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## Culture-based digital sandpaper letters for slow learner

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### ABSTRACT

Slow learners are a type of student with special needs who get the opportunity to attend regular schools. Slow learner students have lower cognitive abilities than normal students so their level of understanding is slower than regular students. One of the difficulties of slow learner students in elementary school is reading. Therefore, elementary school teachers must use more concrete learning media in teaching slow learner students to recognize and write letters. The aim of this research is to develop culture-based digital sandpaper letters as a learning medium that makes it easier for slow learner students to recognize and write letters. The sandpaper letters developed have rough textured letters which function to provide sensory-motor stimulus to slow learner students. This research is development research with a 4D development model (define, design, development, & disseminate). Sandpaper was developed with cultural themes in Indonesia. This culture includes dance, songs, musical instruments, names of weapons, tribes, food and place names. The assessment instruments used are expert assessment sheets and teacher response questionnaires. The research results showed that the book was declared valid by experts and practical by teachers. The results of research trials also show that books are effective in introducing and writing letters to slow learner students.

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## Introduction

One of the most basic aspects of the right to education is that every child, without exception, has the right to receive a quality education. Children with special needs are included in this education guarantee. Children with special needs are educated in special schools in Indonesia. However, Special Schools continue to constitute a barrier between children with special needs and children in general, impeding interaction. As a result, special needs children are isolated from social relationships in society. As a result, the Indonesian government creates an inclusive education system that allows students with special needs to

attend regular schools (Kementerian Pendidikan Nasional Republik Indonesia, 2009). This serves as a deliberate effort to encourage community acceptance of children with special needs. An educational and social environment that enables all children to receive services that are specifically suited to their needs is known as inclusive education (Yusuf et al., 2017). A slow learner is one kind of special needs youngster who is permitted to go to regular schools. Children with exceptional difficulties who frequently attend schools yet are hard to spot are these slow learners (Rasmitadila et al., 2021). Slow learners had higher IQs than mentally retarded kids, but their scores are still significantly below those of typical kids their age.

Six primary schools in Yogyakarta, one of the first cities in Indonesia to introduce inclusive education, have 64.02% of its kids who are slow learners. These schools are participating in a pilot program to offer inclusive education. According to Mumpuniarti et al.'s study, Yogyakarta students who are slow learners experience learning challenges or obstacles. Reading, writing, and counting all suffer from learning issues (Mumpuniarti et al., 2020). The learning environment at school is undoubtedly impacted by the significant population of slow learners in conventional schools. This is thus because slow learners tend to have learning styles that are concentrated on skills that must be applied in practice using all the senses and organized using experience as a concrete mediation of symbolic things (Chauhan, 2011). This serves as the foundation for their educational requirements, which must be adapted to the demands of slow learners in public primary schools who need a lot of presentations during the learning process. As a result, as tangible learning material, teachers need to use media or teaching aids.

Mumpuniarti, et al.'s study's findings demonstrate that slow learners struggle with writing and reading (Mumpuniarti et al., 2020). There are still some pupils who struggle with reading and writing. These students frequently read upside down, don't want to write, and are unable to read or write at all. All students, even those who study slowly, must be able to read. This is so that pupils can learn all subjects by reading (Abdulrahman, 2010). The first phase of language acquisition is beginning reading, which is taught in lower grades (Sukma, 2017). The mechanical encoding process of reading, namely the recoding-decoding process, is emphasized when students begin reading in lower grades (Chandra et al., 2018).

Students identify sound symbols and their combinations with the sounds through the recoding and decoding process. Through this procedure, the texts he reads are converted into a succession of linguistic sounds in intelligible sentences, word groups, and word combinations. Physically and mentally, reading is a process. a physical action that takes the

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form of reading writing aloud. Students can distinguish between distinct sound symbols and their combinations using their visual sense (Taufina & Chandra, 2017).

