

The Effect of Arcs Model on The Curiosity Character of 21st Century Elementary School

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Abstract—Curiosity is a very important trait in a human being. Curiosity character lays a strong foundation for learning, creating and finding something useful in life. This research aims to know the effect ARCS model has on the curiosity character of 21st century elementary school. It is the role of the educators to actively promote the curiosity character of a learner, lack of which is found to be the main problem effecting the normal academic growth of a student. The research method used was a quasi-experiment with control pretest-posttest design. The research population is from elementary school district Minggir, Sleman Yogyakarta, from the academic year 2017/2018. The research grade V, samples as many as 82 students in three schools. The samples were taken with simple random sampling technique. Engineering data collection curiosity character, using questionnaire and data analysis techniques using. Independent Sample t-Test. The results showed: (1) act more effective model ARCS used in conventional model are compared to; and (2) there is an interaction between ARCS model to the curiosity character of 21st century with had significant 0,000 less than α (0,05).

Keywords—ARCS model, curiosity character

I. INTRODUCTION

Education has an important role in improving the quality of human resources Education is not only shaping learners who are knowledgeable but also forming learner's character. It makes them capable of facing the challenges and competition both, nationally and internationally, especially in the current 21st century.

The 21st century has changed the world of learning paradigm from teaching paradigm into a paradigm of learning [1]. Now the learning process is no longer centered on teachers but on the students. Teachers act more as facilitators of student learning and not the only source of student knowledge. Changes occur not only at the level of secondary education but also on primary school education so that teaching elementary school in the 21st century is also aimed at encouraging students to look out of various sources of observation which are not notified.

Characters curiosity became one of the characters that should be encouraged and built in the face of learning in the 21st century. Character curiosity is a strong foundation for students to learn, create and even find something useful for life. Learners who

have curiosity, seeks to find information in the form of a fact supported by the data and ideas that support in finding the truth or the answer to something he wants to know.

One formation of learners who have curiosity can go through the lessons learned from school children learning both in the classroom and outside the classroom. Through the learning process students have a curiosity. Because learning is a free activity to satisfy curiosity, do not be surprised if your child has the knowledge and capabilities of different [2]. Children's freedom is needed so that children can do anything to find answers to his curiosity. This will help the child to think out of the conventional norms and be more creative in finding solutions.

In the learning process, the variation of teachers will facilitate development of curiosity in students because this character has a big contribution towards improving human potential. Therefore, the ARCS model is a model of learning that allegedly assists the teachers to increase curiosity and independence of children. ARCS Model is an acronym that is Attention, Relevance, Confidence, and Satisfaction. This learning model is designed through prioritizing learning that attracted the attention of learners by adapting the learning material to the learning experience of learners thus creating a sense of confidence and satisfaction in the self-learners. Applying this model can provide guidance on what should be done by the students because learning model is reinforced by the draft form of student-centered learning. Four categories of this motivational condition that must be considered by educators to make learning interesting and meaningful for students. ARCS model is also shaped for solving problems that can motivate children's curiosity.

Based on the observations made in several elementary school classes V in District Minggir, it was found that some problems encountered in the process of thematic learning in the classroom are learning more often textual, more towards memorizing, resulting in lack of curiosity in children, often teachers use instructional methods presentation with the learning process of students asked to summarize, memorize then present to the class, not as the ARCS model of the learning process recommends.

Many factors contribute to this situation. However, the most extreme factor is the variation of teachers in teaching. Therefore, this study aims to test the effect of the learning model ARCS to the curiosity of elementary school students.

