

Web 2.0 Technologies Use in ARCS Motivational Model-Based Online Learning on Student Performance in STIPAK Malang

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Abstract— Online learning which capitalizes on Web 2.0 technologies combined with ARCS Motivational model-based learning strategies (Attention, Relevance, Confidence, and Satisfaction) has effects on students' performance in STIPAK Malang. Web 2.0 technologies offer lots of advantages such as facilitating students in obtaining information, transmitting information rapidly that they may be information producers, and producing knowledge. Besides, Web 2.0 technologies contribute to creativity, support learning, and communication as well as the interaction between teachers and students or student-student interaction. ARCS Motivational model focuses on four things in learning that give rise to students' retained attention towards satisfaction. There was a strong relationship between the use of Web 2.0 technologies and ARCS motivational model-based learning, and student's performance in STIPAK Malang indicated at 0.717** with sig value 000<0.01. The effect revealed between variables was shown by the coefficient of determination (R) value of 51.4% meaning that the use of Web 2.0 technologies in the ARCS motivational model-based learning had a significant effect of 51.4% on student's performance whereas 48.6% was attributed to other factors.

Keywords—component; motivation ARCS; Web 2.0; student's performance; education; e-learning

I. INTRODUCTION

Covid 19 Pandemic has swept across Indonesia in 2020. The Indonesian Minister of Education and Culture on March 24, 2020, issued a circular letter of Minister of Education and Culture Number 4 the Year 2020 regarding educational policies in response to the Covid 19 Public Health emergency which includes students' learning from home. This instruction necessitated all educational institutions, both public and private institutions, to switch abruptly into full online learning. Sekolah Tinggi Pendidikan Agama Kristen (STIPAK) Malang complied with this policy and readily moved to online learning by capitalizing on digitalized platforms or Web 2.0 technologies.

Web 2.0 technologies constitute online platforms or applications instrumental in the users' accessing of the

information that they put the information to good use, impart the knowledge they acquire, and transform themselves into an information producer. Web 2.0 technologies comprise website-based or applications that enable the users to get involved in and share their contents through a Blog, microblogging site, Mash-up, Podcast, Social Networks, Social Media, and Wiki [1]. In line with Jaffar, Web 2.0 platforms support teaching-learning process including creative and collective contribution (Twitter, Facebook), concerted contribution to knowledge construction (Wiki, YouTube, Google Docs), communication (Skype), knowledge management, and arrangement (Lezat, Diigo), self-expression (blog), creating and managing personal website (Website, Netvibes), analyzing and developing new concept and ideas (MindMeister), and sharing and exchanging document (Google Documents, Dropbox)[2].

Web 2.0 applications make things easy as users do not need to install the software. All they need to do is to visit the website and get to use the content that is made available there. This facility benefits students as it enables them to work "on time" and gain learning opportunities at "their fingertips". Web 2.0 technologies extensively allow users to create things or undertake projects together, interact and communicate with others, and enable them to navigate, share, and collaborate. Thus, all these affordances provide students with new experiences and learning opportunities [3].

In addition, Web 2.0 technologies provide features that facilitate one's interacting with a group of people who are at a different place and at a different time frame and collaboration among people of different backgrounds through enhanced communication. As such, Web 2.0 technologies allow the learning to take place beyond the confines of location and time where the focus is shifted away from the teacher to students. Besides, Web 2.0 technologies offer cutting edges tools that support students in learning to the best of their ability as they are stimulated in using their intelligence, developing confidence, and reinforcing their basic skills and contents taught in online learning [1]. Web 2.0 technologies in the context of higher education, serve as a medium of changing the teaching and learning process and preparing students for their

future endeavors where things are increasingly dynamic through the influence of digitalized technology [4].

Web 2.0 platforms that were frequently used in March through June 2020 in STIPAK Malang were Google Meet, Google Classroom, Google Document, Google Form, and email. The new academic year in July 2020 in the teaching and learning process in STIPAK Malang instead of Google Meet, zoom platform was used. Lecturers and students made concerted efforts to use the existing technology for the maximized benefit preceded by the training given to lecturers and students to help them get used to it.

