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Alternative teaching materials for distance learning for student with special needs

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Abstract: This research aimed at describing teachers' needs in developing distance learning material from the aspect of physical forms, teaching material delivery, and obstacles faced by teachers. Through a survey of 115 special education teachers in Yogyakarta, The data were obtained through an open questionnaire and analyzed using descriptive quantitative approach. The result shows that alternative teaching materials needed were in the form of printed, audio, and electronic modules. Modules contained daily life activities is aimed to increase the independence of the students. The scope that is needed is an understanding of the concept in the cognitive aspect. Teachers need modules that can be studied independently by students with special needs. The presentation of the material that is most needed is in the form of videos and animated images as aids to make it easier to understand the material. Module display is considered to have more varied and striking color combinations. The obstacles experienced by the teachers were due to the difficulty of identifying the various abilities of the students.

Keywords: *distance learning, special needs students, alternative teaching materials*

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INTRODUCTION

Teachers have an essential role in facilitating teaching material so that students can learn. Teachers must possess an in-depth understanding of designing and presenting the teaching materials in ways and strategies so that students can understand and achieve the learning objective (Eggen & Kauchak, 2012). In special education, teachers must be able to create effective learning by helping their students learn and learn easier (Polloway & Patton, 1993). Furthermore, learning for students with special needs also requires variation in the learning environment management, not only limited to schools but also outside of school, institution, or distance learning. In addition to students' condition, another matter that underlies distance learning is the condition of disaster-prone areas and the Covid-19 pandemic (Heriyanto, Prasetyawan, & Krismayani, 2021). The pandemic quickly causes many emergencies in various fields, including education (Grek & Landri, 2021). In response to the pandemic era, the Indonesian Educational Policy implemented distance learning for every educational institution, including special education. This policy is stated in the Circular Letter of the Ministry of Education and Culture of the Republic of Indonesia Number 4 of 2020 about the Implementation of Educational Policies at the Time of Emergency for the Spread of Coronavirus Disease (Covid 19). The policy implementation requires teachers to change their teaching materials, from an in-class face-to-face presentation to flexible

online learning for students' independent learning. This fact becomes a challenge for special education teachers due to three factors, namely: the characteristic heterogeneity of students with special needs, teachers' reliance on teaching materials provided by the Ministry so that they are not accustomed to developing independent teaching materials, and parents who are accustomed to fully rely on school for their children's education. The change in the learning system also changes special educators' methods in providing supports and services for students with special needs (Hurwitz, Garman-McClaine, & Carlock, 2021).

The characteristics of students with special needs concerning the type include intellectual and developmental disability, learning disorder, attention-deficit and hyperactivity, emotional/behavioral disorder, communication disorder, hearing loss and hearing disorder, blindness and low vision, traumatic brain damage, autism spectrum disorder, disability, and intellectual giftedness (Hallahan, Kauffman, & Pullen, 2019). Teachers are required to understand students' development and recognize characteristic-matching learning for each student as a result of their disabilities and special needs. In-depth understandings of learning and students provide a foundation for special education teachers to identify students' learning requirements. As a result, instructional strategies can be chosen to deal with each student's strengths and needs. Each type requires its learning requirement. However, the difference in the teaching material does not lie in its type, but rather the vastness, the depth of the material, and the method to present it.

As another term for teaching and learning materials, teaching material encompasses every competency that students must acquire including knowledge, skills, and attitudes. Teaching materials include textbooks, video and audiotapes, computer software, and other visual aids (Kitao & Kitao, 2009; Fitriah, 2015; Yaumi, 2016). Special education teachers can make use of the internet as a source of teaching material and an interactive opportunity for students with special needs and their parents (Bull *et al*., 1999). Dick, Carey, and Carey (2015) argue that teaching materials are any form of writing, media that can facilitate teachers, and everything that can deliver the content of teaching material to facilitate students' mastery of the subject. Accessible teaching materials are required by individuals with special needs to make sure that they have an equal chance in the involvement of offline and online learning environments (McGinty, 2021). According to Bates (1997), teaching materials used in distance learning encourage the possibility of learning interaction anywhere and anytime (time and place flexibility). In addition, distance learning can open access to education for individuals who were previously unable to access it (Ben-Jacob, 1998). The development of appropriate teaching materials for students with special needs for distance learning determines students' ease of learning and optimal learning outcome achievement. In addition, it eases families to accompany their children in learning. Some facts show that special education teachers still have problems developing teaching materials. Research by Ishartiwi *et al*. (2012) shows that teachers' difficulty in developing online teaching material and parents' difficulty to accompany their children at home occur due to the limitation of technology and the mastery of teaching materials.