II. REVIEW OF LITERATURE

A. Curiosity Character

Curiosity is a human attitude that is present at birth. It was seen from a baby trying to move the arms and legs so that he knows that he himself was arranging the movement of his body. These events are described a baby's curiosity about his hands may result in wails indignant if he waves his hand so vigorously that it hits him in the face. It takes much more experimentation before a baby realizes he can control his own arm and hand movements [3]. Berlyne & Walker say curiosity is defined as an internal state when Subjective uncertainty occasioned generates a tendency to engage in exploratory behavior partially aimed at resolving or mitigating the uncertainty [4]. The Nowotny said curiosity is a cognitive ability that the brain uses to explore the environment. To unfold curiosity's potential, the use of cognitive tools-particularly subject to thinking, the capacity for abstraction, and the technical skills needed to produce the material tools that change the environment-must be embedded in cultural practices and anchored in a social structure [5]. In line with the opinion McElmeel said curiosity is a desire to learn, Investigate, or know. It is an interest, leading to exploration or inquiry [6]. Therefore, by their curiosity, can push something through knowledge, integrate the old with the knowledge of the unknown. There by encouraging learning through high motivation and possibility as to find something new and useful.

Thomas Edison says the greatest invention in the world is the mind of a child, and every mind is born with the instinct of curiosity [7]. Students who have a curious about something, at least will try to find out about what wanted and be able to motivate the spirit of learning.

Curiosity on primary school learners are visible when the child reacts positively to the environment by means of exploring, the desire to know more about the environment and himself and look at the environment in the search for new experiences. It was explained Maw Maw who said the definition they used was as follows: an elementary school child demonstrates curiosity when he (a) reacts positively to new, strange, incongruous, or mysterious elements in his environment by moving to- ward them, exploring them, or manipulating them; (b) exhibits a need or a desire to know more about himself and / or his environment; (c) scans his surroundings seeking new experiences; and/or (d) persists in examining and / or exploring stimuli in order to know more about them [8]. In line with the opinions Collete A. T. &

Chiappetta, E. L. who said curiosity in children is most apparent in children who constantly explore Reviews their environment and frequency ask the question: Why? Curiosity is characteristic of a scientist, who often has many interests [9].

Many famous thinkers have been stimulated to undergo lifelong meditation simply because they think of new questions about things that are taken for granted by the ordinary people. In general, skilled educators aroused the curiosity of the audience by asking them questions, perhaps about a phenomenon familiar, that never occurred to them to ask themselves. Thus, learning in the classroom can stimulate curiosity.

In organizing the information and knowledge they need to have curiosity. Zuss said the critical curiosity I am sponsoring is engaged in making new relations between emergent ideas, perception, concepts, and representations[10]. Therefore, curiosity is needed in order to learning process knowledge or understanding them correctly.

Achievement of the objectives in learning and intellectual development of learners also needs curiosity. Hargreaves the natural curiosity and rapid intellectual growth of students at this stage provide the springboard for them to attempt (and reach) new heights in thinking [11]. Thus, learners with curiosity can drive a high learning motivation to obtain a deeper knowledge and higher thinking. In line with Engel argues "... that both intrinsic to children's development and Unfolds through social interactions. Thus, it should be cultivated in school, even though it is often almost completely absent from the classroom" [12].

The learning activities that can be used to develop curiosity by Elliot namely curiosity-oriented strategies mainly catch interest. Holding student's interests is a long term, the development process. To Facilitate the development of interest, their classroom teacher should structure their reviews around goals such as; 1). Inviting students to participate in meaningful projects with connection to the world outside of the classroom, 2). Providing curiosity simulating activities that involve students and offer them developmentally appropriate challenges, 3). Allowing students to have a major role in evaluating Reviews of their own work and in monitoring progress, 4) Facilitating the integration and use of knowledge, and 5). Learning to work cooperatively with other students [13]. People who have a curiosity, certainly have an interest to learn new things which are heard, seen and felt. Characteristic someone has curiosity by Loewenstein consists of 3 as follows: first, curiosity was an intrinsically motivated desire. Second, curiosity was viewed as a passion, with the motivation intensity implied by the term. Third, curiosity was appetitive. Suggesting that, analogous to physiological appetites, he viewed curiosity as

producing painful feelings of deprivation if not satisfied [14]. Their curiosity is certainly because the factors affecting such curiosity. According argues basically any individual or person is motivated within themselves to learn the source of curiosity emerged instinctively, this is caused by the desire to interact between each other, recognize, and understand the circumstances surrounding [15].