In comparison to kids their age, slow learners do worse on tests of focus, memory, and abstract thought (Albert, 2018). For this reason, children who struggle with abstract concepts or subject matter need more hands-on instruction. Students who are slow learners may find it challenging to learn if they are provided material in paper and pencil form; they need to be stimulated through a variety of activities (Najma et al., 2012). This study served as the foundation for the project, which intends to create digital sandpaper letters based on culture to enhance reading and writing abilities. The research being conducted is unique in that this teaching tool combines the cultural background of Indonesia in addition to paper with written letters like sandpaper, which is already used in the field. This letter made of sandpaper also has a QR code, which, when scanned with a smartphone, will show the letters being studied as well as Indonesian cultural terms whose first letters begin with the letters studied on the letter.

## Method

This is developmental research. The development model employed is Thiagarajan and Semmel's 4-D model (Thiagarajan et al., 1974). This paradigm has four development stages: define, design, develop, and distribute. The first step of defining includes initial-finish analysis, student analysis, curriculum analysis, idea analysis, and learning target specification. The design stage then continues with media selection, format selection, and the initial sandpaper letter design. The development step is then completed by expert validation, testing, and modification. In this study, the data collection instrument consisted of an expert assessment sheet to measure validity, which included 15 statement items, and a student response sheet to measure practicality, which included 20 statement items. The collected data is processed in a descriptive manner. Using an adapted five-point scale, score conversion was used to determine validity, practicability, and effectiveness (Azwar, 2012). Table 1 shows the conversion of scores to a five-point scale.

**Table. 1** Classification

No	Interval Skor	Kriteria
1	$X > (\bar{x}_i + 1,5 SD_i)$	Very High
2	$(\bar{x}_i + SD_i) < X \leq (\bar{x}_i + 1,5 SD_i)$	High
3	$(\bar{x}_i - 0,5SD_i) < X \leq (\bar{x}_i + SD_i)$	Medium
4	$(\bar{x}_i - 1,5SD_i) < X \leq (\bar{x}_i - 0,5SD_i)$	Low
5	$X \leq (\bar{x}_i - 1,5SD_i)$	Very Low

A book is declared valid if the results of assessments meet at least good criteria, and it is declared practical if the responses of students and teachers meet at least good criteria. The stage of dissemination is the distribution and implementation of sandpaper letters to elementary school teachers and slow learners.

## Results and Discussion

Slow learners in regular classes are a phenomenon that is often found in public and private schools. In Indonesia, slow learner students who join regular schools are provided with inclusive education services. The term slow learner is given to students who have scholastic thinking abilities, but tend to have below average abilities (Peltopuro et al., 2014). The research results show that slow learner students have difficulties in writing and reading (Mursalin, 2021). Reading is a basic skill that all students must have, including slow learners. The large number of slow learner students in regular schools certainly has an impact on the learning process at school. This is because the learning characteristics of slow learners are focused on learning abilities that must be carried out in practice involving all the senses, and using concrete objects. Therefore, sandpaper letters were developed to help slow learner students learn to recognize and write letters.

Book development starts from the Define stage. The Define stage begins with front-end analysis. The analysis begins with Minister of National Education Regulation No. 41 of 2007 concerning Process Standards for Primary and Secondary Education units. The Minister of National Education Regulation states that the learning process must be carried out in an interactive, inspiring, fun, challenging and motivating way for students to participate actively, as well as providing sufficient space for initiative, creativity and independence in accordance with students' talents, interests and physical and psychological development. The next analysis examines

