Enhancing Student Engagement: Analysing the Role of ARCS Motivation Model in Online Learning Tools for Higher Education

Hafini Suhana Ithnin[1], Noormahayu Mohd Nasir[2], Siti Nur'amalina Syeddin[3], Nor Zarina Mohd Salim[4], Murzidah Ahmad Murad[5]

[1,2,3,4]Faculty of Business and Management, Universiti Teknologi MARA Perak Branch, Malaysia

[5]Universiti Teknikal Malaysia Melaka

DOI: https://dx.doi.org/10.47772/IJRISS.2024.803368S

Received: 19 October 2024; Accepted: 24 October 2024; Published: 21 November 2024

ABSTRACT

In recent times, the adoption of online teaching methods has become a noteworthy development. This trend gained momentum during the Covid-19 pandemic, as education transitioned entirely to online platforms. Even though our country has now entered an endemic phase, online learning remains pertinent. Many educational institutions continue to embrace online learning, but its success depends on collaboration with students. Several factors influence students' ability to adapt to this new teaching and learning approach. In this research, the aim is to investigate the motivational factors that affect the use of online learning tools. This study utilizes the ARCS Motivation model, which encompasses attention, relevance, confidence, and satisfaction, to explore the relationship between these factors with online learning tools. Data were gathered from part five students and pre-diploma enrolled in entrepreneurship and management courses at UiTM Perak Branch. Total of 78 questionnaire had been collected and analysed using the latest version of SPS software. The finding for this research were all the motivation factors show positive relationship towards effectiveness of online tools with a different strength. Relevant, confident and satisfaction contribute to high relationship while attention was medium level. Consequently, this research has the potential to positively impact the education sector and government policies by promoting the integration of technology into the teaching and learning process. It also sheds light on the evolving landscape of education in the digital age and its implications for both students and educators.

Keywords: ARCS Motivation, online learning tools, entrepreneurship, management.

INTRODUCTION

Online learning tools are digital platforms and resources that facilitate remote education and training, allowing interaction between students and educators via the internet. They enable diverse educational activities, including the dissemination of course material, interaction through forums or live chats, administration of examinations, and facilitation of collaboration on group projects. Instruments such as Learning Management Systems (LMS), video conferencing, and interactive quizzes enhance the flexibility and accessibility of education, enabling students to learn at their own speed while offering immediate feedback and monitoring progress (Jones & Smith, 2023). These instruments are essential in the era of Education. 5.0 by improving engagement and educational results.

Digital learning platforms are essential in higher education due to their capacity to offer flexibility and accessibility, enabling students to participate in education from any location and at any time. They facilitate customised learning experiences by adjusting to the unique needs and learning velocities of each student.

Moreover, these technologies cultivate vital competencies, including digital literacy and time management, equipping students for contemporary professional settings. Online platforms also diminish educational expenses by lessening the want for physical infrastructure and resources. Moreover, they facilitate international collaboration, providing students with varied perspectives and enhancing their whole educational experience (Jones & Smith, 2023; Allen & Seaman, 2017; Bates, 2015; Dziuban et al., 2018; Means et al., 2014; and Zawacki-Richter & Anderson, 2014).

However, educational online learning tools encounter numerous key challenges, such as disparities in technological access (digital divide), inconsistent quality of resources, and inadequate teacher preparation. Numerous platforms have difficulties in engaging students and adjusting to online pedagogy, resulting in diminished motivation and passive learning experiences. Moreover, concerns regarding data privacy, security, and academic integrity endure, while technical malfunctions and tool fatigue hinder the learning process. The expense of sustaining these tools presents sustainability challenges, particularly for underfunded educational institutions. Enhancing infrastructure, training, and the development of more inclusive and engaging platforms is crucial to optimise the efficacy of online learning.

This study seeks to investigate the motivational factors that influence the effectiveness of online learning tools. Specifically, it will apply the ARCS Motivation Model, which includes Attention, Relevance, Confidence, and Satisfaction, to evaluate its impact on the effectiveness of these tools. The research is guided by two key questions:

1. What is the relationship between motivational factors and the effectiveness of online learning tools?

2. How strong is the relationship between these motivational factors and the effectiveness of online learning tools?

To address these questions, the study sets the following objectives:

1. To identify the relationships between motivational factors and the effectiveness of online learning tools.

2. To assess the strength of the relationship between motivational factors and the effectiveness of online learning tools.

LITERATURE REVIEW

A. Online Learning

In today's world, online learning has become widely practical and accepted in the education sector. A variety of tools and software have been created to assist educators in enhancing and diversifying their teaching strategies. Online learning is relevant across many areas, such as marketing, business, healthcare, and education (Özhan & Kocadere, 2020).

Anderson (2011) compiled a range of insights on online learning from various sources. Some of these emphasize the significance of tools used in online learning, which help students interact with course materials. As a result, for some learners, a computer acts as a tool that provides essential processing power and delivers instructional content.