Another issue regarding teachers' obstacles to distance learning during the Covid-19 pandemic shows that teachers struggle to create varied learning materials to ease students when learning at home. As a result, teachers resort to creating student worksheets. Other issues explained that obstacles to home learning for students with intellectual disabilities occurred due to several factors, which resulted in the requirement for supportive online learning media

(Widyastuti, 2020). Obstacles faced by teachers and parents come from the aspects of teaching material developments, learning material implementation, and learning media. Teachers face the difficulty to provide teaching materials that are appropriate to the different characteristics and individual experiences of each student (Attr, 2012). This difficulty occurs due to the lack of knowledge to adapt the already accessible printed teaching material to online learning for students with special needs (Supratiwi, Yusuf, & Anggarani, 2021). Another concern that arises is the presence of teachers to monitor the learning process and the learning outcomes, which results in the lack of feedback on students' understanding of the subject and students' development monitoring. As a result, learning ineffectiveness reaches 86% since teachers only use the Whatsapp platform to deliver assignments and learning materials (Supriyadi & Wiliyanto, 2021). In addition, 84% of respondents experience certain difficulties in self-organization, time planning, and independent teaching material management (Denisova, Lekhanova, & Gudina, 2020). Teachers and parents face a struggle in performing distance learning for students with special needs due to the vast scope of subject matter that needs to be delivered and the requirement for learning tools that are bought in shopping centers, resulting in the concerns of getting infected by Covid-19 when shopping (Dewi, 2020). Problems with distance learning for students with special needs related to teaching material availability shows the gap in the use of technology in learning. This problem is the result of the lack of training on tools and digital technology and the low number of teachers who achieve training in distance learning implementation (Hirsch & McDaniel, 2021).

The previously presented case studies and research results illustrate that teachers face difficulty to develop teaching material for distance learning. In addition, teachers' perception of distance learning is identical to the implementation of digital technology. However, not all families of students with special needs have that facility. Therefore, special education teachers must be able to make use of other resources as alternative teaching materials for distance learning, which can be performed by students and closely related to their everyday life. According to (Green, 2018), teachers must be able to use a wide variety of strategy, technique, and approach that, even though not involving technology, are effective to achieve the learning outcomes. The learning process can involve therapists, parents, and other aspects that attract students' attention and make them happy. In designing resources, (Torres-Carrión *et al*., 2019) suggest choosing resources with minimum complexity, accessible, and easy to use to improve student's learning outcomes. Based on those researches and issues, this research article examines special education teachers' needs in designing teaching materials for distance learning. The focus of the discussion encompasses three aspects, namely: What is the best form of teaching materials that are suitable and appropriate for students with special needs for distance learning?; In what ways that materials to be presented?; and What are the obstacles faced by special school teachers in teaching and supporting students with special needs during distance learning? The findings of those three focuses are fruitful to develop special education teachers' competency in managing distance learning and appropriate teaching material to improve learning-service quality for students with special needs.

METHODS

This study was survey research that was used for descriptive purposes with the unit of analysis of school institutions. This research revealed the fact about the need for teaching

materials in special schools for distance learning. This study provided an overview of the need for teaching materials in terms of form, material, and material organizing.

The population in this study consisted all special schools (SLB) in the Special Region of Yogyakarta and samples were taken purposively according to the data in 80 schools, both public and private schools. The research subjects were 115 respondents determined by the population. They were all school principals and also a proportional sample of the subject teachers, and parents who have special needs children based on the research objectives. Each school had two teachers and three parents and one student with a special need who can communicate receptively and expressively. The sample was determined using a proportional technique for an in-depth study, based on the case study of special school management from the results of the questionnaire, regional conditions, and types of special school (SLB), with a minimum sample of five special schools (SLB) from each district/city.

This study collected the data through questionnaires and a questionnaire with open-ended questions as enrichment. Questionnaires to collect data about form, aspect, scope and type of presentation the materials and questionnaires with open-ended question to collect data about the obstacles faced during the pandemic. The instrument was developed by modifying the assessment of assistive technology (Prastowo, 2021; Robitaille, 2010; Frederic, 2012) in the aspect of teaching materials. The scope of each instrument was adjusted to the authorities and responsibilities in schools in services.

