Learning Planning Development of *"Universal Design for Learning"* for Autism in Elementary School

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Abstract

Autistics take longer to adapt from primary special schools to primary inclusive schools. Adaptability can be improved with an appropriate learning plan that is in accordance with the needs of autistic children. The lesson plans are used for special schools and inclusive schools during the orientation period. This research produces learning planning development products through the Universal Design for Learning (UDL) principle for autism at the elementary school level in special schools that are feasible, practical and effective. The research method used is ADDIE. Analysis of the character and needs of autistic children. Lesson planning is designed according to UDL principles. Development of learning planning through UDL. The results of the research were implemented in special schools and were introduced to inclusive schools. The pandemic has prevented this research from being fully implemented in inclusive schools. The results of the next study were evaluated. The results of this study indicate that the development of UDL learning planning is considered feasible with a percentage of 82.6%; considered practical with a percentage of 81.62%; and quite effective with a range of n-gain¬ values of 0.13 to 0.213. From these results it can be concluded that the UDL learning plan is feasible, practical, and quite effective for autistic children in primary schools and quite effective with a range of n-gain¬ values of 0.13 to 0.213.

I. Introduction

The development of this learning plan is motivated by the adaptation problems experienced by autistic students during the orientation period. The purpose of the orientation period in this study is a period of learning transfer for autistics from special schools to inclusive schools. Adaptation is an individual's ability to adapt to the environment. Autistic adaptability is not as fast as children of his age. This is because autistics have barriers to communication, barriers to positive behavior, and barriers to social interaction. These obstacles, of course, affect the learning process. In order for the learning process to run smoothly so that learning outcomes are achieved, an appropriate learning plan is needed. Therefore, In this study, developing appropriate learning plans or Learning Implementation Plans (RPP) for autism through Universal Design for Learning (UDL). The formulation of the problem in this research is the development of learning planning through UDL for autism that is feasible, practical, and effective. RPP for autism consists of general programs and special programs. General programs with academic content to improve cognitive abilities; and special programs containing programs for

adaptation through activities to improve communication skills, good behavior, and social interaction. RPP for autism consists of general programs and special programs. General programs with academic content to improve cognitive abilities; and special programs containing programs for adaptation through activities to improve communication skills, good behavior, and social interaction. RPP for autism consists of general programs and special programs. General programs with academic content to improve cognitive abilities; and special programs containing programs for adaptation through activities to improve communication skills, good behavior, and social interaction.

II. Literature Review

2.1 Learning Planning Development

Learning planning or learning design is part of the realm of educational technology. Learning design is referred to as the science of designing learning by Reigeluth (1983), namely the science of improving the quality of learning that bridges learning theory and learning practice. (Degeng, 2013). An instructional design team has the task of creating and supporting a development team, performing progressive solutions, and developing contextual understanding (Mustaji, Learning Model and Design, 2017). A design research is needed when learning has problems and the answers to these problems are not yet available (Kelly, 2013). For learning scientists, the development of a learning model is the result of research and theorization of educational technology (Mustaji, Learning Model and Design, 2017). The development of learning planning is the impact of changing learning conditions through a process of balancing and anticipating learning activities for students.

2.2 Universal Design for Learning

Universal Design for Learning provide convenience for students to obtain information and knowledge; provide opportunities and alternatives for students to show what is known; explore the interests of students so that they are motivated (Burgstahler, 2011). The development of UDL is based on the social cognitive learning theory by Vygostsky, Piaget, and Bloom. According to Lev Vygotsky, every learner has a zone of proximal development (ZPD), which is an area where each individual has a different level of independence and ability in solving each learning problem. The achievement of learning objectives can be achieved when getting guidance from teachers or students collaborating with peers. When in this ZPD, students are involved in learning that is meaningful, challenging, and fun; then the motivation of students will rise by itself. Piaget argued that the level of intellectual ability is influenced by the age of the individual. For this reason, it is necessary to understand the characteristics of students at each age development. (Gargiulo & Metcalf, 2017).

Mace argues that in designing access to learning (through the curriculum) that is friendly to all individuals, namely by modifying or adapting existing designs so that they are beneficial for all individuals, including those with special needs. With this friendly design, it is hoped that it can reduce time in making access and be more useful for all individuals in a fair and balanced manner (Gargiulo & Metcalf, 2017).