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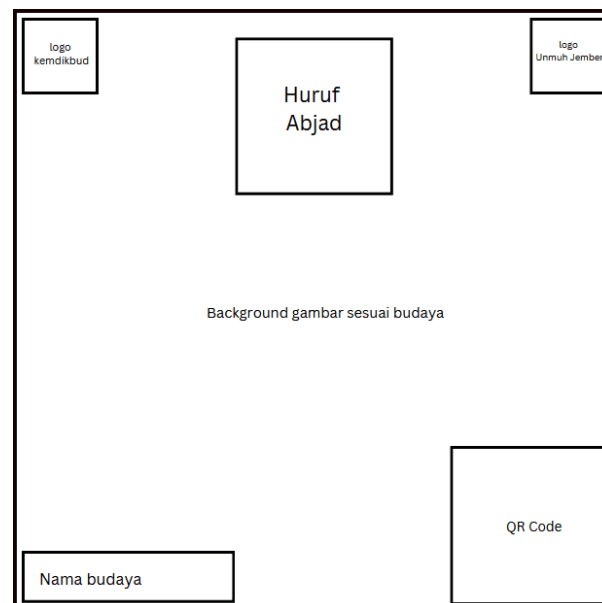
books related to the characteristics of slow learners. Learning is more effective for slow learner students if they use concrete media or images (Sugapriya G\* & Ramachandran C, 2011). Learning will be maximized if slow learner students use all their senses (Najma et al., 2012). Next, interviews were conducted with teachers regarding the needs of slow learner students. The results of interviews with several elementary school teachers in Yogyakarta obtained some information, namely that teachers had difficulty in obtaining media to teach reading and writing letters concretely. The interview results are in line with research by Afzal et al (2021) which states that teachers face problems in finding the right media and materials to help slow learner students.

After the front-end analysis is carried out, the learner analysis is then carried out. Learner analysis is carried out by examining student learning achievements in reading and writing skills. Next, concept analysis is carried out to identify and organize the material that will be developed on sandpaper. Sandpaper letters are a medium used to introduce letters to children in a concrete way. The sandpaper letter that will be developed is thick paper that contains embossed letters. The letters feel rough when touched. The aim of this fingering activity is to provide activities for students to recognize letters concretely before learning to read and write. Students learn to recognize letters by looking and touching, as well as listening to each letter as it is pronounced. The student will feel the letters with his fingers, tracing the outer edges in the same direction as he will write them later. This touching activity is in accordance with Montessori's theory "The hands are the instruments of man's intelligence" which means the hands are a tool or means for obtaining human intelligence (Montessori, 2013). The activity of touching or tracing letters and numbers will stimulate students' fine motor skills (Pittelli, 1965).

The Design Stage starts from selecting the media and format for the sandpaper. Sandpaper was developed using 150-gram art paper with dimensions of 21cm x 21cm. Next, initial design is carried out by making a sandpaper content plan. The plan drawn up is sandpaper using the theme of daily activities, and the letters on the sandpaper are printed embossed and rough. The concept of embossed and rough letters is adopted from sandpaper letters in Montessori classes. The purpose of

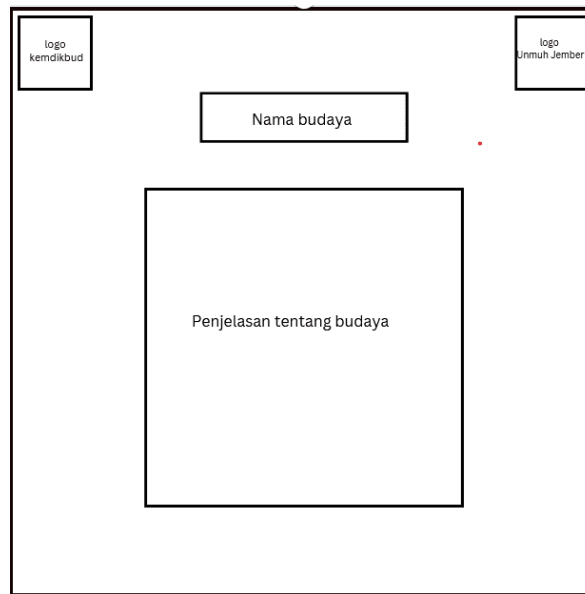


embossed and rough letters is so that students can touch and feel the shape of the letters. This activity of touching or tracing letters will stimulate students' fine motor skills (Lillard, 2021). The novelty of the research being developed is that it is not just paper containing written letters such as Montessori sandpaper letters, sandpaper letters which were developed using the Indonesian cultural context. This sandpaper letter is equipped with a QR code so that when scanned using a smartphone it will display the letters being studied as well as reading about Indonesian culture. An example of the initial sandpaper letter design that was developed is presented in Figure 1.