The data were analyzed using quantitative and qualitative descriptive statistics. Considering the types, sources of data, and variations in data, it was presented in percentages, while the opinions of respondents were grouped according to the problem category, then specific conclusions were drawn as the overview of the conditions. The data analysis was presented in the form of tables and graphs and a description of the explanation of the results.

FINDINGS AND DISCUSSION

This study showed the need for teaching materials in distance learning for students with special needs. The needs covered several aspects, like form, material, scope, presentation of materials, display for teaching materials, and obstacles faced during the distance learning.

In this study, respondents were asked to choose the form of teaching materials needed for distance learning for students with special needs. The percentage of each form of teaching materials is illustrated in Table 1.

Table 1
Forms of teaching materials needed

No.	Forms	Score	Percentage (%)
1	Book	8	7
2	Module	100	87
3	Worksheet	2	2
4	Application	5	4

Based on Table 1, it is known that the most needed form of teaching materials is the module, at 87%. While other forms such as books, applications, and student worksheets

(LKS) are at the bottom after the module with percentages of 7, 4, and 2%. The modules are expected to suit the characteristics of students with special needs, like print, audio, and electronic-based forms. After the respondents were asked to choose the form of teaching materials for distance learning, then the respondents were asked to choose the expected materials in the module. The results of the selection of materials that are expected to be in the module are illustrated in Table 2.

Table 2
The materials in the module

No	Aspects	Score	Percentage (%)
1	Language	3	2,61
2	Communication	2	1,73
3	Social emotion	3	2,61
4	Daily Activity	107	93,81

Based on Table 2, it is known that the most material needed is in the aspect of daily living activities, at 93.81%. Other aspects such as language, social emotion, and communication are in the bottom line after daily living activities, at 2.61%, 2.61%, and 1.73%. This is because distance learning limits the role of teachers to assist students with special needs in achieving independence. Parents do not have sufficient resources in guiding students with special needs to carry out daily activities independently.

The respondent chooses the scope of the material in the module, whether it contains facts, concepts, principles, or procedures. The results of selecting the scope of material in the module are illustrated in Table 3.

Table 3
Scope of material

No.	Aspect	Score	Percentage (%)
1	Fact	2	1.73
2	Concept	107	93.81
3	Principle	3	2.61
4	Procedure	3	2.61

Based on Table 3, it is known that the concept is considered difficult and needed (93.81%). Other aspects such as principles, procedures, and facts are on the bottom after the concept, at 2.61%, 2.61%, and 1.73%. The concept is the core of understanding students with special needs. Mastery of concept is marked by mastery learning. Having difficulties in understanding concepts in students with special needs is because there is no interaction between teachers and special needs students and the limited media used when learning at home.

In addition, respondents also chose aspects of material presentation that were interesting for students with special needs. The results from respondents related to the aspect of presenting the material in the module are illustrated in Table 4.

Table 4
Presentation of materials

No.	Aspect	Score	Percentage (%)
1	Video	15	34.88
2	Voice note	2	4.65
3	Pictures	14	32.56
4	Activities/Practice	7	16.28
5	Teaching aids	2	4.65
6	Fairy tale	1	2.33
7	Quiz	1	2.33
8	Simple sentences	1	2.33

Table 4 shows that the materials presented using videos and pictures are the most attractive form for students with special needs and it achieves the highest percentages, at 34.88% and 32.56%. In addition, the material presented with physical activity or practice placed after videos and pictures at 16.28%. The material presented using voice notes and teaching aids obtained the same percentage at 4.65%. The presentation of material that has the lowest percentage is presenting material in the form of fairy tales, quizzes, and simple sentences with the same percentage at 2.33%.

In addition to presenting the material in the module, respondents also conveyed the module's display to attract special needs students' interests. The results related to the display presented in the module selected by the respondents are illustrated in Table 5.

Table 5
Module display

No.	Aspect	Score	Percentage (%)
1	Video	2	4.35
2	Picture	3	6.52
3	Game	1	2.17
4	Striking colors	11	23.91
5	Varying colors	15	32.61
6	Bright colors	7	15.22
7	Pastel colors	2	4.35
8	Attractive colors	5	10.87

Table 5 shows that the modules displayed using varied and striking colors are more attractive to students with special needs, at 32.61 and 23.91. The displays of bright and attractive colors were chosen by respondents with a percentage at 15.22 and 10.87. The modules display with pictures and videos can attract students with special needs at 6.52 and 4.35. Some respondents chose pastel colors to be used in the module with a percentage of 4.35. Finally, the display of modules using games has the lowest percentage, at 2.17.