The rationale of UDL is how learning can be accessed according to the characteristics of children with special needs who have different backgrounds, different learning styles, and the ability to understand a different context. (Rose & Meyer, 2002).

This is because not all curricula can be accessed by everyone, considering that each individual is unique because of the unequal characteristics between individuals (Edyburn, 2005). Universal Design for Learning is intended for all students, including those with special needs, to have opportunities or opportunities in every learning activity.

The UDL principle consists of three essential qualities, namely a) representation, b) action and expression, c) engagement. Universal Design for Learning is a flexible learning design by seeking opportunities and access for students in achieving learning goals through three essential qualities, namely representation efforts to know things to be learned and taught; action and expression efforts to bridge in conveying learning outcomes through fun learning techniques or ways, as well as engagement efforts to provide understanding to students on their learning goals and motivation. Universal Design for Learning is an adaptive program that can be accessed by students with special needs.

2.3 Autistic Children at Elementary School Level

Each individual is unique; have different characteristics and barriers. Likewise, children with autistic special needs have many needs to adapt. The level of difficulty for social communication and behavior is limited to Autistic Spectrum Disorder, based on the Diagnostic and Statistical Manual of Mental Disorder Fith Edition (DSM V) instrument, divided into three levels of complexity, namely level 3 which requires very substantial support, level 2 which requires substantial support , and level 1 requires support (level 1). The support is in the form of assistance in communication, assistance in participating in social interactions, and assistance in understanding different behaviors (APA, 2013).

The absence of communication skills in autistic children is true if you refer to the description above about communication. Autistic children's communication is different from children in general. Some autistic children use more visual communication. It was conveyed by several adults who suffer from autism that autistic people can communicate through the blackboard to express feelings, ideas, intentions, and goals. They try hard to communicate with language because what appears in the children's heads are pictures. So far, they have used the Augmentation and Alternative Communication (AAC) method.(Growing Up Unique - , 2019). The AAC method is a non-verbal communication method using tools or media as a substitute for oral communication; which is used not for conversation but to enhance or replace conversation (Somad, 2016).

2.4 Feasibility, Practicality and Effectiveness of Learning Planning

Feasibility is one of the three criteria for product development quality, in addition to practicality and effectiveness (Plomp & Nieveen, Reference and Source on Educational Design Research, 2013). A learning product is said to be valid if the product can contribute information to the achievement of learning objectives (Anderson & Krathwohl, 2001). The feasibility of this UDL principle learning plan is known based on the opinion of Dick and Carrey (2015) about the components in learning planning, namely a) preparation in planning, b) presentation of teaching materials, c) students' ability to participate, d) appropriate feedback , e) an assessment that is in accordance with the objectives, and f) knowing the continuation activities of the plan(Dick, Carey, & Carey, 2015). The learning model has a very important role in the process of teaching and learning activities and is one of the main parameters of the success of teachers in teaching (Ismail, 2020). Research and information collecting stage; planning stage; develop preliminary form of product stage; preliminary field testing stage; main product revision stage; and main field testing stage (Mindayani, 2020). The role of the media in learning is not in doubt (Siahaan, 2020).

III. Research Methods

The model used in this research is the ADDIE (Analysis, Design, Develop, Implement, and Evaluate) model. The ADDIE model is one of the most commonly used models in the field of teaching design guidance for producing an effective design. Planning developed following the ADDIE model can be used in any environment as online or face-to-face (Aldoobie, 2015).

The concept of the ADDIE method in this study, namelyanalyzeidentification of imbalances in the preparation of lesson plans; desired product verification design and appropriate test methods; develop produce and validated products; implement prepares teachers and students; evaluate product quality assessment and implementation results.

This study contained eighteen steps adapted from (Branch, 2009), namely the identification of non-conformities; determination of instructional objectives; analysis of the character of students; resource identification; determining the delivery of teaching materials; preparation of product development activity plans; RPP preparation inventory; the purpose of preparing lesson plans; the selection of strategies in the preparation of learning plans; preparation of the results of the development of learning plans; generated content; UDL principle learning planning in the form of printed media; revision of the product development Example of the UDL Principles Learning Implementation Plan; preparation of product implementation for teachers; preparation of students; evaluation of the resulting product (guidelines for drafting RPP principles of UDL); evaluation of students.