B. ARCS Model

This model raised by John M. Keller is often known by the model ARCS Keller. ARCS learning model is used to stimulate students' motivation that is required to have a high curiosity. The fourth component of the learning model ARCS namely:

1. Attention

Attention is something that is desperately needed by a learner. Paying attention will encourage students to do something with the maximum concentration. Attention becomes important in the learning process. John M. Keller explained that the concern stimulate interest and encourage the curiosity of learners [16]. With the attention of the child had so the interest and curiosity of children can grow and increase. Zainal Abidin argues that attention is a form of guidance for consultation/centralization of power and psychic energy in the face of an object, in this case the events of the process of teaching, learning in the classroom [17]. Therefore, learning must be designed to foster curiosity of learners so that educators are encouraged how the lesson plan that can stimulate and attract the interest of learners in order from beginning to the end. The plan should bring new things, different from the others and thus foster care challenge that appeals to learners during the learning that goes on. Soetarno says attract the attention or interest of the learner to learn is a task that must be created in learning [18].

2. Relevance

A learning material should be arranged or designed according to the needs or interests of the students and not on the interests of education. Their relevance to meet the needs/ personal goals thereby affecting learner positive attitudes [16]. Lessons learned should be useful to the person. What they learn should meet individual needs and benefits and in accordance with the values that are believed or held. In line with the opinion Means, David, and Francis clearly Enhance relevance meaningfulness and academic performance [19].

Learning should be designed on how the learning experience will be valuable for students. Lessons have activities to discover the relationship between each of the lessons learned to real life in accordance with the needs of learners. John M. Keller state personal needs (basic needs) are grouped into three categories, namely:

- a. Values personal motives include the need to succeed. The need for power, and the need to make friends.
- b. Values instrumental motive means that success in the task taken as an indication or step to achieve success in achieving the next success.
- c. Value cultural motive means that the objectives of the common values that correspond to and held by the reference group of students [20].

Relevance implementation steps are:

- a. Explaining the purpose of learning and taking appropriate action in achieving the learning objectives.
- b. Extract meaning from learned material.
- c. Explains the values that can be taken from the material being studied to be applied in everyday life.

3. Confidence

Positively interact with the environment requires self-confidence so that they can convey their knowledge to others and can be beneficial to the whole society. Huett, et.al said that confidence is the interplay between desire for success and fear of failure [21]. This will encourage learners to make their best efforts to do anything. Confidence will also help learners believe or feel that they will be successful and in control of their success [16]. Therefore, effective learning should be able to relieve anxiety and inability to self-learners to believe that he is capable and able to succeed in learning something. Improving students' confidence, for example by saying words of praise and encouragement even if they make the wrong answer and encourage the student weaknesses as an improvement by motivating them to find correct solutions through many trials, if necessary. Then give constructive feedback during the learning process, so that students understand their subjects and improve on their weaknesses.

4. Satisfaction

Satisfaction is a feeling we manage to achieve through learning objectives in the form of academic performance. Student satisfaction is feeling happy, positive feelings that can arise when people gain an appreciation of him [17]. Having a sense of satisfaction that will encourage someone to do something more advanced and challenging.

The success in achieving a goal will result in fulfillment of the basic human need for attaining a desired lifestyle. In the learning process the teacher awards the symbol of success, which can serve as a reminder of the successes ever achieved such as stickers, certificates, etc. Then the teacher can give words of gratitude or sing together when students can manage to complete the given work and do well their tasks. it will feel their hard work is appreciated. The

fourth component of the ARCS Keller summarized in table I.

TABLE I. KELLER ARCS MODEL SUMMARIES (MARSHALL ET.AL, 2012: 22)[22]