Furthermore, respondents conveyed the obstacles faced during distance learning. The results related to distance learning constraints are illustrated in Table 6.

Table 6
Obstacles faced during distance learning

No.	Aspect	Score	Percentage (%)
1	Teacher's ability in making video	3	5.00
2	Limited media/mobile phone	9	15.00
3	Mobile phone specification	3	5.00
4	Laptop specification	1	1.67
5	Internet connection	6	10.00
6	Limited quota as low economic status	2	3.33
7	Parents having many activities	5	8.33
8	Unresponsive parents	6	10.00
9	Unable to read and write Braille	2	3.33
10	Diverse students' conditions	14	23.33
11	Limited teaching materials and media	9	15.00

Table 6 shows that the biggest obstacle to distance learning is the diverse conditions of students so that not all students can get services that suit their needs. The percentage is at 23.33. In the second place, there are limited media/mobile phones as well as limited teaching materials and media which are obstacles in distance learning with a percentage of 15. The internet connection and unresponsive parents get 10 responses. In addition, parents also have other activities such as work so they cannot accompany students with special needs while studying. This is an obstacle in distance learning with a percentage of 8.33. The ability of teachers to make videos and specifications for mobile phones has 5. Parents who have low economic status so that they are only able to buy a cheap internet quota and students who are not able to read/write Braille are at 3.33. Finally, the specifications of the laptop used in learning become an obstacle in distance learning with the lowest percentage, at 1.67.

Modules are currently the highest need for teaching materials because of independent instruction, teachers act as facilitators and students learn independently by using instructional materials specially designed by educational institutions (Suparman, 2014). This is related to the understanding of the module according to Hamalik (2009) that the module is an integral part of the curriculum as determined in the Outlines of the Teaching Program. The teaching program is an embodiment in the form of a curriculum document, one part of which contains various basic competencies. The content of the module contains content that students need to learn in printed form and is facilitated by the teacher to achieve the objectives, (Opara & Oguzor; Dick et al., 2009). Wadjadi (2004) states that the module contains instructional objectives, presents the material with good structure. The scopes that need to be included in the module are learning instructions for teachers and students, competencies to be achieved, supporting information, worksheet exercises, and evaluations (Prastowo, 2012).

The printed-form module is still a priority because the research results of Ampa, Rasyid, Rahman, Haryanto, and Basri (2013) show that students and teachers need 75 of printed teaching materials, 73 video, 58 audio, and 18 pictures. In addition, the module also has the following principles. *First*, individualized learning materials: i.e. instructional materials are designed according to the abilities and characteristics of those who are studying them. *Second*, flexible and mobile learning materials; i.e. instructional materials can be studied anytime, anywhere, in silence. or move. *Third*, communicative and interactive learning materials; i.e. instructional materials designed by the principle of effective communication involving the process of interaction between teachers, students, and parents. The visual module is teaching material that can be read, understood through the sense of sight, including printed and non-printed media. Printed media that can be used include handouts, textbooks, modules, student worksheets, brochures. Non-printed media that can be used is miniature. The audio module is a teaching material that can be understood with the sense of hearing. Examples of teaching materials that include audio are cassettes, radio, vinyl records, and compact discs (Majid, 2008).

The modules are arranged in a systematic and structured way to make it easy to learn and to build the truth of a concept of knowledge as a whole. Integrity can be seen in programs that are arranged in a certain form designed for successful learning (Susilana & Riyana, 2008). For having the structured material and program, the module needs to be adjusted to the type of module.

Delivering material in the concept aspect becomes difficult because the concept is an abstraction of the relationship of a group of objects that have the characteristics to determine the label or name of an object (Dick et al., 2015). The concept is related to daily life because each object has a name and characteristic so that each individual can carry out regular activities. The basic concept is an attribute as a feature of an object that will make it easier for individuals to recognize and distinguish objects. Students with special needs have the right to be able to access an environment that is available to all children. The environment is not only limited to classrooms and public school, but also it can be recreational activities, activities of daily activities such as public transportation, access to schools, and vocational and post-secondary school context.

Mastery of concepts, including knowledge competence, is in the cognitive area, in the form of the ability to keep information in the mind (Sadiman, Rahardjo, Haryono, & Rahardjito, 2011). Examples of basic concept material in learning are object names, shapes, characteristics, functions about objects in nature and social environment. Those are stated in the material content of each subject, in the form of printed teaching materials.