The pilot design of this study was conducted on four small groups at a special primary school in Surabaya. The small group consists of two to four autistics with grade IV elementary school abilities. The trial in this study has not yet reached the field test, namely inclusive schools. The reason why this trial cannot be carried out in inclusive schools has been stated previously, namely the pandemic period made teachers in inclusive schools not ready to accept transitional students. Teachers in inclusive schools still need to adapt from offline learning to online learning. The research sites are 1) Bhakti Wiyata Special School, Surabaya (BW); 2) Harapan Bunda (HB) Special School, Jalan Pucang Jajar no. 81 Surabaya; 3) SLB Happy Angela Center (HAC), Surabaya; and 4) SLB Grahita Sari (GS), Jalan Keputih Tambak, Surabaya. The research was carried out in the Even Semester of FY. 2019-2020.The number of autistic students with special needs involved in this study was a total of 10 students from four special schools in Surabaya.

The feasibility data of this research product was obtained from experts in the field of special education and the field of educational technology. Users of this product, namely education teachers for children with special needs or special school principals, provide data for practicality. The learning activities of autistic students in this study were to determine the effectiveness of the products produced.

Data analysis techniques of feasibility, practicality, and effectiveness of the results of the development of learning plans using the Guttman scale forto find out the firmness of the problem asked (Gutmann, 1950). The results of calculations for feasibility and practicality with the Gutmann scale are converted in percentages with a quantitative approach (Creswell, 2015).

Table 1. Percentage Feasibility Interval and Practicality

Percentage Interval	Appropriateness	Practicality
85%-100%	Very Worthy	Very Practical
75%-84.99%	Worthy	Practical
60%-74.99%	Decent enough	Practical enough

40%-59.99%	less worthy	Less Practical
0% - 39.99%	Not feasible	Not Practical

Description adapted from (Arikunto, Research Procedure, 2019)

Indexing with Normality Gain (n-gain) on the results of measuring effectiveness through observation of student learning activities as an effort to determine the improvement of communication skills, behavior, and social interaction; and through tests to determine cognitive abilities(McKagan, Sayre, & Madsen, 2017).

$$Normalized\ Gain\ (g) = \frac{Posttest\ Score - Pretest\ Score}{Ideal\ Maximum\ Score - Pretest\ Score}$$

Information:

Normalized Gain (g)	:	Normalized gain value of n;
Posttest Score	:	value n after UDL ;
Pretest Score	:	value n before UDL;
Maximum Score	:	the sum of the scores of all of each measurement;
Pretest Score	:	ideal score

adapted (Hake, 1998)

Hake's opinion (1989) states that the n-gain test is a statistical test that can provide an overview of improving learning outcomes of a model or method development before and after the test. (Hake, 1998).

Table 2. Normalized Gain Index Interpretation

Normalized Gain Score	*Interpretation*
-1.00 < g < 0.00	*decrease*
g = 0.00	*stable*
0.00 < g < 0.30	*low*
0.30 < g < 0.70	*average*
0.70 < g < 1.00	*high*

Description: source (McKagan, Sayre, & Madsen, 2017)

IV. Discussion

4.1 Results

At the analysis stage, namely characteristics of students with autistic special needs, components in individual learning planning, curriculum for students with autistic special needs at the elementary school education unit level, teaching materials, learning methods, learning strategies and learning media.

The design phase begins with an inventory of RPP preparation in the form of a blue print for learning planning maps, determining learning planning objectives.

Results on stage *develop* namely the preparation of principle learning plans *UDL* in the form of a Guide to the Preparation of Learning Planning, namely draft A and draft B. Draft book A which was validated before the pandemic and draft B which was validated at the beginning of the Covid 19 pandemic. The feasibility of the results of this development

was validated by experts. Validation resultdraft A the average percentage for representative principles of Valiator I and Validator II is 70.83%; the principle of action and expression by 86.37%; and the principle of engagement by 78.57%. Notes and suggestions for draft a are that the textbooks used by teachers are more varied and in accordance with the themes and abilities of students. The results of the validation of draft B the average percentage of eligibility from valiator I and validator II for the representative principle of 83.33%; the principle of action and expression of 90.91%; and the principle of engagement by 85.71%. Notes and suggestions for draft B are suggestions for more use of simple media that are around students' homes; the teaching resources used by the teacher are more varied and in accordance with the themes and abilities of students; collaboration with the guardians of students is more concerned. http://repository.unipra.ac.id/id/eprint/155.

