

Online Learning of Children's Education Subject With Attention-Deficit Hyperactivity Disorder for Undergraduate Students of Special Education

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ABSTRACT

This study aims to examine the effectiveness of online learning products of children's education subject with attention-deficit hyperactivity disorder for undergraduate students majoring in special education, faculty of Education at Surabaya State University. This study uses the ADDEM design model (Analyze, Design, Develop, Deliver, Evaluate, and Maintenance). The data collected in this study used a validation test technique of learning media experts and Special Education experts before the product was tested on students. The effectiveness test data were obtained from the results of studying midterm exams and final semester exams for undergraduate students in class A and B totaling 93 people majoring in special education. The product validity test results from the learning media validator have obtained a good rating score of 3.3 while an assessment from the Special Education validator has obtained a good score of 3.2. In the effectiveness testing period, it showed 78 midterm results of students with excellent grades, and 15 students with good grades. Likewise, the results of the final semester exams showed 45 students with excellent grades, and 48 students are good grades. Thus, it can be concluded that online learning of children's education subject with attention-deficit hyperactivity disorder in undergraduate students majoring in special education that is developed has the potential to improve learning outcomes.

Keywords: *Learning, online and offline*

1. INTRODUCTION

The shifting dynamics of the globalization era in access to education seek to use technology for the application of science both offline and online to be used for learning practices, especially for the entire learning community. A comprehensive learning technology creates conditions for effective learning of the quality of students. It can be seen through the improvement of student's ability to see (visual) and hear (auditory), including capturing the spoken and written and so on. This type of conditioning in learning requires scheduling, sorting and organizing for students. A series of activities designed for the occurrence of a learning process in learning is used to show the activities of educators and students. Thus, learning is not limited to student interaction with the physical presence of educators.

On the other hand, printed teaching materials, audio and video programs, television, radio, or other media based on ICT (Information and Communication Technology) have an important role in the design of classroom learning activities. Affirmation of learning as an effort to learn students, and the learning process as the association of new knowledge on the cognitive structure that is already owned by learning outcomes.

Although learning produces a study, but not all learning occurs because of learning. But this learning is for the context of formal education, namely education in institutions and their occurrence in class.

The grouping of learning resources can be in the form of written/printed learning resources, recorded, broadcast, network, and environment. learning environment which is the background of the learning process in the classroom, library, school or campus as well as other accessible places, has the potential to improve the quality of education and learning. Another feature of learning is the existence of intentionally programmed interactions, it occurs between students and their learning environment, such as with educators, other students, media and other learning resources.

According to Trianto (2007: 15) argues that good learning emphasizes the full involvement of students and educators, so that conditions will be created in which all proceed to achieve the desired quality. Affirmation of Government Regulation No. 19 of 2005 concerning National Education Standards especially in Chapter IV article 19 states that the learning process in the education unit is held interactively, inspiratively, fun, challenging, motivating students to participate actively, as well as providing sufficient space for

initiative, creativity and independence in accordance with talents, interests, physical and psychological development of students. The realization above is a form of inspiration in the learning of children's education subject with obstacles to concentration and hyperactivity. Learning innovations need to exist as demands from the conventional education system combined with information and communication technology according to the demands of the global era.

This in line with Faisal (2011) who stated that e-learning has the opportunity to shift the conventional learning paradigm towards information and communication technology in developing new knowledge, skills, and behavior for students. In the e-learning process, teaching and learning activities require a variety of methods, models and learning media that are applied in order to achieve maximum results and quality. Smaldino (2011: 11) says that learning develops new knowledge, skills and behaviors in the form of individual interactions with information and the environment. Skills in the field of information and communication technology not only require technical skills solely, but also require mental maturity

and problem-solving skills. Andajani (2010), emphasized by saying that classroom learning which uses information and communication technology in the form of media that can be visualized through audio and picture motivates the learning application effectively.