The modules used for teaching concepts to students with special needs should use the stages according to Santrock (2009), as follows: define the concept, clarify terms in the definition, give examples to illustrate the key features or characteristics, provide additional examples. Mulyati (2005) argues that 2 factors can improve students' understanding of concepts, as follows: the material must have logical meaning and relevant ideas must exist in the student's cognitive structure. This opinion directs the teacher to provide material that is logical and meaningful for students' lives. In addition, supporting examples or providing knowledge of information must suit the cognitive structure of students.

Appropriate examples and activities to daily life are in the module through organizational structure and repetition as cognitive control. Learning psychology theory according to Gagne

has 9 instructional conditions (Sugihartono, Fathiyah, Harahap, Setiawati, & Nurhayati, 2007) namely, gaining intention, informing learners of objectives, stimulating recall of prerequisite learning, presenting new material, providing guidance, eliciting performance, providing feedback about correctness, assessing performance, and increasing the long term memory.

The presentation of the message content and the appearance of the module are adapted to the learning modalities for students with special needs. Students with intellectual disabilities, or who experience obstacles in thinking because their intelligence is below average, mental disabilities, or Down syndrome need assistive devices that can support and assist them in learning and carrying out daily activities that are modified and adapted to their conditions as well as their needs. It should be known that students with intellectual disabilities are individuals who experience intelligence barriers or intelligence abilities below normal. They have a lack understanding of conceptual knowledge, practical nature, and have difficulty socializing. The impact is they are unable to participate in general school programs. However, students with intellectual disabilities can still develop functional abilities like reading, writing, arithmetic, adapting, and simple skills (Efendi, 2008; Barker, 2014).

Characteristics shown in intellectual disabilities students are difficulty in processing conceptual knowledge in the cognitive area. The use of language is low because of the limited intelligence. They also have difficulty adjusting because they have unstable social and emotional abilities. The development of social skills for students with intellectual disabilities needs to be given so that students can adapt and be accepted by the environment (Kirk, Gallagher, & Coleman 2015). Even though their characters become the constraint in their social skills, they can learn problem-solving strategies to develop their independence with the following conditions: find the problem, discover as many options as possible (option building), choose the option you think is best (best option), act on the choice (action), judge the effectiveness of the choice (success or no success) (Kirk, Gallagher, & Coleman, 2015).

Audio modules are commonly used for students with visual impairments. A child with visual impairment is a person who experiences visual barriers by checking the sharpness of the visual distance and the degree of seeing and cannot use properly even though he/she has used visual aid (Gargiulo, 2006; Eileen & Glynnis, 2012). This statement can be interpreted that the visually impaired are severe enough to be unable to read printed text, demanding that they receive an education using Braille (a system that shows the representation of letters of the alphabet) and other materials by touch or sound. The opinion of Eileen and Glynis emphasizes that blind students get more exposure to Braille or other materials by touch or sound.

The biggest obstacle found was that the teacher had difficulty compiling the module according to the teacher's needs because of the diversity of students in one class. Teachers' difficulties in identifying student barriers include teacher competency skills. (Eyo & Nkanga, 2020) found that teacher competence in identifying difficulties faced by students was related to educational qualification background and professional development. The educational qualification background has an impact on the understanding of students as learning subjects with special characteristics they have. Teacher professionalism is obtained from the experience of teaching special needs students. The choice of color in the module menu is a big contribution in terms of appearance. Color affects attention, behavior, and student achievement (Gaines & Curry, 2011). The choice of the use of colors needs to pay attention to each color character to evoke the mood, attention, and aggressiveness

of students. Object recognition theory should consider the role of information color and outline its role in object recognition (Bramão, Reis, Petersson, & Faísca, 2011). The use of color is adjusted to the object and information in introducing the object. Color information facilitates the students to distinguish recognition of color and non-color as a diagnostic (Bramão et al., 2011).

Various and striking color presentations are important for students with intellectual disabilities and autism. Research results (Wilkinson & McIlvane, 2013) showed a significant fast response when symbols shared with colors compared to symbols without colors. These results show that a simple change to the symbol arrangement seems to make a difference as a guide for students in distinguishing objects. The findings provide evidence that visual concepts related to perceptual characteristics of displays may be important features for consideration of display constructs of information. Another benefit of using color is as a differentiator for the same pattern or form of animation but used as information on a different concept (Wilkinson & McIlvane, 2013).

