results as a basis for mapping teaching materials to be developed in stage 2. The development of teaching materials is important teaching materials developed by researchers; experts and observers of dyslexia education; for example the Ayo Baca [8] module is partial but has not integrated curriculum 13; audio learning media [9] has not been marketed and lexical [10] is not yet a priority for schools to feel expensive

**IV. DISCUSSION**

The findings of front-end analysis shows that there are 4.2% dyslexia. In contrast to the findings of the Ministry of Education (2002) that elementary students who experience reading and writing problems (+10%); Jap; Borleff & Maassen; assign[3] students at risk of Dyslexia in Indonesian primary schools are 17.3% first grade students and 14;1% second grade students. IDEA states that the population of LD in the United States from year to year tends to fluctuate; sometimes increasing sometimes decreasing between 6.9% - 8.2%. Early literacy dyslexic teaching materials are the same as regular students; namely using Teacher's Books and Student Books curriculum 13 th. Classical learning; students who cannot read / do not understand teaching material are getting remedial after learning or therapy in the source room; but early literacy teaching materials that are suitable with the characteristics difficulty learning dyslexia is not yet available. Therefore it needs to be developed.

The finding of Student analysis indicates that the early literacy abilities of dyslexia tend to be low; slow voice reading hesitant; contradicted; substitution; inversion; addition and subtraction of sounds / words and inconsistent writing; incorrect writing of letters; nonstandard size. According to HKI Indonesia [11] the difficulty of learning to read dyslexia due to incomplete development of early age; includes impaired concentration; remembering; perception; thought

processes; language development causing academic difficulties in reading writing and speak in language that results in dyslexia doing omission; addition; substitution; ground figure; referral; inversion; difficulty understanding reading the tasks of expressive writing and mathematics; difficulties to develop all aspects of language skills: phonology; morphology; syntax; semantics; pragmatics. Thus early intervention is needed by teachers who are competent in understanding dyslexia; teaching materials and management throughout the curriculum to avoid dyslexia from depression and spirals failure. [1]

The finding of task analysis covered three things designed by integrating them: (1) improving development aspects of dyslexia; namely concentration; memory; perception; and cognitive processes through various brain learning games and suitable strategies. This is suitable with the findings of research on brain scanning and neuroscience that have provided ongoing support for the hypothesis of the causes of dyslexia. Bender [12]. Unfortunately the root cause of dyslexia remains unknown. Kandel [13]; (2) the five pillars of the foundation of early literacy learning include: phonological awareness; understand phonics / fluency; word study; and understanding of Hadikoesoemo [14] The five target pillars of reading learning are important as a remediation strategy for the development of dyslexic academic tasks. (3) Curriculum material 13: (a) preparation activities to read and write the beginning and proper way of sitting; distance from eyes to books; how to turn pages of books; left; right eye movements; choose places with bright lights; and ethics of reading books with the correct way. (b) Learning assignments :) phonic analysis: connecting letters to the words; reciting; separating; combining; understanding the alphabet a-z; visual-auditory discrimination; study words with theme; me; my passion; my activities; my family; read fluently the text according to the theme with the icon Let's Observe; Let's Read; Let's Try; Let's Practice; Let's Do it; Let's Sing; Let's Write. The integration of these three matters is important in accordance with Ministry of Education and Culture's [15] suggestion that student books as teacher models can develop innovative ideas of self-learning adjusted to the conditions and needs of students.

The finding of concept analysis refers to the findings of task analysis. The concepts taught to dyslexic students focus on early literacy teaching materials; namely: phonological awareness; phonic / alphabetic letters a-z; fluency word study; and comprehension. This material is explicitly and implicitly contained in Class I Students' Books; 2;3 curriculum 13. Academic dyslexic learning difficulties (addition; omission; inversion; reversal; substitution) are taught integrated in the teaching material. Both through reading and writing activities and Reading and writing strategies recommended by D.Sausa [16] and remediation strategies by HKI Indonesia [17] as well as remediation materials proposed by Hadikoesoemo [14] are used as reference material for teaching materials adapted to Indonesian characteristics. The design of teaching materials refers to Basic Competencies; Themes; and Icons in Student Books and Teacher Books [18].

The finding of Specifying Instructional Objective are formed in a statement of purpose formulation of the teaching materials on the basis of early literacy that is adjusted to the problem of learning to dyslexia and the low grade 13 curriculum as follows.

(1) Phonemic awareness: students skilled in phonemic awareness through manipulation of phonemes in spoken words. Phonemic awareness skills include phoneme isolation; categorization; blending; segmentation; and deletion phoneme. Phonemic awareness is important because research studies have long indicated that early phoneme awareness is a strong indicator of success (Fuchs; Compton; Fuchs; Bouton; & Caffrey; 2011; National Reading Panel; 200; Yurick; Cartledge; Kaurea; & Keyes; 2012 in D. Sausa 180 [16].