The results of the research at the implementation stage are to determine the practicality and practicality of the product development of this research. Implementation preparation is carried out for teachers as users to determine practicality and for students to determine the effectiveness of the lesson plans.

This Learning Implementation Plan is stated to be practical if the planning is in accordance with the components of the learning plan that is prepared through the use of the three principles of Universal Design for Learning guidelines. This practicality assessment is done by the user, namely the supervising teacher or school principal. This implementation is done in Extraordinary Schools that organize learning for fourth grade autistic students at the basic education unit level, namely 1) SLB Bhakti Wiyata, Surabaya; 2) Harapan Bunda Special School, Jalan Pucang Jajar no 81 Surabaya; 3) SLB Happy Angela Center, Surabaya; 4) Grahita Sari, Jalan Keputih Tambak, Surabaya. The results of users' assessment of draft A and draft B are as follows.

Table 3. Practicality and Effectiveness Assessment Results

School	SLB (1)	SLB (2)	SLB (3)	SLB (4)
Draft/Number of Students	4	2	2	2
Practicality				
A	82.35%	76.47%	79.41%	82.35%
B	85.29%	82.35%	79.41%	82.29%
Effectiveness with n-$gain$				
A	0.170	0.090	0.180	0.080
B	0.330	0.150	0.260	0.110

The practical instrument consists of seven items, namely: school and student identity; description of the characteristics of students; general program; special programs; themes and subthemes; teaching materials, learning methods and learning media; Learning Activities; and assessment. The effectiveness instrument includes four points of student ability assessment, namely communication skills, positive behavior skills, social interaction skills, and cognitive abilities. The learning planning of the Universal Design for Learning principle is declared effective if there is an increase in the ability of students with

special needs with autism through the n-gain index. Collecting data for the effectiveness of this research through observation activities of students' activities in communicating, behaving positively, and interacting socially; and student learning outcomes in doing written or oral tests.

4.2 Discussion
a. Appropriateness

In draft A, in the preparatory activities, it has not invited students to convey things that are already known in accordance with the material to be delivered; as well as information that can help students know the tasks to be done. The teacher has not had initial orientation and provides more instructions for doing habits; not deep enough to know the knowledge that students already know. For this reason, the habit of greeting that can motivate and improve mood needs to be done with various techniques, for example while singing, tossing hands, or giving gifts at the beginning of class. This is in accordance with research (Israel, 2014) that in preparing lesson plans by considering the characteristics of autistic students having difficulties in expressing themselves, this is not easy to do.

In draft B, which was implemented during the early period of the pandemic, preparatory activities were carried out in the place where the students lived. This is considering that learning is carried out online. The preparatory activities in draft B include the teacher ensuring that the guardians of the students have prepared themselves as companions for the learning process (30 minutes before the start); teachers and students carry out daily routine activities: greeting, greeting, and praying; students tell the news about themselves (activities during preparation for learning). The preparatory activities and presentation materials in draft B have been delivered at the beginning by the teacher to the student companions, which is called the mentor orientation period. The teacher has previously oriented the student companions while studying at home. The teacher knows in advance the habits and knowledge possessed by students from the results of orientation with a companion. The sorted and selected teaching materials also need to be considered in this study, namely how to sort and select them. In planning this lesson, the suggested teaching materials should be more specific. This is because students with special needs like things that are routine and organized. Agree with the expert that in UDL it is not the students who are changed, but the environment of the students that is adapted to their needs (Parker & Bischoff, 2016).

The percentage of assessment in draft A for student participation and feedback through the principle of action and expression is 86. 36%; while in draft B it is 90.91%. An increase of 4.53% occurred because these activities were more flexible and provided more opportunities for students to learn in the early days of the pandemic. This is in accordance with other studies, namely the indicators achieved through learning instructions need to pay attention to several things, namely the learning styles of students (visual and or auditory); the type of instruction given to students, for example oral assignments for slow learners; the teaching resources provided are not from textbooks; videos that are displayed related to learning, especially those related to poetry and songs; interesting powerpoint in the presentation of teaching materials; (Widerhan & Odrowski, 2012).