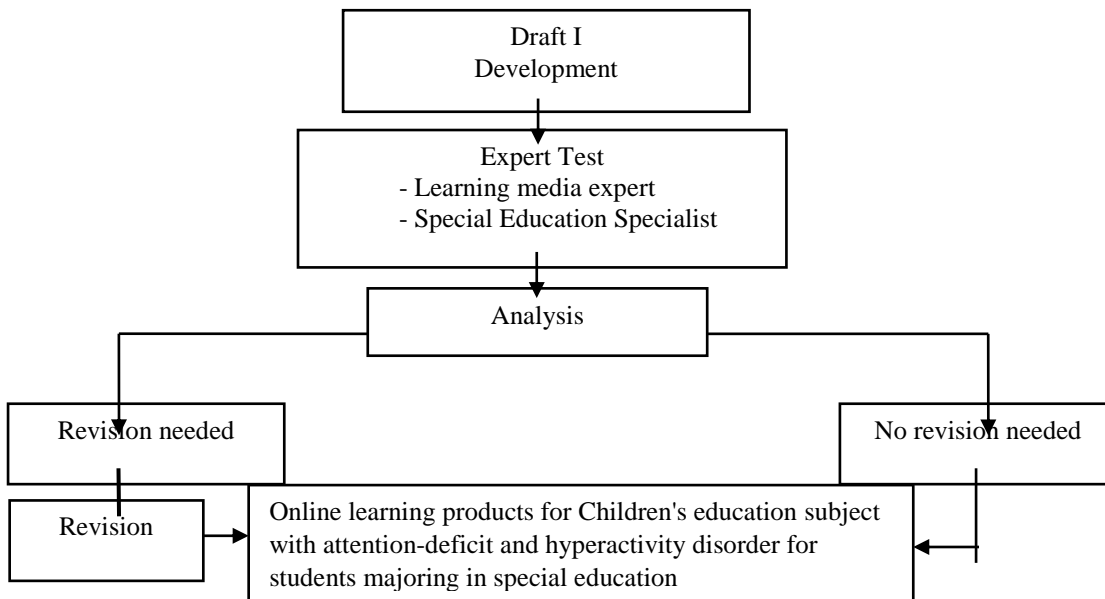
This study aims to examine the effectiveness of online learning products in children's education subject with attention-deficit and hyperactivity disorder for undergraduate students majoring in special education, faculty of Education at Surabaya State University.

2. METHOD

Approaches and Types of the Study

This research type used in this study is the development of learning with research and development (R&D) approaches. The model of this 21st century learning innovation development product by adapting the ADDEM model that is Analyze, Design, Develop, Deliver, Evaluate, and Maintenance (Purnomo, Made, et al, 2015). Schematic stages are specifically seen in chart 1 below:

Picture 1. Research Chart



Data Collection Techniques

The data collection instrument was carried out using a questionnaire to collect the results of the opinions of learning media experts and Special Education experts about the validity of online learning products. The assessment indicators are a) referring to the ease of learning material that is packaged in books (offline) and online material. b) refers to the comparison of the results from learning media experts and special education experts.

Data Analysis Techniques

Quantitative descriptive was applied in this study as a data analysis technique. The data obtained from the results of the mid-term and final test scores on students who take that course. The assessment of each component of the exam questions is stated in the range of scores 0-100. The criteria used to determine the result of learning outcomes through analysis of the average student grades are formulated as follows.

$$= \frac{\text{The number of learning outcomes for each student}}{\text{Total number of students}} \times 100\%$$

Table 1. Learning Assessment Criteria

Level of Achievement	Qualification
80% - 100%	Excellent
70% - 79%	Good
55% - 69%	Adequate
40% - 54%	Average
0% - 39%	Poor

3. RESULTS AND DISCUSSIONS

Results

In the process of producing lecture material, it can go through stages of development. Stages or the development process that is carried out requires conformity with the rules of the existence of theory, making networks both offline and online. If the preparation of online teaching materials can be done correctly, then it will produce a representative product according to the needs of the target audience of students majoring in undergraduate of Special Education. The stages of the development process as an initial stage are done by classifying 1) the subject matter of lecture material for 14 meetings, 2) referring to the description contained in the lecture learning plan, assessment rubric and quiz, 3) teaching material according to the indicators for the online and offline.