An effective system for increasing understanding and correctness of concepts in students with intellectual disabilities and autism is pictures and videos, but a video is more effective (van Laarhoven, Kraus, Karpman, Nizzi, & Valentino 2010). Besides pictures and videos, the teacher's capability in considering the efficiency of instructional methods is very important, especially concerning the level of student development and the teacher's willingness to prepare teaching materials. Park, Bouck, and Duenas (2019) found the results of the study that it will more effective if the actors in the videos are students or their classmates. Kellems, Frandsen, Cardon, Knight, and Andersen (2018) found that there was no significant difference between the use of static images and video prompting in learning for autism. It emphasizes individual differences, especially in the material activities of daily life. Although there is no difference between static images and video prompting, teachers need to pay attention to the use of animation as an indicator of cognitive flexibility in storing material in long-term memory. (Fan, Zhan, Qing, Gao, & Wang, 2021) found the results of the study about the interaction between animation, age factor, and its relationship with working memory. The use of animation has more impact on students aged 4 to 7, the choice of animation needs to involve memory flexibility which is associated with students' fantasy. Baglama, Yucesoy, and Yikmis (2018) found the results that the use of animation was based on computer-assisted assistive technology, and daily activities to make students more independent as the main material. Animation with assistive technology provides opportunities for students with special needs to develop themselves more easily, especially in communication skills so that they can acquire social skills.

The material for daily life activities becomes the highest requirement as material content that needs to be developed in the module. This need is in line with the results of Park et al. (2019) research that stated the results of the study that the use of video self-modeling and video prompting continued to adjust the target skills, various skills including daily/life skills, leisure skills, academic skills, and work skills were taught and resulted in positive results; individuals with intellectual disabilities received the most in the areas of activities of daily living (51).

This study is limited to the material aspect, presentation of material, appearance, and obstacles experienced by the teacher. Researchers have not searched for data relating to the needs of each student with a special need at every age and level of education. Researchers

did not search for data related to teacher training needs to develop modules because they focus on the content of the module, not the skills of the teacher.

Future researchers can conduct a need assessment for each level of education for students with special needs and the need for teacher training to develop modules. The next researcher can develop modules and try out the modules of daily activities to the students with special needs.

CONCLUSION

Alternative teaching materials needed in distance learning are in the form of printed, audio, and electronic modules. The material contained in the module is daily life activities to increase the independence of special needs students. The scope that is needed is an understanding of the concept in the cognitive aspect. Teachers need modules that can be studied independently by students with special needs. The presentation of the material that is most needed is in the form of videos and animated images as aids to make it easier to understand the material. Module display is considered to have more varied and striking color combinations. The obstacles that have been experienced by teachers in compiling teaching materials are due to the difficulty of identifying the various abilities of students.

REFERENCES

Allen, K. E., & Cowdery, G. E. (2012). The exceptional child: Inclusion in early childhood educatio. Wadsworth Cengage Learning.

Ampa, A. T., Rasyid, M. A., Rahman, A., Haryanto, D., & Basri, M. (2013). The students' needs in developing learning materials for speaking skills in Indonesia. Journal of education and practice, 4(17), 171-178.

Attr, A. K. (2012). Distance education: Problems and solutions. *International Journal of Behavioral Social and Movement Sciences*, *1*(04), 42-58.

Baglama, B., Yucesoy, Y., & Yikmis, A. (2018). Using animation as a means of enhancing learning of individuals with special needs. *TEM Journal*, *7*(3), 670-677. https://doi.org/10.18421/TEM73-26.

Barker, C. (2014). Kamus Kajian Budaya. In *Kanisius* (Vol. 19, Issue 56). Kanisius.

Bates, A. W. (Tony). (1997). The impact of technological change on open and distance learning. *Distance Education*, *18*(1), 93-109. https://doi.org/10.1080/0158791970180108.

Ben-Jacob, E., Cohen, I., & Gutnick, D. L. (1998). Cooperative organization of bacterial colonies: From genotype to morphotype. *Annual Review Microbiology*, *52*, 779-806. http://dx.doi.org/10.1146/annurev.micro.52.1.779.

Bramão, I., Reis, A., Petersson, K. M., & Faísca, L. (2011). The role of color information on object recognition: A review and meta-analysis. *Acta Psychologica*, *138*(1), 244-253. https://doi.org/10.1016/j.actpsy.2011.06.010.

Bull, R., Johnston, R. S., & Roy, J. A. (1999). Exploring the roles of the visual-spatial sketch pad andcentral executive in children's arithmetical skills: Views from cognition and developmentalneuropsychology. *Developmental Neuropsychology*, *15*, 421-442.