The teacher's ability to use the device and its application needs to be improved. It runs and develops following technological advances that affect students' teaching techniques. The results of the study show that assistive technology needs to be provided in special schools (Alnahdi, 2014)

The percentage of assessment of the feasibility of the assessment component and follow-up activities through the principle of engagement is 78.57%; and in draft B of

85.71%. An increase of 7.14% occurred because the nature of the assessment in draft B was more objective. Researchers are aware of changes in the conditions of the learning process affect the assessment of learning outcomes. In the learning process in the pre-pandemic period, draft A, teachers can conduct direct assessments of students with special needs. However, at the beginning of the pandemic, teachers can assess student learning outcomes online and information from student learning companions. Students have more flexible time in doing practice questions. Accompanying students to learn has an important role while assisting when working on practice questions. Accompanying students during the online learning period is part of education for parents. This is in accordance with the results of other studies that educating parents who have children with special needs is one of the successful implementation of inclusive learning (Kumar K. , 2010)

The impact of the time given is more flexible, which makes the assessment of student learning outcomes better than before the pandemic. More flexible time makes students more focused in working on practice questions. This flexibility is the hallmark of UDL (Sears, 2009).

The assessment plan in this study has not produced valid and reliable information about the status and attitudes of students, both in draft A and in draft B. The status and attitudes of students referred to in this study are conditions of non-academic development abilities that have not been inclusive of schools on a regular basis, considering that not all of the orientation programs for special schools and general schools have been implemented.

b. Practicality

The average percentage of research results for the practicality of UDL principle learning planning by validators in draft A is 76.47%; while in draft B it is 80.88%. The practicality value of the validators is in the appropriate category (75% to 84.99%). The average percentage of research results for the practicality of UDL principles lesson planning by users in draft A is 80.15%; while in draft B it was 83.09%.

The users stated that the Universal Design for Learning Principles Learning Planning product was practical because the implementation of the implementation was easier to understand and understand. Likewise the products used at the beginning of the COVID-19 pandemic; although there is a change in the schedule and the contents of the RPP draft B, it can still be implemented.

The average value of practicality by users in draft A is 80.15%, (75% to 84.99%), so the UDL principle learning planning is called practical. The average value of the practicality of draft B is 83.09%, including in the range (75% to 84.99%) so that the learning planning of UDL principles is called practical. And there is a deviation of 2.94% increase in the percentage of draft A and draft B.

The increase in the percentage indicates that the product has access and flexibility in the learning implementation plan. This is in accordance with expert recommendations that proper planning and teacher preparation in using UDL need to be considered (Israel, 2014).

c. Effectiveness

The results of the research that were recorded were the pretest before using the UDL principle of learning planning; and posttest after using UDL principle learning planning. In this study, the effectiveness was known at the time of the implementation of the UDL principle Learning Planning draft, namely draft A which was carried out before the covid 19 pandemic; and draft B which was done at the beginning of the covid 19 pandemic.

Obstacles during the implementation of draft B include adjustments to the use of devices for teachers and student learning companions, internet networks, and *mood* from students who are not yet stable so that sometimes the schedule is not on time. The indicators that were observed while using draft A and draft B were communication skills, social interaction, positive behavior, and cognitive abilities for autistic students.

1. Improved communication skills of students with autistic special needs if communication skills are a) able to communicate and social interaction that is permanent in various contexts; b) able in social and emotional communication; c) able in verbal communication; d) able in body and facial language; e) no communication disorders in body and facial language; f) the tendency to pull the hand of others when wanting something; g) tendency not to repeat words (parroting); h) the words spoken understand the meaning (babbling); i) imitating typical sentences, such as advertisements, songs by understanding their meanings; j) understand other people's speech.

   The average index of draft A, which was carried out before the covid 19 pandemic, for improving communication skills was 0.00 indexed stable at HAC special schools. The cause of the lack of communication skills is due to the use of media that has not been maximized considering that students have poor hearing abilities. Schools with a low index on special schools HB, and GS; while special schools BW indexed average.

   The average index of draft B, which was carried out at the beginning of the covid 19 pandemic, for improving communication skills is 0.00 indexed stable at HAC special schools.

   There is a slight difference in improving communication skills by using lesson plans from draft A to draft B. The difference in value is from the total difference of the average index of n-gain draft A and n-gain draft B, which is 0.09. This shows positive progress for the effectiveness of learning planning through the principles of Universal Design for Learning to improve communication skills.