Category	Definition	Basic Tactics
Attention	Capturing the learner's interest; stimulating curiosity to learn	<ul style="list-style-type: none"> • Perceptual arousal: capturing learner interest • Inquiry arousal: stimulating an attitude of inquiry • Variability: maintaining learner attention over time
Relevance	Meeting the learner's needs and goals, effecting a positive outcome	<ul style="list-style-type: none"> • Goal orientation: meeting learner's needs • Motive matching: providing learners with appropriate choices, responsibilities, and influences • Familiarity: trying instruction to learner's Meeting the learner's needs and goals, effecting a positive outcome • Confidence experiences
Confidence	Helping the learner build the belief that s/he will succeed, and giving the learner control over his/her success	<ul style="list-style-type: none"> • Learning requirements: building a positive expectation for success • Success opportunities: enhancing learners' beliefs in their competence • Personal control: illustrating that learner success is based on their efforts and abilities
Satisfaction	Reinforcing the learner's accomplishments with internal/ external rewards	<ul style="list-style-type: none"> • Natural consequences: providing meaningful opportunities for learners to use their newly acquired knowledge • Positive consequences: providing reinforcement to learners' success

III. RESEARCH METHODOLOGY

This is a quasi-experimental study with a quantitative approach to determine the effect of learning model in the control group and the experimental group. The study design used is non-equivalent (pretest and post-test) comparison-group design that uses two groups as research units, namely the experimental group and class comparison (control) (Creswel, 2013: 174) [23]. To avoid the results of research that is merely a coincidence, in the experimental group there are two classes of experimental and control groups, there is one class of control.

TABLE II. RESEARCH DESIGN

Group	Pretest	Treatment	Posttest
Experiment 1	O ₁	X _t	O ₂
Experiment 2	O ₃	X _t	O ₄
Control	O ₅	X _c	O ₆

Population in this study involves the students throughout the District elementary class of Minggir

area amounting to 24 elementary schools. The sample is partially subject, or the representative of the population studied. Sampling this study using simple random sampling technique which is taking a sample member randomly from the population so that each population has an equal chance to be a sample. The samples in this study are Class V SD Negeri Krenjon as the first experimental group, elementary school Ngrasik as the second experimental group and Class V SD Kriya as a control group.

This research data collection techniques used a questionnaire. Questionnaire is a number question that is written used to obtain information from respondents in terms of personal or reports about the things he knew. The data collection technique used in this questionnaire was analyzed using a Likert scale. In this study, a questionnaire was designed to obtain character data curiosity of students before and after being taught through the ARCS model of learning.

Assessment instruments used for collection of data on student's curiosity character, must have a valid and reliable criterion in order to get the preferred results. To test the validity and reliability of the questionnaire for characters curiosity of students, researchers use the contents of the validation point statement using expert judges were analyzed by Gregory formula. After that, tested empirically instrument (field trial) using correlation analysis and then test reliability (internal consistency test) using Cronbach Alpha technique with a significance level of 5%. Indicators to measure curiosity were used on the group that wanted to learn something new, seen nor felt, felt challenged to solve a problem that is encountered, reading continuously to understand the material, cognitive aspects Integrating the existing reality. Reliability test values obtained Alfa > r table at significance level of 5% 0.677 > 0.304. So, Questionnaire character curiosity construction and point statement has a valid and reliable to measure the curiosity of students.

Before the data analysis through hypothesis test to determine whether or not the influence after a given treatment, researchers to test the prerequisite that data normality test to determine whether a population where taking data curiosity of students with normal distribution and homogeneity to determines whether the obtained data is derived from a sample the same before and after being treated.

Test for normality using the Kolmogorov-Smirnov test with SPSS 20. If Sig > 0.05 means that the data came from a normal distributed population. Statistic Levene homogeneity test was done using SPSS 20.0. Acceptable if the significance is greater than 0.05 means that the same variant data variable (homogeneous).

Hypothesis test study conducted by researchers is using Independent Sample t-Test. This is done because researchers wanted to compare the

experimental class control class which is an independent sample. Hypothesis alternative was accepted if its significance is less than 0.05 means that there is a difference of influence between the groups being compared. Then will use gain score to see increasing students' curiosity for each group research.

IV. RESULT AND DISCUSSION

Independent test samples t-test were conducted to prove the difference curiosity of learner's class V SD district Minggir the following study uses a model that follows the ARCS and conventional learning. The criteria used in making conclusions are sig < 0.05, hypothesis nil (H0) is rejected, then there are significant differences between the experimental group and control group for curious learners. Results of the calculations are shown in Table III.