In the course material, it is viewed from the indicators and referred to the students' abilities through the results of the midterm and final semester exams. The stages of the online learning development process refer to the ADDDEM (Analyze, Design, Develop, Deliver, Evaluate, and Maintenance) development model. The following are the stages carried out in the development process.

Analyze

The beginning of this implementation is by tracing and gathering information that was developed through analyzing the competence of courses by considering the principle of reuse and repurpose, so that it can be described as learning objects that are shareable and reuseable. This analysis was conducted to obtain theoretical references in developing teaching materials online and offline. This activity is carried out with reference studies and research results on children attention deficit and hyperactivities disorders and various field problems in learning. below are the findings from lectures on education of children with attention-defisit and hyperactivity disorder majoring in undergraduate Special Education:

1. There is no availability of online teaching materials for online lectures that is designed for independent learning.
2. There are no lecture needs that are designed through e-learning programs that can increase online learning skills.

3. It has not been designed in the main teaching material for students such as understanding hypoactive and hyperactive child behavior that requires independent work.
4. Lack of availability of teaching materials that are packaged in online programs.

Design

Online learning material designed for students in the context of the 21st century through online and offline means. Online design is applied by utilizing internet learning tools which become one of the development of learning skills competencies based on facts, concepts, principles and procedures whose material has been determined in the semester learning plan. teaching material design using online learning is needed as an effort to provide understanding to undergraduate students majoring in Special Education.

- 1) Define learning objects at each level.

In choosing the course material, it is adjusted to the content that is packaged through learning videos. This teaching material is about understanding concepts and characteristics of children in their learning environment. This learning activity is the beginning of the lecture at the second meeting to find a picture of hypoactive and hyperactive children.

- 2) Define the prerequisites and competencies of each learning object.

In learning outcomes, it has the potential to utilize science and technology, master, make decisions and be responsible for individual and group learning performance. The design of this teaching material shows active involvement in carrying out the tasks and roles given both individually and in groups during the learning process by utilizing internet learning resources independently and in teams.

- 3) Define the relation of each learning object.

In the achievement of this course learning, the design of teaching materials combines offline and online that support each other. Material related to learning service models and good synchronous learning needs that have been prepared through virtual learning programs with internet-based student search results.

- 4) Designing learning object metadata

In e-material is prepared to understand work independently and in group discussions to discuss virtual learning material. Study material in the form of identification and assessment for children with attention deficit and hyperactive disorders. This is a form to carry out child identification and assessment. The material model requires an interconnected understanding to be discussed as student assignments.

- 5) Designing learning object strategies.
Teaching material for children's learning services model of hyperactivity attention deficit and disorder is designed using e-learning media. Content design in the form of applications on how to provide academic, social and communication learning services for hyperactive and hypoactive children. The e-material is in the form of multimedia based content as a way to understand knowledge and respond

Develop

- 1) Develop e-material by implementing reuse and repurpose of information objects and digital assets (identifying new and existing content).
In learning material classified into 2, these are offline and online. Specifically e-material online prioritizes that can not only be read, but a form of pilot indoor and outdoor learning for hyperactive and hypoactive early childhood. Audio visual media as a learning model that is packaged through the web that has been provided by Unesa.
- 2) Develop e-material using technology that is neutral towards the delivery method.
The virtual learning program that has been prepared by the Surabaya state university as a place to place e-material, namely the introduction of hypoactive and hyperactive children, identification and assessment of children, and a real learning service model.
- 3) Develop e-material using technology that is device independent.
Hypoactive and hyperactive child recognition material, child identification and assessment materials that have been pre-packaged through a pdf program, real learning service models, but require modeling examples through a variety of ways that can be used for ADHD child services. The development of e-material is a representative place for virtual learning programs that have been prepared by Unesa.
- 4) Designing e-material follows the e-learning standard specifications.
Independence of learning without having face to face lectures as one of the academic standards on how to deliver online learning for undergraduate students. E-material in this e-learning standard specification as part of how to deliver learning does not have to be face-to-face but can be facilitated by virtual learning technology provided by Unesa. Therefore innovation of lecturers in every level of faculties is facilitated to fill the programs provided by Unesa.

