Development of Arcs (Attention, Relevance, Confidence, Satisfaction) Based Learning Media in Craft and Entrepreneur Course to Improve Students' Performance

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ABSTRACT

Learning system conducted nowadays was still centered on teachers. Whereas teachers were supposed to create a learning process which could improve creativity, by following the development of technology in education. The purposes of this study were: 1) Analyzing the requirements to develop of ARCS (Attention, Relevance, Confidence, Satisfaction) Based Learning Media in Craft and Entrepreneur Course; Analyzing the effectiveness of ARCS (Attention, Relevance, Confidence, Satisfaction). This study utilized Borg and Gall model to develop ARCS. Data was collected by questionnaire and observation, and further descriptively analyzed. Three experts did validation of the ARCS based learning media and was proved to be valid on materials with 80.05% of good category, on media with 81.63% of good category, and practitioner rate with 98% of very good category. T-test formula was used to analyze the effectiveness of ARCS. The score of $t_{calculation}$ got from the post test of control group and experiment group was 3.461 and the score of t_{table} was 1.99. Since $t_{calculation} > t_{table}$, it proved that the improvement of students performance in Craft and Entrepreneur Course in experiment group was higher than the ones in control group.

Keywords: Learning Media, ARCS, Craft and Entrepreneur

1 INTRODUCTION

Nowadays Indonesia were facing unemployment problem due to the increase in the number of labor force followed by the low level of labor absorption power in industrial sector, massive professional change, and economic deceleration in Indonesia. The data from Central Bureau of Statistics in the I/ 2015 quarter stated that it 4.71% decreased or decelerated compared to I/2014 quarter (Sari, November 5th, 2015). The data from Central Bureau of Statistics of Central Java Province stated that the number of job seekers based on the highest level of education background in Central Java in 2014, especially high school graduated job seekers, were: 120.363 people of senior high school graduates and 130.056 people of vocational high school graduates from the total job seekers from all level of education background, that was 426.435 people. The conclusion was that the biggest contributor of job seekers was high school graduates, which – in 2014 – was 59% from the total number of job seekers from various level of educational background.

The government, in 2013 Curriculum, wrote down Entrepreneur course as one of obligatory courses to be learned from elementary school level to high school. There should be independence teaching integrated with the values of entrepreneur education in the curriculum used nowadays. The Craft and Entrepreneur course in high schools was classified as transience – knowledge, which developed knowledge and trained life skill and soft skill based on art, technology, and economy. In this 2013 Curriculum, the nature of teaching and learning process in Craft and Entrepreneur course was student-

centered; it meant that the students were motivated to be active while the teachers were functioned as facilitators and motivators. The purpose was that all the potentials of the students could be developed so that they could create various useful creations while still implementing their positive characters in accordance with the purpose of national education stated in national law about national education system as stated in Law No. 20 Year 2003.

Learning was defined as a system containing of inter-related and united components, including: purpose, material, method, media, and evaluation. In the current modern learning system, there was two ways traffic communication or even multi ways traffic communication. Susilana and Riyana (2009: 07) defined learning media as a place for messages, material delivered as learning messages, and purpose to be achieved as learning process. The use of media creatively would improve the probability of the students to learn more, understand what was taught better, and improve performance in implementing skill in accordance with the learning purpose. The use of learning media at the beginning of the process would increase the effectiveness of learning process and the delivery of learning content and messages by the teachers. One of learning media that could be used by teachers was audio-visual media or usually known as learning video. Video-based teaching with various soundtracks could be used in various kinds of learning (Smaldino et al., 2012: 404). Text could be written in various languages and used to translate or give some description about the content of the video.

Deporter and Hrenacki (2007: 110) stated that in some elementary schools and middle schools in America, the teachers realized that every person had his own best way in learning a new information. At the beginning of learning experience, one of the first steps was to recognize the modality as visual, auditoria, or kinesthetic modality. As widely known that visual learners learn through what they saw, auditoria learners learn through what they heard, and kinesthetic learners learn through movement and touch. The differences between each learning style of every student in a class needed to be accommodated by the teachers so that all the material could be received by all the students.