Denisova, O. A., Lekhanova, O. L., & Gudina, T. V. (2020). Problems of distance learning for students with disabilities in a pandemic. *SHS Web of Conferences*, *87*, 00044. https://doi.org/10.1051/shsconf/20208700044.

Dewi, N. P. (2020). Problematika pembelajaran untuk anak berkebutuhan khusus pada masa pandemi Covid-19 di sekolah. *JPI (Jurnal Pendidikan Inklusi)*, *4*(1), 1. https://doi.org/10.26740/inklusi.v4n1.p1-10.

Dick, W., Carey, L., & Carey, J. O. (2015). *Systematic design of instruction* (8th ed.). Pearson.

Efendi, M. (2008). Pengantar psikopedagogik anak berkelainan. PT Bumi Aksara.

Eggen, P., & Kauchak, D. (2012). Strategi and model for teachers: Teaching content and thinking skills (6th ed.). Pearson.

Eyo, M., & Nkanga, E. (2020). Teachers' competence in identifying pupils with learning disabilities: A study in nigerian primary schools. *Issues in Educational Research*, *30*(3), 883-896. http://www.iier.org.au/iier30/eyo.pdf.

Fan, L., Zhan, M., Qing, W., Gao, T., & Wang, M. (2021). The short-term impact of animation on the executive function of children aged 4 to 7. *International Journal of Environmental Research and Public Health*, *18*(16). https://doi.org/10.3390/ijerph18168616

Fitriah. (2015). Teaching materials. *Itqan*, *6*(2), 41-49.

Gaines, K. S., & Curry, Z. D. (2011). The Inclusive Classroom : The Effects of Color on Learning and Behavior. *Journal of Family & Consumer Sciences Education*, *29*(1), 46–57. http://www.natefacs.org/JFCSE/v29no1/v29no1Gaines.pdf

Gargiulo, R. M., & Bouck, E. C. (2018). *Special education in contemporary society: An introduction to exceptionality* (12th ed.). SAGE Publications.

Green, J. L. (2018). *Assistive technology in special education: Resources to support literacy, communication, and learning differences* (3rd ed.). Routledge. https://doi.org/10.4324/9781003233138.

Grek, S., & Landri, P. (2021). Editorial: Education in Europe and the COVID-19 pandemic. *European Educational Research Journal*, *20*(4), 393-402. https://doi.org/10.1177/14749041211024781.

Hallahan, D. P., Kauffman, J. M., & Pullen, P. C. (2019). *Exceptional learner an introduction to special education* (14th ed.). Pearson.

Hamalik, O. (2009). *Perencanaan pengajaran berdasarkan pendekatan sistem*. Bumi Aksara.

Handoyo, R. R. (2019). Pengembangan bahan ajar kode braille berbasis teori elaborasi bagi guru pendidikan khusus. *JPK (Jurnal Pendidikan Khusus)*, *14*(2), 46–56. https://doi.org/10.21831/jpk.v14i2.25166

Heriyanto, Prasetyawan, Y. Y., & Krismayani, I. (2021). Distance learning information literacy: Undergraduate students experience distance learning during the COVID-19 setting. *Information Development*, *37*(3), 458-466. https://doi.org/10.1177/02666669211018248.

Hirsch, S. E., & McDaniel, S. (2021). Remote instruction and interventions: Considerations for students with disabilities. *Intervention in School and Clinic*, *57*(2), 75-77. https://doi.org/10.1177/10534512211001828.

Hurwitz, S., Garman-McClaine, B., & Carlock, K. (2021). Special education for students with autism during the COVID-19 pandemic: "Each day brings new challenges". *Autism*, *26*(4).. https://doi.org/10.1177/13623613211035935

Ishartiwi. (2012). Asesmen kebutuhan pengembangan profesionalisme guru pendidikan khusus. *Jurnal Penelitian Ilmu Pendidikan*, *5*(2), 122824. https://doi.org/10.21831/jpipfip.v5i2.4748.

Kellems, R. O., Frandsen, K., Cardon, T. A., Knight, K., & Andersen, M. (2018). Effectiveness of static pictures vs. video prompting for teaching functional life skills to students with

autism spectrum disorders. *Preventing School Failure*, *62*(2), 129-139. https://doi.org /10.1080/1045988X.2017.1393790

Kirk, S., Gallagher, J. J., & Coleman, M. R. (2015). *Educating exceptional children*. wadsworth publishing.

