



BAGAIMANA MENDESAIN PEMBELAJARAN LITERASI DAN NUMERASI YANG INKLUSIF DI SEKOLAH DASAR?

Arif Widodo¹, Dyah Indraswati²

¹ Program Studi Pendidikan Guru Sekolah Dasar, Universitas Mataram, Jalan Majapahit No. 62, Mataram NTB, 83115. Indonesia.

² Program Studi Pendidikan Guru Sekolah Dasar, Universitas Mataram, Jalan Majapahit No. 62, Mataram NTB, 83115. Indonesia

E-mail: arifwido@unram.ac.id¹, dyahindraswati@unram.ac.id²

Abstrak

Fakta empiris menunjukkan bahwa kemampuan literasi dan numerasi siswa sangat beragam. Penelitian ini bertujuan untuk menganalisis desain pembelajaran yang inklusif sesuai dengan keragaman kemampuan siswa. Lokasi penelitian di SDN Selebung 2 Kabupaten Lombok Tengah. Jenis penelitian yang digunakan adalah studi kasus. Pengumpulan data menggunakan observasi, wawancara, angket dan dokumentasi. Hasil penelitian menemukan bahwa model pembelajaran literasi dan numerasi yang inklusif adalah *teaching at the right level* (TaRL). Siswa dibagi menjadi beberapa kelompok sesuai dengan level kemampuannya. Tahapan model pembelajaran TaRL antara lain: penilaian awal, pengelompokan siswa, dan pembelajaran sesuai level. Penerapan model pembelajaran berbasis level menunjukkan adanya perbaikan dalam proses pembelajaran. Indikator keberhasilan penerapan model tersebut dapat dilihat dari kenaikan kemampuan literasi dan numerasi siswa, serta banyaknya jumlah siswa yang memberikan respon positif terhadap pembelajaran berbasis level kemampuan.

Kata kunci: Desain Pembelajaran; Inovasi Pembelajaran; Literasi Numerasi; Pendidikan Inklusif.

HOW TO DESIGN INCLUSIVE LITERACY AND NUMERACY LEARNING IN ELEMENTARY SCHOOLS?

Abstract

Empirical facts show that literacy and numeracy abilities are very diverse. This study aims to analyze the design of inclusive learning according to the diversity of students' abilities. The research location is SDN Selebung 2, Central Lombok Regency. The type of research used is a case study. Collecting data using observation, interviews, questionnaires, and documentation. The results of the study found that the inclusive literacy and numeracy learning model was teaching at the right level (TaRL). Students are divided into several groups according to their ability level. The stages of the TaRL learning model include initial assessment, grouping students, and learning according to level. The application of the level-based learning model shows an improvement in the learning process. Indicators of the success of the application of the model can be seen from the increase in students' literacy and numeracy skills, as well as the large number of students who give positive responses to ability level-based learning.

Keywords: Inclusive Education; Learning Design; Learning Innovation; Numeracy Literacy

INTRODUCTION

Literacy and numeracy are basic skills that must be possessed by students to develop knowledge, skills,

and behavior in the future. Without these basic abilities, students will certainly experience difficulties in participating in learning at a higher level. These two aspects need serious

attention, especially at the elementary school level. Students' failure to learn basic literacy and numeracy can hurt the education budget. In a report, it was stated that educational institutions were forced to spend additional budgets to finance remedial for students who failed to learn basic skills (Greene, 2000). In a broader context, literacy is one of the fields that must be prepared to face the rapid flow of information in the era of the industrial revolution 4.0. Literacy and numeracy skills are the basis for students to develop 21st-century skills (Sulistyaningsih et al., 2019). Every student is required to be skilled in the field of literacy, especially those that include basic literacy skills, namely reading, writing and arithmetic (González- Valenzuela et al., 2020).

The facts in the classroom show that student's literacy and numeracy abilities are very diverse (Rohl & Greaves, 2005). One solution in dealing with the diversity of student abilities is to apply inclusive learning (Forlin & Chambers, 2017). Inclusive education encourages education for all students, regardless of students' backgrounds and abilities. All forms of discrimination in inclusive education must be eliminated. Every student must get learning services that are following the diversity they have. One of the principles of inclusive education is that all students must succeed according to their abilities (Moriña, 2017). The principles of inclusive education can be used to assist teachers in overcoming contextual differences and inclusive learning practices (Florian, 2014).