Deliver

- 1) Apply internet technology to deliver e-material in various formats.
The e-material learning process is directed at students being able to process information as knowledge in children's education courses with attention deficit and hyperactivity disorders. E-material in the form of audio-visual learning programs. The understanding of e-material in this learning video is about the characteristics and models of hyperactive and hypoactive children's tutoring services. Based on this format, it is programmed on virtual learning that has been facilitated by Unesa.
- 2) Implement mobile technology to deliver e-material.
In the application of mobile learning for material that is designed through learning media can be directly downloaded on an android mobile phone.

Evaluate

This assessment stage is carried out as feedback to correct any possible errors that might occur. The following are the assessment steps:

1. Approach
Feedback between lecturers and students to reuse / repurpose learning objects, in this case students are able to use knowledge to solve problems through material delivered by lecturers by conducting discussions through questions and answers to measure the achievement of understanding teaching material.
2. Evaluating learning objects
The development of teaching materials through online learning requires assessment. A review through a deliberate assessment is carried out in order to obtain maximum results. The questionnaire method as one way to obtain data from the users assessment, namely students. An assessment is held to obtain input as a basis for video product revisions.
The purpose of this is to obtain a feasibility assessment of the video through the questionnaire. there are 2 videos, first is a video of a child with a hyperactive and hypoactive concentration disorder and second is a model of tutoring services. Feasibility advice from users is given before the video product is uploaded to the virtual learning program. The task of the students was to provide an assessment through a series of questions contained in the questionnaire that had been prepared. after watching the video, students are asked to give input in the form of criticism and suggestions.
Therefore these inputs and suggestions need to be revised to the learning videos developed. The revision of the video as draft I was carried out based on assessments, comments, and suggestions from students.

Based on the revised draft I, it was then shown again to the students through cooperative discussion. The revised results of draft I as part of draft II were given input and suggestions back by the students. Below are the revised results from the input and suggestions of students as users :

Table 2. Revision of Hyperactivity / Hypoactive Children Social Interaction Learning Videos and Tutoring Service Model

No	Revision	Draf I	Draf II
1	The social interactions of hyperactive / hypoactive children are distinguished in the video images with other children which are almost the same condition as regular children	It has been revised by giving a red circle mark on hyperactive / hypoactive children with the right position on the head to neck both indoors and outdoors	Learning videos are feasible and ready to be uploaded in the virtual learning program
2.	Video with a model of tutoring services for ADHD children	It has been revised by adding an introduction whose contents illustrate a learning service model for ADHD children	Learning videos are feasible and ready to be uploaded on the virtual learning program

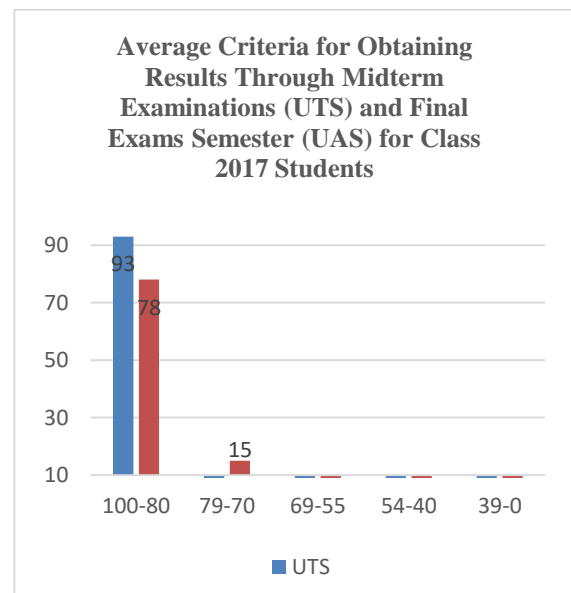
Furthermore, the assessment of the feasibility of online learning will be tested by lecturers supporting the learning outcomes of students through midterm and final exam. The material that has been determined from the learning outcomes in the Children's Education course with Attention Deficit and Hyperactivity Disorders will be applied through offline and online learning. The results of the analysis of the evaluation of online learning objects in class A and B class 2017 students were 93 people based on (Special Education Department Siakad 2017 who programmed the course).