(2) Phonic / Alphabetic: student of understanding phonic / alphabetic system (letter-sound correspondence and spelling pattern and learning how to apply this knowledge in their reading with systematic phonical instruction; analytic synthetic phonic; game; brain learning; song; read -write practice).

(3) Fluency: Students are able to read and write through decodable text reading aloud / together / guided / independent; singing; playing reading and writing practices. Understanding fluency and how the brain works is critical to build a successful reading fluency strategy. [18] dyslexic students who are able to read fluently will be more confident so that students are motivated to understand reading.

(4) word study: students master vocabulary through word games; word sight; decodable text etc. Kids with dyslexia can have extra trouble learning sight words. Some of these words don't follow standard spelling rules; so they're not decodable Others appear so often that kids *have to* recognize them quickly to be fluent readers. These tips can make learning sight words easier. [19]

(5) comprehension: students understand reading through interactive reading; guided reading; independent reading. PAAS strategy is suggested D. Sausa [16] because a number of studies show that the individual components of PAAS (that is predicting; questioning; summarizing; integrating new and past learning) improve the reading skills of students with learning problems.

## V. CONCLUSION

The conclusion of the research in stage 1 in the Define-Design stage is the description of the development process; covering five the activity (front-end analysis; student analysis; task analysis; concept analysis; and specifying instructional objectives) indicate the importance of early dyslexia literacy teaching materials being developed because early dyslexic literacy teaching materials integrated in the curriculum are not yet available; dyslexic students experience pre-academic difficulties (omission; addition; substitution; inversion; lateralization; spatial) which need to be improved through learning with initial literacy teaching materials that are adjusted to their needs and the applicable curriculum; learning

tasks; the concept of early literacy teaching materials and the formulation of specific objectives refer to Curriculum 13 and are designed taking into account the characteristics of early dyslexic literacy learning difficulties.

## REFERENCES

- [1] A. Texas Education Agency, *The Dyslexia Handbook: Procedures Concerning Dyslexia and Related Disorders*. Texas Education Agency, 2001.
- [2] "Understanding Dyslexia - Dyslexia Center of Utah." [Online]. Available: <https://www.dyslexiacenterofutah.org/Statistics>.
- [3] B. A. J. Jap, E. Borleffs, and B. A. M. Maassen, "Towards identifying dyslexia in Standard Indonesian: the development of a reading assessment battery," *Read. Writ.*, vol. 30, no. 8, pp. 1729–1751, 2017.
- [4] D. P. Nasional, "Panduan pengembangan bahan ajar." Jakarta: Depdiknas, 2008.
- [5] J. G. Elliott and E. L. Grigorenko, *The dyslexia debate*, no. 14. Cambridge University Press, 2014.
- [6] T. I. D. Association, "Knowledge and Practice standard for Teacher of Reading," 2010.
- [7] S. Thiagarajan, "Instructional development for training teachers of exceptional children: A sourcebook.," 1974.
- [8] F. Khairisofa, "PENGEMBANGAN MODUL MEMBACA PERMULAAN UNTUK ANAK BERKESULITAN BELAJAR KELAS III SEKOLAH DASAR NEGERI 2 BERO, TRUCUK, KLATEN," *WIDIA ORTODIDAKTIKA*, vol. 6, no. 5, pp. 547–559, 2017.
- [9] F. Indriastuti, "Development of Audio Book for Learning Dyslexic," *Kwangsan J. Teknol. Pendidik.*, vol. 3, no. 2, pp. 91–100, 2015.
- [10] "No Title," 2014. .
- [11] H. Indonesia, "Panduan Asesmen Bahasa Indonesia bagi Siswa Kesulitan belajar," 2012.
- [12] W. N. Bender and M. J. Larkin, *Reading strategies for Elementary Student with Learning Difficulties*. California: corwin a Sage Company, 2009.
- [13] S. Kandel, D. Lassus-Sangosse, G. Grosjacques, and C. Perret, "The impact of developmental dyslexia and dysgraphia on movement production during word writing," *Cogn. Neuropsychol.*, vol. 34, no. 3–4, pp. 219–251, 2017.
- [14] Hadikoesoemo and Sheila, "Workshop Handout Targeting the Pillars of Reading for Dyslexia Remediation," 2017.
- [15] Depdikbud, *Panduan Teknis Memahami Buku Guru dan Buku Siswa*. 2014.
- [16] D. Sausa, *How the Special Needs Brain Learns*. California: corwin a Sage Company, 2016.
- [17] M. of E. and Culture, *Teacher Book and Student Book*. 2017.
- [18] C. Knebel, "Reading Fluency in Dyslexic Brain: Low Level/High Content Book," 2016. [Online]. Available: <https://blog.dyslexia.com/reading-fluency-dyslexia>.
- [19] K. Johnson, "Understood." [Online]. Available: <https://www.understood.org/en/learning-attention-issues/child-learning-disabilities/dyslexia/12-tips-to-help-kids-with-dyslexia-learn-sight-words#slide-12>.