The result of some studies on learning achievement showed that motivation was a factor to highly affect the learning process and achievement. The important role of motivation was as physiological activator inside the students that could create learning activities and give passion, spirit, and comfortable feeling in learning so that the students had the energy to do learning activities. Theory on motivation developed by Keller (1983) loaded some principles on motivation that could be implemented in learning process that was frequently known as ARCS Model, that were Attention, Relevance, Confidence, and Satisfaction. This motivational condition was really important to be implemented in teaching and learning process so that students' motivation could always be maintained.

Based on the direct observation conducted, Craft and Entrepreneur course needed learning media that could improve students' motivation in learning so that it would improve the students' learning achievement. The students' learning achievement based on the Semester Final Exams was that 38% of the students got scores below

Minimum Mastery Criteria or *KKM*, that was <75. Means and infrastructure in SMK Negeri 1 Karanganyar was really supporting to use learning media that could improve the students' learning achievement by building students' learning motivation, such as the availability of LCD projectors and screen projectors in every

classroom. Therefore, the researcher would develop audio-visual learning media that could motivate the students to learn Craft and Entrepreneur so that the students' achievement could be improved. Learning media developed would be based on ARCS Model (Attention, Relevance, Confidence, and Satisfaction).

2 METHOD

This research developed learning media based on ARCS. Research and development model used was Borg and Gall Research and Development. The population of this research was the students of Class XI of Business and Management Competence Program. The technique of sample withdrawal used in this research was Nonprobability Sampling, which was a technique of sample withdrawal that did not give the same opportunity for every element (member) of the population to be chosen as the member of the sample. The technique used was purposive sampling, which meant a technique of determining sample by considering that experimental class and control class should be homogenous or equal or there was no significant difference.

The preliminary field test was tested to 6 students. Main field test was tested to 69 students. Operational field test was tested to 71 students of Class XI AP 1 as control class and Class XI AP 2 as experimental class. Instruments of collecting data used in this research was validation sheet used to measure the indicators related to the layout of learning media and students instrument in using learning media created by the developer. Questionnaire were delivered to the students to find out their responses towards the development of ARCH based media. Score distribution of the questionnaire was based on *likert* scale with 1 to 4 score range. Observation sheet was used by the researcher when direct data collecting was conducted. Test questions were used to find out the beginning competence score and students' achievement after learning using ARCS based learning media. Students' knowledge test questions were developed in the form of multiple-choices in accordance with learning material indicators of Craft and Entrepreneur. Test questions instruments delivered at the beginning before experiment (pretest) to find out the students beginning competence, and test after experiment (posttest) was to measure the students' achievement in Craft and Entrepreneur. Before final test was delivered to the students, test or instrument tryout was conducted to find out the validity of the questions, the reliability of the questions, and the level of difficulty of the questions, and the discrimination power of the questions.

The techniques of analyzing data in this research were: (1) descriptive statistical analysis in this research were analysis of need, analysis of data validity by experts, and analysis of questionnaire data, (2) inferential statistical analysis in this research were conducted on normality test, homogeneity test, and effectiveness test, and (3) qualitative analysis were conducted on the data of result of the interview and beginning observation as well as the result of validity and appropriateness test of the media; that the data in the form of percentage was transformed into qualification criteria.

3 RESULTS

The result of literary study and field study on Craft and Entrepreneur learning was that the teaching and learning activities were still monotonous and boring so that

the students were not motivated to engage in teaching and learning process resulted in students' score that was not satisfactory. The facilities, such as LCD projector and active speaker, provided by school could not be maximally utilized in teaching and learning process. The result of the final exam of the first semester in the academic year of 2015/2016 showed that 38% of the students' scores were still below *KKM*.

The result of this finding analysis could be used as the base for the researcher to develop learning media based on ARCS (Attention, Relevance, Confidence, and Satisfaction) in Craft and Entrepreneur course. The product of ARCS based learning media was developed by using *sparkol videoscribe* software that could combine the materials and learning videos with interesting and easy to understand package.