Moving halfway into the learning, some challenges began to arise which required immediate attention such as students' dwindling motivation, interaction issues between lectures and students, students' encountering hurdles to effectively working in collaboration, and the assessment administration. In coping with the problems, few changes were made including the adoption of different teaching methods instead of lecturing to enhance students' interaction, learning evaluation (test) modifications were made to ensure that students would not Google search the answers whilst lecturers were able to keep track of students' learning performance.

Considering the hindrances that came up, this research was conducted to bring to light how the use of Web 2.0 technologies in online learning and the ARCS motivational model affected students' performance in STIPAK Malang. A drastic shift from classroom face-to-face learning into the teaching-learning process undertaken on digital platforms is quite disruptive because students struggle to focus and remain focused as they stare into the screen and deal with discomfiture. The temptation of latching on to other things during online learning such as gadgets or games challenges the quality of learning.

The selection of the ARCS motivational model is intended to bring about an effect where students continue to show good academic performance in online learning because they are motivated. Motivation comprises a personal drive that originates from within, and external incentives from one's environment or other people that prompt someone to take up challenges and deal with problems he encounters to accomplish a certain task or attain a goal [5]. Motivation enables one to make his best efforts to persist and accomplish his purpose [6][7].

ARCS motivational model-based learning is a motivational learning strategy that focuses on students' Attention, Relevance, Confidence, and Satisfaction throughout the learning process. In using ARCS motivational model-based learning strategies educators need to focus on four things when they are orchestrating lessons comprising as follows: Attention which is intended to grab and direct the attention of students from the very beginning of learning to the closure and get them to have sustained interest and follow the learning. Relevance aimed to focus on the degrees the learning content is connected to reality so that students develop adequately useful competence in solving the problems they. Confidence deals

with how students can feel at ease, comfortable, and confident during learning that they are assured of their ability to express opinions or ideas. Satisfaction focus on students' feeling good about their accomplishment or when they achieve their expectations, and this sense of satisfaction encourages them to try their best, study harder, and practice even more [8].

Students' sources of motivation can be internally and externally. The ARCS motivational model-based learning can potentially ramp up students' motivation internally and externally [9][10][11]. The benefit of implementing ARCS motivational model-based learning by focusing on the four factors the accomplishment of the goal of learning which teachers effectively determine [12].

Selecting applying the right learning strategies will enable teachers to anticipate students' behaviors during the learning process. The outcome can be manifested in students' achievement representing their academic performance. Academic achievement serves as a significant criterion to evaluate and measure students' performance [13].

Academic achievement or success in learning has a correlation with the outcome or standard of performance. In Indonesia students' performance is divided into four domains of outcome namely, cognitive domain, affective domain, psychomotor domain, and social skill through the final test on the course" Learning Strategies in Christian Religious Education. In online learning some things worth observing regarding student performance: punctual attendance, daily interaction between teachers and students, students' behavior, students' final score, and skills they have developed [14].

This research unveils the effects of using Web 2.0 technologies in the ARCS motivational model-based learning on students' performance in STIPAK Malang.

II. METHOD

A. *Selecting a Template*

The research employed quantitative method which is ex post facto-correlational study. This research design offers an advantage as it discloses what transpires, and what conditions things are at their best that researcher may explore the causal relationship in simple terms and avoid artificiality in the process. This design provides a clear direction as to the hypothesis should go that it has the testing power [15]. The researcher employed intact groups.

There were 40 students in all. The sample taken is in accordance with Slovin formula which is 5% those 30 students were selected accordingly. 2. The questionnaire used consisted of 32 items [16] measured in Likert scale. To test the validity of each item is conducted by correlating each score to the total score using Pearson product-moment correlation in SPSS 23.0. Validity is confirmed when each item used has a significance value of 0.05. When the r count is greater than the value of the t-table the item is pronounced valid. However, when the

opposite takes place, it is thus considered not valid, and the item must be left out.

III. FINDING AND DISCUSSION

A. Research Result

The questionnaire has high reliability indicated by Cronbach Alpha value of 0.936 and the significance value of 0.05 is used to determine whether the item is valid or not. When the r count is greater than the r table the question item is deemed valid and otherwise, it is left out. The result of computation for 32 questions revealed that each had a value of greater than 0.9 with a significance value of 0.00. Therefore, each item of the questionnaire is deemed valid.