Then the division of class A amounted to 46 students who should have been 47 students, but 1 student died due to illness. The division of class B consists of 47 students, complete formation to the results of data acquisition in online learning for the lecture. Data analysis on the results of the effectiveness of the development of online learning courses in Children Education with Attention Defisit and Hyperactivity Disorders in the assessment of participation, assignments and midterm is shown below.

Table 3. Data Analysis of Obtaining Midterm and Final Exam in Online Learning of Children's Education Subjects with Attention Deficitand Hyperactivity Disorders in Undergraduate Students Majoring in Special Education.

No	Level of Achievement	Number of Students		Qualification	Information
		Midt erm test	Final test		
1	80% -100%	60	77	Excellen t	
2	70% - 79%	33	17	Good.	
3	55% - 69%			Adequate	
4	40% - 54%			Average	
5	0% - 39%			Poor	

Based on the results of the Midterm and Final Test can be distinguished in Figure 1.



Based on the results of the effectiveness test in the online learning assessment of Children Education with Attention Deficit and Hyperactivity Disorders, it is classified into 2: 1) UTS amounted to 60 students, and UAS for 77 students indicate that the acquisition of learning outcomes is excellent, 2) UTS for 33 students and UAS for 17 students showed that the acquisition of learning outcomes is predicated good. While the predicate of adequate, average and poor are zero results.

Assessment of the progress achieved by students is monitored and documented systematically, as feedback from the midterm and final test learning outcomes. The assessment is carried out in stages as follows, (1) measuring the success of students in terms of understanding knowledge by means of discussion and question and answer; (2) measuring learning outcomes, students can absorb material with an essay exam; (3)

measuring learning material must really be used by students, such as when conducting lectures by skillfully opening a virtual learning web.

Based on these trials as the direction of the implementation of online learning of Children Education courses with Attention Deficit and Hyperactivity Disorders which use the following principles of learning methods.

- 1) Learning in accordance with the learning needs of students.
- 2) Educators emphasize learning through visual channels both offline and online.
- 3) Learning requires real experience in knowing the concepts of subject matter.

Maintenance

This stage is carried out to maintain the relevance of e-material in the Children's Education course with Attention Deficit and Hyperactivity Disorders \ for undergraduate students of the 2017 Special Education Class, Unesa, These are the following steps:

- 1) Keeping e-material content to be always relevant, this means the material in learning in this lecture must always be updated from various references both local and international books and well as the internet resources.
- 2) Keeping e-material content always up-to-date, this means that in developing learning material that is packaged in e-learning every one year, efforts are made to be reviewed according to field conditions and the existence of updates through the results of research and other studies.
- 3) Utilizing the evaluation data for material improvement or maintaining e-material content, it is intended that the 2017 class courses will be periodically assessed in connection with the feasibility of teaching materials with review every 1 year before the lecture takes place.

Discussion

In developing online learning for undergraduate students of the 2017 Special Education Department, they have been conceptualized through offline and online. In the study of theoretical studies and field findings about the learning conditions in the course, learning innovations are required to be updated in their designs. This conditioning is the impact of the needs of the field for users on human resources, especially in tertiary institutions.

Special education market needs of qualified alumni which need to be prepared or there needs to be a review of lecture materials that are in accordance with the user's field conditions, so that graduates of bachelor degree Education's Department of Special Education at the State University of Surabaya are in accordance with the standards expected by the community specifically

institutions that provide child services with special needs.

On the other hand, the condition of undergraduate students in learning activities requires the flexibility, effectiveness and efficiency required by students. This in line with Kedasih, (2008) who stated that the use of online e-learning is in the following:

1. Flexibility

In the classroom learning activities requires learners to be present in class at certain hours (often these hours clash with learner's routine activities), the online learning e-learning system provides flexibility in choosing the time and place to access learning material.

2. Effective, Efficient and Attractive Learning

According to Reigeluth (in Uno, 2009) said that learning outcomes can be classified into 3 aspects, these are:

- 1) The effectiveness of learning,
- 2) Efficiency of learning,
- 3) The attraction of learning.