3.1 The Validity of ARCS Based Learning Media

The stage of experts' validation was conducted after the researcher finished the creation of media product. The media applied in teaching and learning process was the validated media. The validation of the product was consulted to material experts, media experts, and practitioners. It was conducted to find out the strength and the weakness of the media created.

3.1.1 The Validation of Material Experts

Material experts' validation included the aspects of purpose assessment, learning content or material (media, affective, cognitive, and psychomotor), material quality on the media, language and communication, and level of students' competence, motivation of ARCS Model, and usefulness. The result of questionnaire on the validity of the materials seen from purpose aspect was stated to be very good (88%), the material content from media element was stated to be good (81%), affective element was stated to be enough (70%), cognitive element was stated to be very good (90%), psychomotor element was stated to be good (75%), material quality aspect was stated to be good (75%), language and communication aspect was stated to be good (75%), level of students' competence aspect was stated to be really good (100%), aspect of ARCS Model motivation was stated to be very good (88%), and usefulness aspect was stated to be very good (92%). Overall, the result of the calculation of all aspects was 82.05%, it meant that it was stated as good and did not need to be revised.

3.1.2 The Validation of Experts on Media Development

The validation of media experts included the aspects of learning design assessment, learning content or materials (media, effectiveness, cognitive, and psychomotor), technical quality, and motivation of ARCS Model. The result of media validation questionnaire seen from the aspects of learning design was stated to be good (83%), the content of the material from media element was stated to be enough (72%), affective element was stated to be enough (75%), cognitive element was stated to be very good (90%), psychomotor element was stated to be very good (95%), technical quality element was stated to be good (81%), illustration aspect was stated to be good (83%), and aspect of motivation of ARCS Model was stated to be good (81%).

While, the result of the calculation of overall aspects was 81.63%, it meant that it was stated to be good and did not need to be revised.

3.1.3 The Validation of Practitioners

Practitioners' validation included the aspects of purpose assessment, learning content or material (media, affective, cognitive, and psychomotor), material quality on the media, language and communication, and level of students' competence, motivation of ARCS Model, and usefulness. The result of questionnaire of practitioners' validation seen from purpose aspect was stated to be very good (100%), the material content from media element was stated to be very good (94%), affective element was stated to be very good (95%), cognitive element was stated to be very good (95%), psychomotor element was stated to be very good (100%), material quality aspect was stated to be very good (100%), language and communication aspect was stated to be very good (100%), level of students' competence aspect was stated to be really good (100%), aspect of ARCS Model motivation was stated to be really good (100%), and usefulness aspect was stated to be very good (100%). Overall, the result of the calculation of all aspects was 98.00%, it meant that it was stated to be very good and did not need to be revised.

3.2 The Appropriateness of ARCS Based Learning Media

The appropriateness of ARCS based learning media could be seen from appropriateness questionnaire in the preliminary field test, main field test, and operational field test. At the preliminary field test, ARCS based learning media was given to 6 students as the respondents to give their assessment. Based on the assessment in this limited test, the students gave positive response; the assessment on the aspect of material content of the media was stated to be good with 89% score, affective aspect was stated to be good with 82% score, cognitive aspect was stated to be good with 80% score, psychomotor aspect was stated to be good with 80% score, material quality score was stated to be very good with 90% score. While, the score of assessment on the overall aspects was 86.00% and was stated to be good. The product of ARCS based learning media, based on limited test, and was stated to be valid and appropriate to be used in main field test. Before main field test was conducted, the media was revised based on the suggestions of the respondents.

The result of students' questionnaire in main field test given to 69 students showed that they gave a very good score (91%) for material content aspect of the media, a good score (85%) for affective aspect, a very good score (87%) for cognitive aspect, a good score (83%) for psychomotor aspect, a very good score (96%) for material quality aspect, and a very good score (91%) for motivation of ARCS Model. The score for all aspects was 88.63% with very good criteria. So it could be concluded that the product of ARCS based learning media could be stated as valid and appropriate to be used in operational field test.