**Fig 1.** Cultural sandpaper letter layout design

The QR code on the sandpaper will be linked to the PDF file. The PDF file contains an explanation of material about the culture contained in the sandpaper. The material layout design is presented in Figure 2. Next, the sandpaper content plan is developed into sandpaper which is referred to as draft 1.



**Fig 2.** Layout design

The Development Stage includes expert assessment and limited trials. Expert assessment was carried out on draft 1 which had been developed at the design stage. The results of the assessment by 3 experts are presented in Table 2.

**Table 2.** Assessment Results Score

No	Validator	Rata-rata	Kriteria
1	I	82	Very high
2	II	80	High
3	III	81	Very high
	Rata-rata total skor	81	Very high

The results of the expert assessment in Table 2 show an average score of 81. Based on Table 1, the average score of the expert assessment results shows that the sandpaper developed has very good criteria. These results indicate that the sandpaper developed is declared valid or suitable for use for trials. Apart from the assessment scores, experts also provide input for improvements to the sandpaper being developed. Input from experts included adding an independent campus logo, improving the layout, adding images to cultural materials, and adding a cover. Sandpaper revisions based on input from experts are presented in Table 3, Table 4, and, Table 5.

**Table 3.** Revised the layout and added the *kampus merdeka* logo



**Table 4.** Revisions add images to cultural materials



**Table 5.** adding cover on cultural material PDF files



Draft 1 which has been revised is called draft 2. Draft 2 is given to the teacher for practicality testing. The results of teacher responses obtained an average score of 82.7. Based on the conversion of Table 1, the average score is in the Very Good criteria, or can be said to meet the practical criteria for use.

Apart from providing assessment responses, teachers also provide input on adding letter tracing lines to guide students' writing. The revised image from teacher input is presented in Table 6.

**Table 6.** add tracing lines

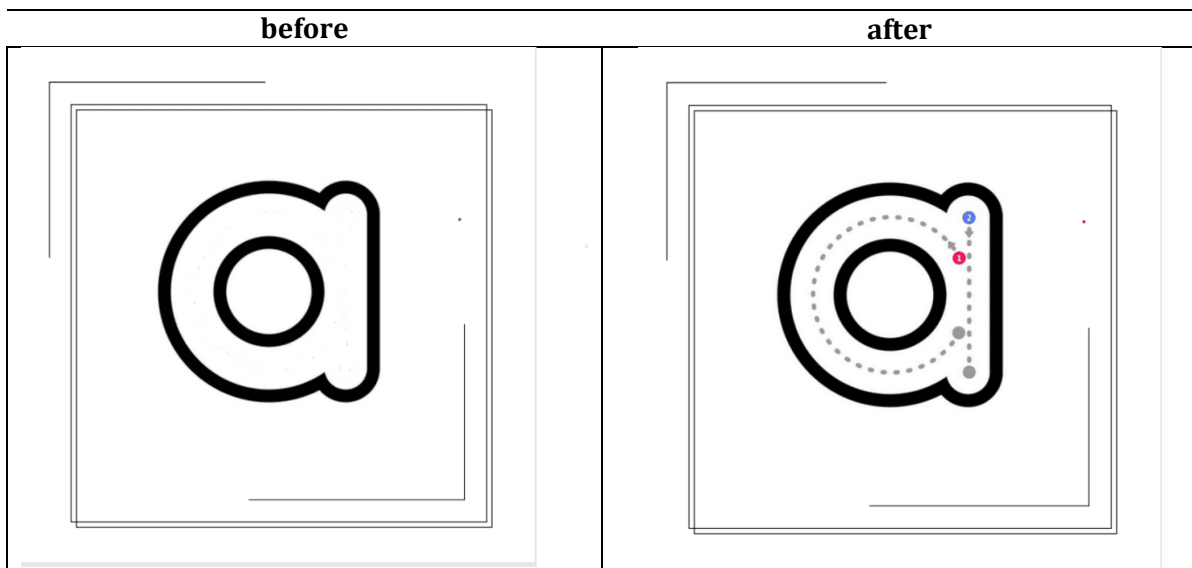


Table 7 shows the changes that occurred after being given input by the teacher.