The effectiveness aspect of learning is usually measured by the level of student achievement on more defined learning goals. Efficiency is usually measured by the ratio between effectiveness and the amount of time and or cost spent, while the attractiveness of learning is usually measured by observing the tendency of students to continue learning. The effectiveness aspect of learning is usually measured by the level of student achievement on more defined learning goals. Efficiency is usually measured by the ratio between effectiveness and the amount of time and or cost spent, while the attractiveness of learning is usually measured by observing the tendency of students to continue learning.

Based on this reality, the development of prototype products for Tunadaksa Orthopedagogic teaching materials based on blended learning for undergraduate students of Special Education Department, Faculty of Education, the State University of Surabaya as a solution in teaching cognitive understanding, practice and attitudes for its learning innovation. The effort of this prototype product development refers to the development model of ADDEM (Analyze, Design, Develop, Deliver, Evaluate, and Maintenance) (Purnomo, Made, et al, 2015) with five stages. The suitability of the ADDDEM development model chosen in this study was used to develop a prototype product of Tunadaksa Orthopedagogic teaching materials based on blended learning for undergraduate students. The process in developing a prototype product is supported by a theory put forward by Smaldino, Sharon E & Russell, James D (2005) who said that product development is not only in the form of learning media but also in the form of procedures, instruments and learning processes.

Mainstreaming online learning development products for undergraduate student learning activities that are produced right on target, so that it can overcome the problems faced by lecturers who have found a variety of references and field data that the design through the following steps:

1. Analyze, this stage includes:
 - a. In analyzing this, it is done to get a reference theory and field findings that exist in Special School and inclusive schools to develop online learning courses in Children Education with Attention-Deficit and Hyperactivity Disorders.
 - b. Children's Education Subjects with Attention-Deficit and Hyperactivity Disorders in accordance with learning achievements utilizing science and technology to obtain the use of 21st century learning tools from various sources about concepts, principles, and service strategies in hyperactive / hypoactive children.
 - c. The availability of learning materials for courses that are packaged in virtual learning programs has not been realized in the Undergraduate of Special Education Department, Faculty of Education.
2. Design
 - a. In the selection of learning material on this course, it is adjusted to the content to be packaged through offline and online. This learning material consists of mastering the concepts, characteristics, identification, assessment, service strategies, and service models for AGPPH. While using online is in the form of e-material virtual learning programs through learning videos of the characteristics of hyperactive/hypoactive children and learning service models.
 - b. Undergraduate students' understanding of learning achievements has the potential to utilize science and technology, master, make decisions about the learning process, and be responsible for individual and group learning performance. This means that the design of this course needs active involvement of undergraduate students in carrying out the tasks and roles given both individually and in groups during the learning process, as well as utilizing learning resources and ICTs to support learning.
 - c. In learning outcomes for offline and online material design, they relate to one another. Material related to the service model for AGPPH is packaged through an online program. While offline by mastering the concepts, characteristics, learning needs, identification and assessment as well as service models. This shows that the material designed both offline and

online are interconnected to be used as student assignments.

- d. This learning object metadata is classified through material about the introduction of service models. This learning management strategy for children is designed using an audio visual program that is included in the making of learning videos. Then, master the concepts and problems of AGPPH, the concepts of identification and assessment, as well as learning strategies, management of the learning process, guidance for GPPH children through PowerPoint and papers.
 - e. offline and online applied as a design of instructional learning materials in the Children's Education course with Attention-Deficit and Hyperactivity Disorders.
3. Develop
 - a. Develop e-material using technology that is neutral towards the delivery method.
 - b. Develop e-material using technology that is device independent
 - c. The design of e-material follows the standard e-learning specifications.
 4. Deliver
 - a. Applying internet technology to deliver e-material in various formats.
 - b. Implement mobile technology to deliver e-material
 5. Evaluate,

This stage is carried out at each of the above stages and serves as feedback on the achievement of student measurement results. One way to improve services that educators can currently do is by developing online learning.
 6. Maintenance,

This stage is done to maintain the relevance of the e-material itself, here are some steps that can be applied.

 - a. Keep e-material content always relevant
 - b. Keep e-material content always up-to-date
 - c. Utilizing the evaluation data for material improvement or maintenance of e-material content.