3.3 The Effectiveness of ARCS Based Learning Media

ARCS based learning media was tested in main field test and then revised based on the suggestions of the respondents. The media that had been revised was tested in operational field to score its effectiveness by using experimental method. In this experimental method, the researcher used two classes, which were control class and experiment class. This operational field test was conducted in three meetings by using Pretest-Posttest Control Group Design.

In this stage, ARCS based learning media was applied in Class XI AP 2 consisting of 36 students as experiment group and Class XI AP 1 consisting of 35 students as control group. The selection of experiment and control groups was randomly done. During the test, the researcher was helped by the teacher of Craft and Entrepreneur course to do the supervision and observation on the improvement of students' learning score. The result of pretest, which was the class score of control and experiment groups, were: the average score of pretest of control group was 72.91 while the average score of pretest of experiment group was 70.44. It could be concluded that there was no significant difference between the average score of control group and the average score of experiment group for preliminary core or pretest because the difference was only 1.47. Therefore, it could be stated that experiment group and control group had the same and equal level of intelligence so that the next treatment could be applied. The analysis of t-test by using Software IBM SPSS 17 showed that the significance score was 0.141 with no significant category, because it > α (0,050). It showed that at the beginning, control group and experiment group did not have significance difference on the students' average learning score.

The result of pretest or class learning score of control and experiment groups was also analyzed by using t-test formula. The score of t-calculation from pretest of control and experiment groups was 1.490 and the score of t-table was 1.99. Therefore, t-calculation < t-table, it meant, at the beginning, there was no significant difference between control and experimental groups or it could be said that both had the same level of understanding. The result of posttest or the score of learning achievement of Class XI AP showed that the average score of experiment group was 84.89, while the one of the control group was 79.31. The analysis of t-test by using Software IBM SPSS 17 showed that a significance score of 0.001 was obtained with significant category, because it < α (0,050), showing that the result of posttest of experiment group was better than the one of control group with significant difference.

The result of posttest or learning score of control and experiment groups was also analyzed by using t-test formula. The value of t-calculation that was obtained from posttest in control and experiment classes was 3.461 and the value of t-table was 1.99. Therefore, t-calculation > t-table, it meant that the improvement of the score of experiment group was better than the one of control group. It showed that the use of ARCS based learning media developed could improve students' learning score compared to learning process without the use of ARCS based learning media.

4 DISCUSSION

This research and development was a research and development resulted in a product, which was learning media by utilizing sparkol videoscribe software, in which the output of this product was learning media based on ARCS (Attention, Relevance, Confidence, and Satisfaction). It was not only learning media but also a means to

motivate in teaching and learning process. It was in accordance with the theory of Hamalik (1986) in Arsyad (2015: 19) which stated that the use of learning media in teaching and learning process could awaken a brand new desire and interest, awaken motivation and impulse in learning activities, or even bring about physiological effects towards the students. The results of former research and development on learning media had gave their contribution, by creating useful products for education. The following were the former research results which were relevant to the research and development conducted by the researcher: Dini Kurniawati (2015) proved that motivation and the use of learning media could improve students' learning achievement on entrepreneur. The result of the research conducted by As'ad an Hikmah (2013) proved that the used of learning media by utilizing macromedia flash software could improve students' learning achievement. The result of the research conducted by Andi Kristanto (2011) proved that the use of learning video in class could improve material understanding better than the use of power point. The result of the research conducted by Yudha Adhi Wijana (2014) showed that the development of multimedia based on ARCS could motivate the students with 87.58% score.

The result of the research conducted by Babalola Isiaka (2007) and J. Ayodeji Akerele and Adeola F. Afolabi (2012) showed that the use of video in teaching learning process was more effective to improve students' performance in teaching learning process. The result of the research conducted by Jason Bond Huett, Leslie Moller, Marty Bray, Jon Young, and Kimberly Cleaves Huett (2007) as well as Xiaowei Qian (2014) proved the effectiveness of teaching and learning process by using the elements of ARCS in stimulating the skill of delivering materials, skills, and passion to learn for the students.