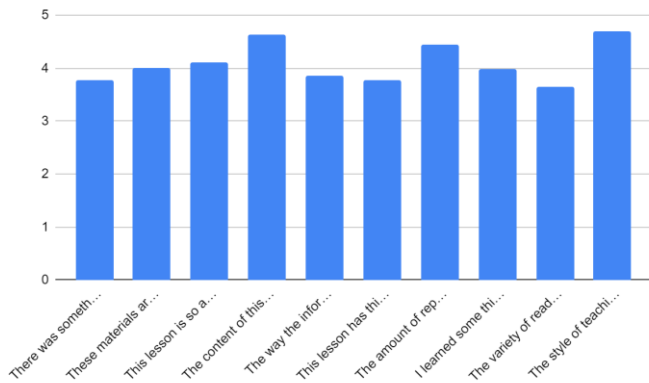


Fig. 1. Attention

The testing of correlation coefficient (r). Based on the analysis, the r-value obtained was 0.717 with a significance value of $p < 0.01$. Further looking at the coefficient value of 0.717** the effect is deemed "significant" in which $r(38) = 0.717$; $p < 0.01$ meaning that ARCS motivational model-based learning (X) influenced student performance in STIPAK Malang.

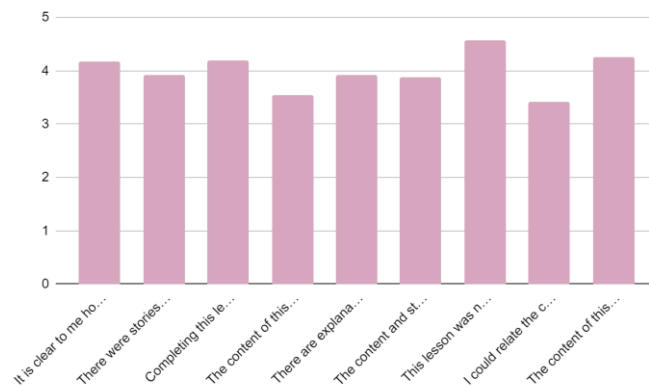


Fig. 2. Relevance

Furthermore, it is evident that variable X influenced variable Y. The testing to determine the value of (R) was

intended to find out how significant the effect was in percentage (%). Based on the data analysis, the summary reveals that the effect was 0.514 or 51.4 %. It was indicated that the correlation coefficient value of $(r) = 0.717$ then $R(r^2) = (0.717)^2 = 0.514$ or 51.4%. Therefore, it can be concluded that ARCS motivational model-based learning had a significant effect which is indicated by r (0.717) and 51.4 % (R) on student performance in STIPAK Malang.

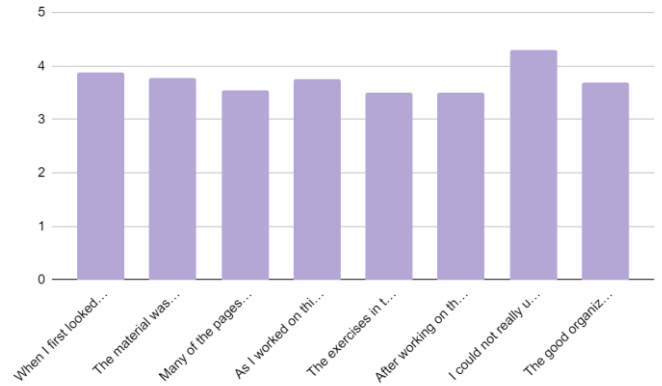


Fig. 3. Confidence

Based on the significant value $0.00 < 0.01$. This confirms that ARCS motivational model used in the learning influenced student performance in STIPAK Malang.

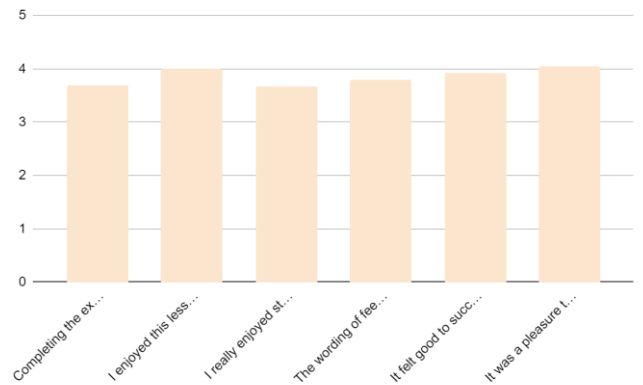


Fig. 4. Satisfaction

B. Discussion

The Result of Data computation showed that there was a strong connection between Web 2.0 technologies used in the learning based on ARCS motivational model and student performance in STIPAK Malang. The reference to which ARCS motivational model is used in the learning can be seen in Table 1. [16]