Starting from these empirical facts, a teacher must design inclusive learning. Inclusive learning design is a learning design based on student abilities. Differences in student abilities must be overcome with different learning models (Hitt et al., 2017). Teachers are required to be able to adapt to forming an inclusive

learning environment (Brooks et al., 2020). Innovation must continue to be done in the face of challenges in the world of education that continues to grow. Moreover, in the pandemic era with students' literacy and numeracy abilities continuing to decline, teachers need to make changes to the learning model used. This is following the research of Maulyda et al., (2021) which states that the threat of learning loss in learning in the pandemic era is one of the causes of the decline in students' literacy and numeracy abilities. Therefore, teachers must be adaptive in designing inclusive literacy and numeracy learning. The problem is that there are still many teachers who have difficulty in designing inclusive learning, especially in learning literacy and numeracy in elementary schools. This is a common problem and a major challenge for many education systems around the world. Teachers are expected to always develop their competencies and add experience in designing inclusive learning for students (Navarro et al., 2016).

Based on the background that has been described, it is necessary to conduct research related to the design of learning carried out by the teacher. This study aims to analyze how the teacher's initiatives are in designing inclusive literacy and numeracy learning, especially during the Covid-19 pandemic. Aspects analyzed include how the teacher designs the learning model, how it affects students' literacy and numeracy skills, and how students respond to the learning design used by the teacher. Through this research, it is expected to find an ideal literacy and numeracy learning design as a model for implementing inclusive learning in elementary schools. The resulting learning design is expected to be implemented in other schools that implement inclusive education during the Covid-19 pandemic. The discovery of an inclusive literacy and numeracy

learning model, it can help teachers provide inclusive learning services according to the diversity of students' abilities.

METHOD

This study will describe how teachers design inclusive literacy and numeracy learning in primary schools. The researcher acts as an observer in the learning process. The type of research used is a case study. The research location is SDN Selebung 2. This school was chosen as the research subject because it is one of the primary schools providing inclusive education in the Central Lombok district. The main aspects observed during the research were how teachers designed learning models, student responses to the use of learning models, and the implications of using learning models on students' literacy and numeracy abilities. Each aspect requires its way of collecting data, as shown in Table 1.

Table 1. Data collection techniques

No	Observed aspects	Data collection technique
1	Learning model design	Observation and interview
2	Students' literacy and numeracy abilities	Documentation
3	Student response	Questionnaire

The research sample was 39 students who were randomly selected from grade 1 to grade 6. Students with special needs and students had the same opportunity to be the research sample. In taking the sample, the researcher did not make a special category to distinguish the number of students with special needs and normal students, because, in this study, we will look for learning designs that can apply to all students. The instruments used in data collection were observation guidelines, interview guidelines, questionnaires, and field notes. There are two kinds of data analysis techniques in this

study. Questionnaire data were analyzed using descriptive statistics by tabulating the data and calculating percentages. Data from observations and interviews were analyzed by grouping the data according to the research objectives.

RESULTS AND DISCUSSION

A. Design of inclusive literacy and numeracy learning

Based on the results of observations and interviews, it can be seen that in designing inclusive literacy and numeracy learning the teacher uses the TaRL (Teaching at the Right Level) learning approach. The first stage of learning in the TaRL model is the initial assessment. The initial assessment aims to determine the students' initial abilities. The initial assessment also affects the determination of students' literacy and numeracy levels in learning. This assessment is important so that teachers can provide appropriate treatment according to students' abilities during learning. The second step is grouping students. After the assessment, the next step is grouping students. Students are grouped into small groups according to their ability level. In this learning, students are no longer grouped according to regular classes, but are grouped according to their literacy and numeracy abilities. In the literacy aspect, students are grouped into five groups, namely beginner level, letter level, word level, paragraph level, and story level. In the literacy aspect, students are also grouped into five levels, namely: beginner level, single-digit level, double-digit level, three-digit level, and four-digit level. The third step is level-appropriate learning. After students are grouped according to their ability level, the next step is to provide learning services according to each student's ability level. Each study group gets special learning services from one teacher. The

treatment and learning method given by the teacher to each study group is different, this is adjusted to the literacy and numeracy abilities of the students in that group. One teacher is responsible for providing learning services to a study group. After two weeks of learning, the teacher together conducts an assessment to determine the development of students' abilities. After the assessment stage, the two teachers regrouped again according to the progress achieved by the students. This step continues to be repeated until students reach the highest level in literacy and numeracy.