The conclusion from various researches conducted by former researchers was that the development of learning media could be conducted by using various software in accordance with the competence of the researchers to use that software and the compatibility with the materials used to develop the media. The new different thing in the research conducted by the researcher was the use of ARCS based learning media, especially in Craft and Entrepreneur course. The ARCS Model could be used for any learning model or learning media because this ARCS was one of motivation model that could affect students' learning motivation. The use of sparkol videoscribe software was selected because sparkol videoscribe software was still rarely used in teaching and learning process. The strength of using this software was the output of this software, that was video that could be watched everywhere, could be through video-supported cell phone, laptop, or other presentation tools without any internet connection so that the students could learn everywhere. Other than that, teachers could also better maintain their teaching and learning process so that the learning material could be delivered on time.

5 CONCLUSION AND SUGGESTIONS

The conclusion of this research was that ARCS based learning media had been stated to be valid to be used in teaching and learning process. ARCS based learning media was effective to improve students' learning achievement in Craft and Entrepreneur course. The suggestion for the headmaster was to conduct training for the teachers on how to use newest software that could support their teaching and learning

process in class. It meant for the teachers to have skill in creating learning media that was suitable for their teaching needs. The suggestion for the teachers that they should be creative in teaching and learning process by using technology-based learning media. Teachers were supposed to be able to develop the continuation of ARCS based learning media that had been developed for other materials because this ARCS based learning media had been proved to have great effects in the improvement of students' learning achievement.

REFERENCES

[1] Akrele, J.A., Afolabi, A.F. (2012). Effect of Video on the Teaching of Library Studies among Undergraduates in Adeyemi College of Education, Ondo.Retrieved from University of Nebraska website : http://digitalcommons.unl.edu/libphilprac/680/

[2] Arsyad. A.(2015). Media Pembelajaran. Jakarta : Raja Grafindo Persada

[3] DePorter, B & Hernacki, M. (2007). Quantum Learning : Membiasakan Belajar Nyaman dan Menyenangkan. Bandung : Mizan Media .

[4] Fajar,A. (2009). Portofolio dalam Pelajaran IPS.Bandung: PT Remaja Rosdakarya

[5] Isiaka. B. (2007). Effectiveness of video as an instructional medium in teaching rural children agricultural and environmental sciences. The International Journal of Education and Development using Information and Communication Technology, 3 (3), 105-144.

[6] Jason, B.H., Moller, L., Bray, M.(2006).The Effects of ARCS-base Confidence Strategies on Learner COnfidence and Performance in Distance Education. (pp. 116-139). Retrieved from www.aect.org/pdf/proccedings/2006/06_12.pdf

[7] Kustandi, C dan Sutjipto, B.(2013). Media Pembelajaran.Bogor: Ghalia Indonesia

[8] Rohani, A dan Ahmadi, A.(2007). Pengelolaan Pengajaran. Jakarta: Rineka Cipta

[9] Sari, E.V.(2015). BPS: Jumlah Pengangguran Bertambah 320 Ribu Orang Akibat PHK. Retrieved from http://www.cnnindonesia.com/ekonomi/20151105130747-92-89668/bps-jumlah-pengangguran- bertambah-320-ribu-orang-akibat-phk/

[10] Siregar, E., & Nara, H.(2014). Teori Belajar dan Pembelajaran.Bogor : Ghalia Indonesia

[11] Suprijono,A.(2009).Cooperative Learning Teori dan Aplikasi PAIKEM. Yogyakarta:Pustaka Pelajar

[12] Susilana, R. & Riyana, C.(2009). Media Pembelajaran: Hakikat, Pengembangan, Pemanfaatan, Penilaian. Bandung : CV Wacana Prima

[13] Qian, X.(2014).Construction and application of an educational game based on the ARCS model. The World Transactions on Engineering and Technology Education Journal, 12 (21),236-241