2. An increase in the ability of positive behavior can be seen through indicators of a) having only one pattern of repetitive behavior (behavior that is repeated), for example adaptive behavior: jumping around, circling, flapping hands, pacing aimlessly; b) flexible routine behavior (willing to accept change); c) abnormal attachment to a particular object; d) considerate and not indifferent to others; e) attention to the surroundings (not preoccupied with their own world; f) screaming with reason (there is a cause); g) walk rarely toe; h) less and less self-harm; i) laugh at yourself with an excuse (there is a cause); j) crying with an excuse (there is a reason); k) angry with reasons (there are causes); l) Rarely (almost never) exhibits uncontrollable tantrums when he does not get what he wants and some even becomes aggressive and destructive; m) reasonable fear; n) not so (reduced) sensitive to certain sounds (bell ringing, certain music); o) not fixated on certain objects; p) begins to have a sense of empathy, (eg when another child cries because he is hurt he does not feel sorry for or even gets annoyed with the crying child and may even hit).

   The average index of draft A, which was carried out before the COVID-19 pandemic, was 0.045 with a low index, which was quite effective, there was a slight increase in the ability to increase positive behavior. The average index of draft B, which was carried out at the beginning of the covid 19 pandemic, was 0.045 with a low index, which was quite effective, there was a slight increase in the ability of positive behavior.

3. Improving the social interaction skills of students with autistic special needs is a) not avoiding eye contact; b) react when called by name (more than two calls); c) never or rarely daydreams or stares blankly; d) willing and not avoiding when invited to play;

e) want to shake hands (by order); f) willing to share and want to play together (with all ages); g) return a smile when greeted; h) smile spontaneously (albeit stiffly) at new acquaintances; i) follow stimuli with their eyes; j) rarely gets angry when his toys are taken; k) willing to take things that other people ask for; l) willing (understood) to be asked to give something to others; m) say thank you (verbal or symbol) when given something; n) say thank you (verbal or symbol) when helped; o) willing to help if anyone needs help; and p) able to introduce oneself (verbal or symbol).

The average index of draft A, which was carried out before the covid 19 pandemic, was 0.325 with a low index, which was quite effective, there was a slight increase in the increase in social interaction skills. The average index of draft B, which was carried out at the beginning of the COVID-19 pandemic, was 0.525 with a low index, which was quite effective, there was a slight increase in social interaction skills.

The difference in the average index value of the n-gain social interaction ability of draft A and n-gain of draft B indicates an increase in the value of n-gain. This shows positive progress for the effectiveness of learning planning through the principles of Universal Design for Learning to improve social interaction skills.

4. Cognitive improvement, in this study is academic which consists of improving the ability to read, write, and count. The following is the n-gain value of cognitive improvement in this study.

   The average index of draft A, which was carried out before the COVID-19 pandemic, was 0.115 with a low index, which was quite effective, there was a slight increase in cognitive ability. The average index of draft B, which was carried out at the beginning of the covid 19 pandemic, was 0.0675 with a low index, which was quite effective, there was a slight increase in cognitive abilities.

   The difference in the average index value of the n-gain cognitive ability of draft A and n-gain of draft B indicates an increase in the value of n-gain. This shows positive progress for the effectiveness of learning planning through the principles of Universal Design for Learning to improve cognitive abilities.

   The difference in the n-gain index between draft A and draft B was an increase in two special schools, one special school did not increase, and only one school experienced a decrease in the index. This happens because there are obstacles between student assistants and teachers during online learning. These barriers include miscommunication, technological stuttering, and time during mentoring. Companion must work even during the pandemic.

V. Conclusion

1. The feasibility of the UDL principle learning planning product is the result of validation from experts in the fields of special curriculum, teaching materials, media and learning strategies, as well as children with special needs. The average validation result of 82.62% indicates that the product of this study is feasible.

2. The practicality of using the UDL Principles of Learning Planning product is the ease of implementing the lesson plans in learning activities. The results of the average ease of use of the product of 81.62% indicate that the product of this study is practical.

3. The effectiveness of using the UDL Principles of Learning Planning product is to increase the adaptability and cognitive abilities of students by using the UDL principle lesson plans both before the pandemic and at the beginning of the pandemic. The effectiveness assessment using n-gain with a value in draft A, the

period before the pandemic, was 0.13 and in draft B, the early period of the pandemic, was 0.213. The range of the two values in the category is quite effective.

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