TABLE I. ARCS CHARACTERISTIC

Motivation	Subcategories	Process Question
Attention	A1 Perceptual arousal A2 Inquiry arousal A3 Variability	What can I do to capture their interest? How can I stimulate an attitude or inquiry? How can I maintain their attention?
Relevance	R1 Goal orientation R2 Motive matching R3 Familiarity	How can I best meet my learner's needs? How and when can I link my instruction to the learning styles and personal interests of the learners? How can I tie the instruction to the learners' experiences?
Confidence	C1 Learning requirements C2 Success opportunities C3 Personal control	How can I assist in building a positive expectation for success? How will the learning experience support or enhance the learners' beliefs in their competence? How will the learners clearly know their success is based upon their efforts and abilities?
Satisfaction	S1 Intrinsic reinforcement S2 Extrinsic rewards S3 Equity	How can I encourage and support their intrinsic enjoyment of the learning experience? What will provide rewarding consequences to the learners' successes? What can I do to build learner perceptions of fair treatment?

The teaching-learning process that capitalizes on the Web 2.0 technologies where the learning strategies employed are based on ARCS motivational model proves to support students in demonstrating expected performance in online learning. This is evident in the correlation coefficient test value of r which is 0.717 with the significance value <0.001 revealing the strong connection between variables.

Web 2.0 technologies enable lecturers to identify students' learning styles and streamline the access to information, social interaction, and exchange of information towards the accomplishment of the goals and help them ensure that tasks are appropriate, and students show motivation and expected behaviors. The interactional hindrance can be mitigated by enabling students to remain on task without supervision through the implementation of the ARCS motivational model in learning. In this way, students are encouraged to focus on the four things (attention, relevance, confidence, and satisfaction) to accomplish the predetermined and expected goals.

Keller's motivation theory known as the ARCS model is used in designing learning activities. This model reveals the impact of motivation as the primary focus is placed on the attitudes, beliefs, and behavior of students. As they take part in the learning, they show sustained engagement that helps them cope with the hindrances and difficulties to arrive at the goals. The confidence which teachers expect students to develop gives rise to a self-efficacy that they keep their hope up and are assured of what they can do to solve problems. Their

motivation gives them the drive to learn new things, develop new skills, and complete tasks. The ARCS learning design is intended to bolster students' self-confidence in particulars that they are aware of their self-efficacy that they can make achievements. Students believe that they have the ability and take ownership of their endeavor to achieve goals. This enhances their motivation and thus helps them engage themselves in learning.

During online learning, teachers can see their way to make sure that students pay attention from the very beginning of the lesson to the closure. Thus, students are enabled to develop intrinsic motivation. Moving on to the learning process which emphasizes the relevance, students are given opportunities to make meaningful discoveries as they connect the subject matter to their personal experience that the process arouses students' interest. Students' self-confidence comes through when students are encountering others in various ways such as checking with others when they have difficulties comprehending something, or during the class discussion, and even when the teachers give verbal praises or comments. As such, students' confidence is bolstered. Students gain satisfaction when they are given challenges which they can solve, or within the range of their capability.

In this research, student performance in STIPAK Malang was measured by looking at their final test score as academic achievement. Student performance, cognitively speaking was observed by analyzing and evaluating chapter tests, mid-semester tests, and final tests. As students' final test scores in STIPAK Malang were pretty good, the outcome that was obtained showed that their performance had a strong correlation with the learning strategies selected and applied with a Pearson correlation coefficient of 0.717.

The use of Web 2.0 technologies in ARCS motivational model-based learning exerted an effect on student performance in STIPAK Malang by 51.4%. The rest which was 48.6% revealed the influence of other factors such as interaction with friends, interaction with teachers, students' engagement in the learning, and suitability of learning strategies. These factors could also step up the cooperation and collaboration among students, allow knowledge sharing and learning opportunities to take place.

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