B. Description of students' literacy and numeracy ability levels

Based on the results of the analysis of the student learning outcomes document, it can be seen the differences in students' literacy and numeracy abilities before and after the application of learning based on students' ability levels. The following shows the development of students' literacy and numeracy skills in level-based learning:

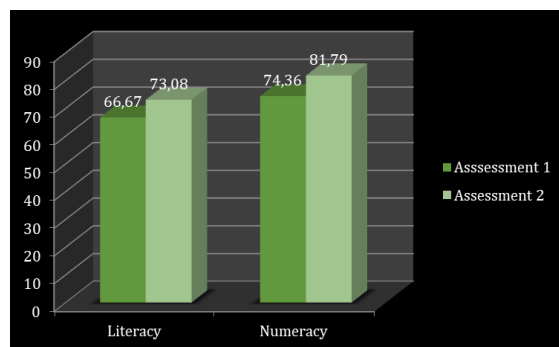


Figure 1. Descriptive statistics of students' literacy and numeracy skills

The diagram in Figure 1 shows the differences in student abilities. Assessment 1 is the ability of students before learning, while assessment 2 is the ability of students after learning. The average literacy ability of students before learning is 66.67 while after learning is 73.08. In the field of numeracy, the students' initial ability is 74.36, while the ability after

learning is 81.79. The average difference in student learning outcomes in the literacy field is 6.41, while in the numeracy aspect it is 7.43. These data indicate that there is an increase in students' ability in literacy and numeracy after learning.

C. Description of student responses to level-based learning

To measure student responses in learning, six indicators are used, including student interest in learning, ease of students in understanding learning material, student motivation in learning, student learning activity, ability to cooperate between students, and students' ability to interact with students from different classes. The six indicators were developed into twenty questionnaire items. Each question provides answer choices in the form of a scale. Number 1 indicates that students strongly disagree with the implementation of the learning model, number 2 indicates agree, number 3 indicates neutral, number 4 means agree and number 5 means strongly agree. After the data is collected, then the average student's perception of the learning given is carried out. The average student response can be seen in Table 2.

Table 2. The average score of student responses to the application of the TaRl learning model:

Learning aspect	Average Score	Category
Literacy	4.34	Agree
Numeracy	4.34	Agree

Based on table 1, it can be seen that the average student agrees with the application of the TaRl learning model in literacy and numeracy activities at school. If the percentage is done, the student response in literacy learning is 86.82% while in numeracy learning it is 88.62%. This data shows that students give a good

response to the application of the learning model.

The increase in students' abilities in terms of literacy and numeracy can be seen from the increase in the level of students' abilities. This can be seen in the

decreasing number of students at the lower level and the increasing number of students at the high level. The following shows the number of students at each literacy and numeracy level before and after level-based learning.

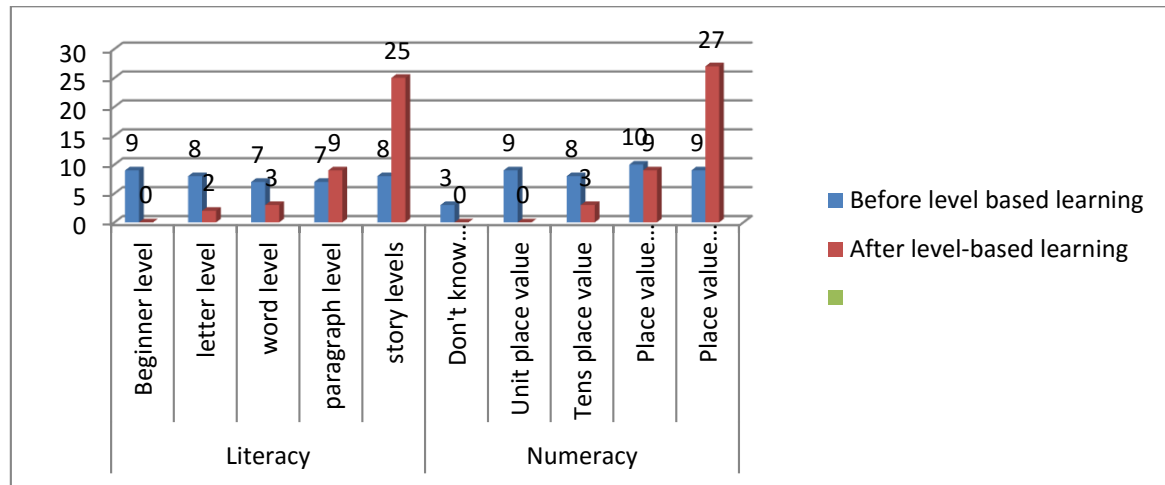


Figure 2. Comparison of the number of students before and after level-based learning