Based on the explanation above, it can be said that the mainstreaming is on the use of information and communication technology with the internet or e-learning model that has been facilitated by Unesa. Apart from being part of an effort to improve student learning skills, virtual learning plays an important role in preparing qualification standards for graduates who are competitive in the community. Other urgency shows that in the development era the use of the internet for educational purposes is increasingly widespread,

especially in developed countries. The fact of the findings shows that online media enables the implementation of teaching and learning processes that are more effective and efficient.

Furthermore, independent learning through E-learning provides opportunities for students to take control of learning success. This means that learners are given the freedom to determine when they will start, when they will finish and what parts of the material they want to learn first. Students can start from topics or pages that interest them first or can just skip the parts that they think they have mastered. If students have difficulty understanding a certain part, they can repeat it again until they are able to understand. If after repeated there are still things that are not understood, students can directly interact with virtual learning.

According to Rusman (2011) said that lecturer and students can communicate easily through regular internet facilities or whenever the communication activities are carried out without being limited by time and place. lecturer and students can use instructional materials or instructional learning that is structured on the internet. Wedemeyer (in Rusman, 2011) asserted that learning independence with e-learning programs requires learners to learn independently and autonomously.

Regarding the educational method applied to virtual learning, the close relationship between students and lecturers is a central point of education. Then this method can produce good quality education, and not only make students smart but also educated with polite behavior. Furthermore, the impact of the infrastructure conditions and learners that are not appropriate and also the increasing number of students, it can be said that the conventional method is not achieving maximum results. Learning research results that integrate learning using a computer (internet) with traditional methods state that the achievements obtained are better with a computer (internet) (Newby, 2011). Learning is best for students if it is arranged systematically which can inspire, be fun and motivate. So that they can learn independently and are designed according to their grade or level.

Specifically, learning is centered on what, how and everywhere according to the needs of students majoring in Special Education. In learning must be in accordance with the needs of students who are discussing about what materials will be discussed. In addition it is necessary to pay attention to the Principles about methods in the context of learning provided and the last place of learning that suits your needs. Especially for undergraduate students where learning needs to be facilitated. Bold learning methods that can enrich and help control online learning materials or take advantage of the various sites available on the internet. Specifically learning is centered on what, how and everywhere according to the needs of students majoring in Unesa S1 PLB. In learning must be in accordance

with the needs of students who are discussing about what materials will be discussed. in addition it is necessary to pay attention to the Principles about methods in the context of learning provided and the last place of learning that suits your needs. Especially for undergraduate students where learning needs to be facilitated. Bold learning methods that can enrich and help control online learning materials or take advantage of the various sites available on the internet. In connection with this course, below are the principles of learning methods.

- a. Learning in accordance with study needs
- b. Educators emphasize learning through visual channels both offline and online.
- c. Learning requires real experience in studying the concepts of subject matter.

The linkages in developing children's education courses with attention deficit and hyperactivity disorders online are prioritized on how to make learning products delivered to students in order to understand teaching materials comprehensively. The complexity of the characteristics and needs of children with attention-deficit and hyperactive disorders that will be served in class and pre-class education, so that the child can actively participate in learning and socializing with their environment, the online learning model as an alternative to develop good teaching materials offline and online.

Therefore, as educators in the development of materials that require learning to improve services for students entrusted to be taught. One way to improve the services that educators can do at present is to develop bold learning. This is contrary to six 21st century learning,

1. Emphasis on main subjects, these are:
2. Emphasis on developing learning skills.
3. Utilizing 21st century learning tools.
4. Teaching students in 21st century meetings.
5. Teach 21st century content.
6. Use 21st century assessments that measure 21st century skills.

4. CONCLUSION

Based on the results and discussion above, it can be concluded that the results of testing the effectiveness of online learning courses in Children Education with Attention-Deficit and Hyperactivity Disorders show 1) UTS amounted to 60 students and UAS amounted to 77 students show learning outcomes with an excellent predicate, 2) UTS of 33 students and UAS of 17 students show learning outcomes is good, 3) 0 student is adequate, 4) 0 other student is average, and 5) 0 student is poor. This means online learning can enrich and explore the mastery of learning materials both online and utilizing various sites available on the internet.

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