TABLE III. SUMMARY TEST RESULTS

variables	Sig	Conclusion
Curiosity	0,000	There are significant differences

Based on the summary above, it can be concluded that the results of hypothesis testing with Independent Samples t-Test obtained significance value of 0.000. So, Hypothesis zero was rejected because Sig 0.000 < 0.05. It was concluded that there are significant differences curiosity of learner's class V SD district Minggir which follow ARCS Model and conventional learning.

The results of this study prove that there are differences in the effect of curiosity of learners who follow learning using the ARCS in the first and second experimental group with which to follow conventional teaching fifth grade elementary district Minggir. In the ARCS model of learning, learners are more involved than the conventional teaching models specially to cultivate the curiosity of learners.

Comparisons were performed on average to see a higher average and lower in each study group. For pretest and posttest scores in each treatment group was calculated using the average normalized gain analysis. Results of the calculations are presented in the following table:

TABLE IV. AVERAGE NORMALIZED OF CURIOSITY EACH GROUP RESEARCH

Information	Group	pretest	posttest	gain
mean	EC1	52.71	64.48	0.51
	EC2	52.94	63.97	0.48
	CC	53.95	57.40	0.16

Descriptive analysis curiosity shows that in the first experiment class had an average of 64.48 and the second experiment class has an average of 63.97. The control class have on average lower than in the first experiment experimental class and the second class of 57.4

Based on the analysis of the gain is normalized scores can be seen an average increase of curiosity at first experimental group of 0.51 and the second at 0:48 experimental class has an average of greater improvement than the control class 0:16. Comparison of the average increase in curious learners pretest and posttest can be seen in the following charts.

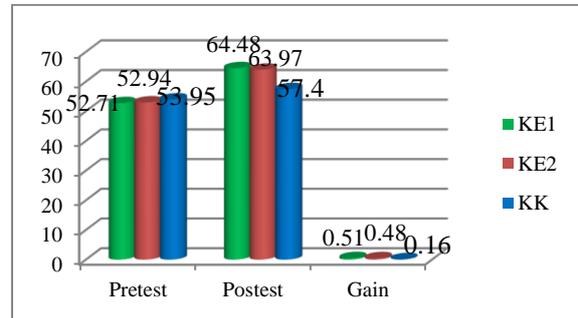


Fig. 1. The bar chart on average curiosity

The diagram above proves that the control class included in the low category and the first and second experimental group included in the medium category. The figure also showed a greater increase occurring in the first experimental class and the second experimental class compared to that occurred in the control class. Therefore, the use of ARCS Model in learning is very good to apply.

According to Rowson/ curiosity is dually important for innovation, first in its link to creativity and divergent thinking, and second in its role as an intrinsic motivator to sustain interest in a given area [24]. Hence the importance of curiosity which every learner develops the ARCS model will be highly effective if implemented. ARCS model can motivate learners to give an opinion or ideas for the learning occur. ARCS model is done in the classroom first and second experiments. Lessons are designed to attract the attention that must be implemented to learn a topic. Attract attention or interest of the learner to learn is a task that must be created in learning [18]. Attract attention aroused the curiosity of students is done by using a content unusual or unique during the learning process. Use of media images contained in a case that fits the needs of pupils will encourage learners to find solutions that can be done to solve the case. With there are relevance to the needs of every learning/ learners' personal goals affect a positive attitude for learning.

V. CONCLUSION

There are differences in the effect of curiosity of students in class V SD district Minggir the following study uses a model that follows the ARCS and conventional learning STAD. This is evident in the variable curiosity acquired Sig value 0.000 < 0.05 with value count 5.732. Use ARCS model study to enable learners have an interest to learn the subject matter, have a learning experience in accordance with the experience of everyday life, give each other ideas or

opinions in their mutual learning process. Learners must strive to raise the curiosity to become learners who can learn, create and find something useful for life with a learning experience that is owned him/herself. An educator is expected to not just focus on one learning model just because of the subject matter and the other one definitely has different characteristics, so that the necessary innovation and variation in teaching so that students are not saturated and able to understand the material presented well and one model of learning that can be applied to the model of learning this ARCS. With this research can also be used as a basis to conduct further research into and with more samples.

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