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This input is adding letter tracing. Letter tracing functions to guide students in writing letters. The final stage is Disseminate. After Draft 2 was revised and declared valid and practical, it was then disseminated on a wider scale. Distribution is carried out by registering cultural sandpaper letters as Intellectual Property Rights and increasing the number of sandpaper letters for use in inclusive schools. The Intellectual Property Rights Certificate is presented in Figure 3. Figure 3 is an image of the Intellectual Property Rights certificate from the Cultural Sandpaper Letter. Sandpaper is registered under the props creation type with registration number EC002023107595.

Recognizing letters is one of the basic abilities that students must have. Letters are abstract symbols for students, including slow learners. The research results show that slow learner students have difficulty understanding symbols, distinguishing letters and numbers, and distinguishing upper- and lower-case letters (Hirawatillah et al., 2023). Slow learner students' obstacles are caused by various factors, one of which is brain development that is not yet optimal due to lack of stimulus (Mohammad & Mahmoud, 2014). Therefore, to introduce letters you cannot just memorize them. Slow learner students need media to learn to read (Puspitasari et al., 2021).

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Fig 3. Certificate

The cultural letter sandpaper developed aims to introduce letters to students. Students will learn to recognize numbers through the activity of touching and feeling the shapes of letters. This activity stimulates students' sensory-motor skills. Research shows that fine motor skills have a positive effect on academic performance, especially in the early years of school (Dolgova et al., 2017). Not only that, students get to know letters through culture in pictures. This is to attract the attention of slow learner students who have low focus. The presence of pictures is more interesting for slow learner students. The presence of images in the media will improve students' memory and understanding abilities (Raiyn, 2016). The images in the sandpaper letters represent culture which includes regional languages, musical instruments, songs, weapons, place names and artifacts. This culture may not be known to students. This will certainly make students curious about this culture. This curiosity



is one of the things that can increase students' interest in learning to read (Dasaradhi et al., 2016).

## Conclusion

The research results show that the cultural sandpaper letter assessment from experts is in very good criteria. The average score of teacher responses to the criteria is very good. Therefore, the sandpaper letters developed are declared valid and practical for use in learning to recognize and write letters. The tactile letters in sandpaper are expected to stimulate students' sensory-motor skills. It is hoped that the culture in sandpaper can increase students' interest in reading. The trials carried out are still on a limited scale; further research can be carried out in field trials to see the effectiveness of sandpaper letters in learning to recognize and write numbers. Testing the effectiveness of sandpaper can be combined with various learning methods. One method that can be used is the Montessori method.