The diagram in figure 2 shows that the number of students after receiving level-based learning has increased in level. Before getting literacy learning was based on the level of students who were at the beginner level of nine students, letter level eight students, word-level seven students, and story level as many as eight students. After getting student-level-based literacy learning, there are no more students who are at the beginner level. They have increased to the letter level with two students, word-level three students, paragraph-level nine students, and story-level twenty-five students. The more students who are at the story level, the more students are fluent in reading. The diagram in figure 2 also shows that students' numeracy skills have increased. Before getting level-based learning, there were three students at the number recognition level, nine students at the one-digit level, eight students at the double-digit level, tens students at the 3-digit level, and nine students at the 4-digit level. After getting level-based

numeracy learning, there are no more students who do not know numbers or who are at the 1-digit level. Students have experienced improvement by recognizing the value of tens, hundreds to thousands. Even students who can recognize the value of thousands and perform basic arithmetic operations at the four-digit level have increased dramatically with a total of twenty-seven students.

Based on the description in the research results section, it can be seen that the TaRL (Teaching at the Right Level) learning used by the teacher in the learning process has reflected an inclusive form of learning. This is because each student can learn according to their abilities. Teachers can ensure that students receive fair learning services. Students no longer learn according to their age group but learn according to their abilities. The application of this level-based learning has been successfully implemented in India. Some literacy volunteers work with the government to combat illiteracy. Through training and mentoring these literacy

volunteers have succeeded in improving students' reading skills with a level-based learning approach (Banerjee et al., 2016). This grouping greatly facilitates the teacher in providing tutoring for students. From the student's point of view, grouping is also very useful because students can learn according to their level. This is under one of the principles of inclusive education to facilitate student diversity.

The results of the study also found that the application of the TaRL learning model was able to improve student's abilities in literacy and numeracy. When compared with students' initial abilities, there was an increase in literacy and numeracy skills after learning. The successful application of the TaRL model has been studied by researchers in several other countries. One study stated that using the TaRL model students' diverse abilities can be improved in a relatively short time. In this study, it only took 50 days for students to read fluently (Lakhsman, 2019). This shows that the level-based learning approach is indeed effective in improving the literacy and numeracy abilities of various students. A significant increase occurred in the numeracy aspect. This is understandable because literacy requires habituation and follow-up. In addition, numeracy learning media in schools are more complete and easy to find when compared to literacy media. One of the reliable literacy learning media is storybooks, but teachers have limitations in choosing stories that are interesting for students. This has an impact on the learning process. On average, students are more enthusiastic about learning numeracy when compared to literacy.

Student response to the implementation of level-based learning is quite positive. This can be seen from the number of students who agree with the implementation of level-based learning. Through the

application of this learning, students become more enthusiastic about learning, students find it easier to understand learning materials, students are more active in learning, and can interact with friends from different classes. Of the several indicators used to measure student responses, the aspects of cooperation have not been met properly. The ability to work together between high and low-grade students is still lacking. High-grade students tend to feel disadvantaged when studying with lower-grade students. The implication is that students tend to be in groups with their classmates, not wanting to mingle with friends from different classes. This aspect of the ability to cooperate needs special attention from the teacher. Teachers need to improve learning designs that can stimulate collaboration between students. One solution that can be done by teachers is to combine cooperative learning strategies with level-based learning. Cooperative learning can improve communication and collaboration skills among students (Jurkowski & Hänze, 2015). The hope is that students are accustomed to interacting and collaborating with anyone under the demands of 21st-century skills.

CONCLUSION

Based on the description of the results and discussion, it can be seen that the design of inclusive literacy and numeracy learning is learning based on students' ability levels. The learning model approach used is teaching at the right level (TaRL). The learning stages in the TaRL model are initial assessment, grouping, and learning according to level. TaRL learning design is suitable to be applied to address the diversity of students' abilities. Each student can learn according to his ability level. In terms of effectiveness, this learning model is quite successful in improving

students' literacy and numeracy skills. In general, inclusive literacy and numeracy learning has been successful. The average student gave a good response to the application of the level-based learning model. One aspect that needs to be improved is the aspect of student cooperation, therefore teachers are advised to integrate learning designs that can improve the ability to cooperate between students.