Kitao, K., Kitao, S. K. (1997). Selecting and developing teaching/learning materials *The Internet TESL Journal*, *4*(4). http://iteslj.org/Articles/Kitao-Materials.html.

Majid, A. (2008). *Perencanaan pembelajaran mengembangkan standar kompetensi guru*. Remaja Rosdakarya.

McGinty, J. M. (2021). Accessible digital learning materials for inclusive adult education. *Adult Learning*, *32*(2), 96-98. https://doi.org/10.1177/1045159520961470.

Mulyati. (2005). *Psikologi belajar*. CV Andi Offset.

Opara, J. A., & Oguzor, N. S. (2011). Inquiry instructional method and the school science curriculum. Current research journal of social sciences, 3(3), 188-198..

Park, J., Bouck, E., & Duenas, A. (2019). The Effect of Video Modeling and Video Prompting Interventions on Individuals With Intellectual Disability: A Systematic Literature Review. *Journal of Special Education Technology*, *34*(1), 3–16. https://doi.org/10.1177/0162643418780464

Polloway, E. A., & Patton, J. R. (1993). *Strategies for teaching learnes with special needs*. Macmillan Publishing Company.

Prastowo, A. (2012). *Panduan kreatif membuat bahan ajar inovatif*. Diva Press.

Robitaille, S. (2010). *The illustrated guide to assistive technology and devices: Tools and gadgets for living independently*. Demos Medical Publishing.

Sadiman, A. S., Rahardjo, R., Haryono, A., & Rahardjito. (2011). *Media pendidikan : Pengertian, pengembangan, dan pemanfaatannya*. Rajawali Pers.

Santrock, J. W. (2009). Educational psychology (4th ed.) McGraw-Hill International. https:// doi.org/10.1016/0001-6918(64)90138-6.

Sugihartono, Fathiyah, K. N., Harahap, F., Setiawati, F. A., & Nurhayati, S. R. (2007). *Psikologi Pendidikan*. UNY Press.

Suparman, A. (2014). *Desain instruksional modern: Panduan para pengajar dan inovator pendidikan* (4th ed.). Erlangga.

Supratiwi, M., Yusuf, M., & Anggarani, F. K. (2021). Mapping the Challenges in Distance Learning for Students with Disabilities during Covid-19 Pandemic: Survey of Special Education Teachers. *International Journal of Pedagogy and Teacher Education*, *5*(1), 11. https://doi.org/10.20961/ijpte.v5i1.45970

Supriyadi, S., & Wiliyanto, D. A. (2021). Analisis kebutuhan dan masalah pembelajaran jarak jauh pada anak berkebutuhan khusus di masa pandemi Covid-19. *Jurnal ORTOPEDAGOGIA*, *7*(1), 53. https://doi.org/10.17977/um031v7i12021p53-56.

Surat Edaran Mendikbud Nomor 4, Pub. L. No. 4 (2020).

Susilana, R., & Riyana, C. (2009). *Media pembelajaran: Hakikat, Pengembangana, pemanfaatan, dan penilaian*. CV Wacana Prima.

Torres-Carrión, P. V., González-González, C. S., Toledo-Delgado, P. A., Muñoz-Cruz, V., Gil-Iranzo, R., Reyes-Alonso, N., & Hernández-Morales, S. (2019). Improving cognitive visual-motor abilities in individuals with down syndrome. *Sensors (Switzerland)*, *19*(18). https://doi.org/10.3390/s19183984.

Van Laarhoven, T., Kraus, E., Karpman, K., Nizzi, R., & Valentino, J. (2010). A comparison of picture and video prompts to teach daily living skills to individuals with autism. *Focus on Autism and Other Developmental Disabilities*, *25*(4), 195-208. https://doi.org/10.1177/1088357610380412

Wadjadi, F. (2004). Pengaruh pemberian bahan belajar terhadap hasil belajar pada mata kuliah rangkaian dasar listrik. *Jurnal Teknodik, 4*(15), 104-116.

Widyastuti, A. Y. (2020, May 27). Pembelajaran di rumah. *Tempo*.

Wilkinson, K. M., & McIlvane, W. J. (2013). Perceptual factors influence visual search for meaningful symbols in individuals with intellectual disabilities and Down syndrome or autism spectrum disorders. *American Journal on Intellectual and Developmental Disabilities*, *118*(5), 353–364. https://doi.org/10.1352/1944-7558-118.5.353

Yaumi, M. (2018). *Media dan teknologi pembelajaran*. Prenadamedia Group.