## References

- Abdulrahman, M. (2010). *Pendidikan bagi anak berkesulitan belajar*. Rineka Cipta.
- Afzal, A., Munir, H., Khan, E. A., & Ali, A. (2021). Problems faced by elementary school teachers (est's) towards slow learners. *PaLarch's Journal Archaeology of Egypt/ Egyptology*, 18(2), 377–386.
- Albert, P. (2018). Digital Games - A Magical Learning Tool For Slow Learners. *International Journal of Research -Granthaalayah*, 6(5), 407–412.  
<https://doi.org/10.29121/granthaalayah.v6.i5.2018.1468>
- Azwar, S. (2012). *Penyusunan Skala Psikologi (ed.2)*. Pustaka Pelajar.
- Chandra, C., Mayarnimar, M., & Habibi, M. (2018). Keterampilan Membaca Dan Menulis Permulaan Menggunakan Model Vark Untuk Siswa Sekolah Dasar. *Jurnal Inovasi Pendidikan Dan Pembelajaran Sekolah Dasar*, 2(1), 72–80.  
<https://doi.org/10.24036/jippsd.v2i1.100050>
- Chauhan, M. S. (2011). Slow Learners: Their Psychology and Educational Programmes. *International Journal of Multidisciplinary Research*, 1(8), 279–289.
- Kementerian Pendidikan Nasional Republik Indonesia. (2009). Permendiknas 70 Tahun 2009 tentang Pendidikan Inklusif. In *Permendiknas 70 Tahun 2009 tentang Pendidikan Inklusif*.
- Lillard, A. S. (2021). Montessori as an alternative early childhood education. *Early Child Development and Care*, 191(7), 1196–1206.  
<https://doi.org/10.1080/03004430.2020.1832998>
- Motessori, M. (2013). *The Absorbent Mind and the Sensitive Periods*. Start Publishing.
- Mumpuniarti, M., Handoyo, R. R., Pinrupitanza, D. T., & Barotuttaqiyah, D. (2020). Teacher's pedagogy competence and challenges in implementing inclusive learning in slow learner. *Cakrawala Pendidikan*, 39(1), 217–229.  
<https://doi.org/10.21831/cp.v39i1.28807>

First Author et.al (Title of paper shortly)

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- Mursalin. (2021). Permasalahan Siswa dalam Kesulitan Belajar ( Studi Kasus Terhadap JM Siswi Kelas IV SD Negeri Cot Jaja ). *Seminar Nasional Hasil Riset Dan Pengabdian Ke-III (SNHRP-III )*, 308–314.
- Najma, I. M., Ghazala, R., & Rubina, H. (2012). Effect of academic interventions on the developmental skills of slow learners. *Pakistan Journal of Psychological Research*, 27(1), 135–151.
- Peltopuro, M., Ahonen, T., Kaartinen, J., Seppälä, H., & Närhi, V. (2014). Borderline intellectual functioning: A systematic literature review. *Intellectual and Developmental Disabilities*, 52(6), 419–430. <https://doi.org/10.1352/1934-9556-52.6.419>
- Pittelli, A. L. (1965). Dr. Montessori's Own Handbook. *Pediatrics*, 36(1). <https://doi.org/10.1542/peds.36.1.152>
- Rasmitadila, Widyasari, Prasetyo, T., Rachmadtullah, R., Samsudin, A., & Aliyyah, R. R. (2021). General teachers' experience of the Brain's natural learning systems-based instructional approach in inclusive classroom. *International Journal of Instruction*, 14(3), 95–116. <https://doi.org/10.29333/iji.2021.1436a>
- Sugapriya G\* & Ramachandran C. (2011). Assessing visual memory in slow learners by teaching with computer animated models. *International Journal of Biological & Medical Research*, 2(4), 946–949.
- Sukma, H. H. (2017). Penggunaan Media Pembelajaran Kartu Bergambar Untuk Meningkatkan Kemampuan Membaca Permulaan. *The Second International Conference on Education, Technology, and Sciences*, 244–252.
- Taufina, D., & Chandra, D. (2017). Developing The Big Questions And Bookmark Organizers (Bqbo) Strategy-Based Literacy Reading Learning Materials In The 4th Grade Of Elementary School. *Proceedings of the 9th International Conference for Science Educators and Teachers*, 857–864. <https://doi.org/10.2991/icset-17.2017.139>
- Thiagarajan, S., Semmel, D. S., & Semmel, M. I. (1974). *Instructional Development for Training Teachers of Exceptional Children*. National Center for Improvement Educational System.
- Yusuf, M., Choiri, S., & Supratiwi, M. (2017). Evaluation of Inclusive Education Policies at the Level of Primary and Secondary Education in Indonesia. *Jurnal Penelitian Dan Pengembangan Pendidikan Luar Biasa*, 4(2), 47–154.

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