DAFTAR PUSTAKA

- Banerjee, A., Banerji, R., Berry, J., Duflo, E., Kannan, H., Mukherji, S., Shotland, M., & Walton, M. (2016). *Mainstreaming An Effective Intervention: Evidence From Randomized Evaluations Of 'Teaching At The Right Level' In India* (No. 22746). <http://www.nber.org/papers/w22746>
- Brooks, C., Kizilcec, R. F., & Dowell, N. (2020). Designing Inclusive Learning Environments. *Proceedings of the Seventh ACM Conference on Learning @ Scale*, 225–228. <https://doi.org/10.1145/3386527.3405935>
- Florian, L. (2014). What counts as evidence of inclusive education? *European Journal of Special Needs Education*, 29(3), 286–294. <https://doi.org/10.1080/08856257.2014.933551>
- Forlin, C., & Chambers, D. (2017). Catering for Diversity: Including Learners with Different Abilities and Needs in Regular Classrooms. In *Education in the Asia-Pacific Region: Issues, Concerns and Prospects* (pp. 555–571). Springer, Singapore. https://doi.org/10.1007/978-981-10-3654-5_33
- González- Valenzuela, M., López- Montiel, D., Cazorla- Granados, O., & González- Mesa, E. (2020). Type of delivery and reading, writing, and arithmetic learning in twin births. *Developmental Psychobiology*, 62(4), 484–495. <https://doi.org/10.1002/dev.21932>
- Greene, J. P. (2000). *The Cost of Remedial Education: How Much Michigan Pays When Students Fail To Learn Basic Skills. Estimates of the Annual Economic Cost to Businesses, Colleges, and Universities To Counteract Employees' and Students' Lack of Basic Reading, Writing, and Ari.*
- Hitt, F., Saboya, M., & Cortés, C. (2017). Task Design in a Paper and Pencil and Technological Environment to Promote Inclusive Learning: An Example with Polygonal Numbers. In *Advances in Mathematics Education* (pp. 57–74). Springer, Cham. https://doi.org/10.1007/978-3-319-51380-5_4
- Jurkowski, S., & Hänze, M. (2015). How to increase the benefits of cooperation: Effects of training in transactive communication on cooperative learning. *British Journal of Educational Psychology*, 85(3), 357–371. <https://doi.org/10.1111/bjep.12077>
- Lakhsman, S. (2019). Improving reading and arithmetic outcomes at Pratham 's approach to teaching and learning Improving reading and arithmetic outcomes at scale: Teaching at the Right Level (TaRL), Pratham ' s approach to teaching and learning. *Revue Internationale d'éducation de Sèvres*, 1(June), 1–6.
- Mauliyda, M. A., Erfan, M., & Hidayati, V. R. (2021). Analisis Situasi Pembelajaran Selama Pandemi Covid-19 Di Sdn Senurus: Kemungkinan Terjadinya Learning Loss. *Journal of Elementary Education*, 04(03), 328–336.
- Moriña, A. (2017). Inclusive education in higher education: challenges and opportunities. *European Journal of Special Needs Education*, 32(1), 3–17. <https://doi.org/10.1080/08856257.2016.1254964>
- Navarro, S. B., Zervas, P., Gesa, R. F., & Sampson, D. G. (2016). Developing Teachers' Competences for Designing Inclusive Learning Experiences. *Journal of Educational Technology & Society*, 19(1), 17–27. <http://www.jstor.org/stable/jeductechsociety.19.1.17>

- Rohl, M., & Greaves, D. (2005). How are pre- service teachers in Australia being prepared for teaching literacy and numeracy to a diverse range of students? *Australian Journal of Learning Disabilities*, 10(1), 3–8. <https://doi.org/10.1080/19404150509546780>
- Sulistyaningsih, S., Sulam, K., Syakur, A., & Musyarofah, L. (2019). The Implementation Of 21 St Century Skills As The New Learning Paradigm To The Result Of Student's Career And Life Skills. *Magister Scientiae*, 46, 228–237. <https://doi.org/10.33508/mgs.v2i46.2229>