The terminology surrounding online learning is diverse, including terms like e-learning, internet learning, distributed learning, networked learning, virtual learning, web-based learning, and distance learning. Due to these variations, it can be difficult to create a single, universally applicable definition for online learning, as it is understood and applied in many ways.

In his summary, Anderson (2011) defines online learning as using the internet to access educational materials, engage with course content, communicate with instructors and peers, and receive support during the learning process. Ultimately, the goal of online learning is to gain knowledge, develop personal understanding, and benefit from the overall learning experience.

B. Attention

To maintain motivation, the first essential step for students is capturing their attention. While gaining attention is important, it's even more critical to keep them engaged throughout the learning process (Jokelova, 2013). Motivation primarily revolves around both attracting and sustaining attention. In the learning context, the key goal is to focus attention on relevant stimuli.

At a basic level, attention can be captured using various techniques, such as making bold statements, creating sudden loud sounds, or even using silence (Brewin et al., 1987). Keller (2016) points out that attention includes a wide array of factors, such as curiosity, arousal, interest, boredom, and sensation seeking.

Research consistently shows the significant role attention plays in online learning. For example, a study by Conati et al. (2013) explored the factors influencing students' attention to adaptive hints in an educational game. Their findings revealed that enhancing attention to hints improves student performance, especially in games like Prime Climb, where students who focus on hints tend to do better.

Additionally, research by Papanastasiou et al. (2016) supports the idea that using information and communication technologies (ICTs) through gaming applications enhances the learning experience for students with attention challenges. This approach not only helps students but also children in general by boosting attention and academic success.

However, a study by Chen et al. (2019) found no significant differences in attention among experimental groups. Participants using a digital game with animated and interactive elements achieved better scores on learning outcome tests compared to groups using a simpler digital game or traditional methods. Interestingly, the digital games did not negatively affect motivation or attention, contrary to earlier studies.

Therefore, hypothesis for attention factor support as below:

H1: Attention has a strong significant relationship with effectiveness of online learning.

C. Relevant

The notion of relevance is intricately tied to learners' perceptions of how well instructional demands align with their personal goals, their learning preferences, and their previous experiences (Keller, 2016). In other words, it addresses the "Why?" behind students' decisions to enroll in a course or commit effort to a particular task. When this question is satisfactorily answered, it suggests that the course content or provided information resonates with the students, which in turn increases their likelihood of engagement and motivation to meet learning objectives (Jokelova, 2013).

At this stage, the focus is on creating educational content tailored to the distinct learning needs of students. For instance, research by Lajane et al. (2021) investigating the motivation of nursing students using e-assessments revealed that students rated online quizzes as highly relevant, with relevance scores ranging from 3.8 to 4.27, and an average score of 3.93.

Therefore, the hypothesis on relevance factor was described as below:

H2: Relevant has a strong relationship with the effectiveness of online learning.

D. Confident

Students are generally more motivated to learn when they believe that their success stems from their own efforts, and when they recognize that their achievements are influenced by personal skills rather than external factors beyond their control (Jokelova, 2013). These confidence-related attributes can be classified into two types of locus of control: internal and external (Jokelova, 2013). Individuals with an internal locus of control attribute the outcomes of their actions to their own abilities and characteristics. For example, a student who prepares thoroughly for an exam, believing that their performance depends on their own competence, exemplifies an internal locus of control. Conversely, students with an external locus of control might not feel compelled to study, as they assume that factors like luck or fate determine test scores, regardless of their efforts.

Previous studies employing multiple regression analyses have demonstrated that students' confidence in their ability to learn online is the strongest predictor of satisfaction and the perceived value of online courses (Landrum, 2020). Furthermore, research incorporating the Technology Acceptance Model (TAM), alongside factors such as self-confidence and subjective norms, in the context of e-learning among accounting students at Malang State University, revealed that perceived usefulness, perceived ease of use, self-confidence, and subjective norms significantly impact e-learning adoption.

Therefore, a new similar hypothesis is also used in this research as below:

H3: Confident has a strong significant relationship with effectiveness of online.

E. Satisfaction

Satisfaction represents the final component in the ARCS Motivation Model and is described as the sense of contentment or positive emotion associated with one's accomplishments (Jokelova, 2013). This element is often referred to as the "post-task" phase, as it becomes relevant once tasks are completed. While satisfaction may not be crucial for the immediate task, it is vital for sustaining motivation for future tasks. Continued satisfaction with instructional outcomes plays a key role in encouraging students to persist in their learning beyond the completion of their current activities (Jokelova, 2013).

Satisfaction can be seen as a facilitator that positively affects students' motivation to engage with online learning tools. In a study by Hampton et al. (2020) examining self-efficacy and satisfaction among online nursing faculty, participants reported high levels of both teaching self-efficacy and overall satisfaction. Notably, satisfaction was largely driven by the benefits of online environments, such as flexibility, convenience, and access to learning resources, which were rated highly by instructors.

Similarly, research by Gopal et al. (2021) emphasized that student satisfaction positively influences both online teaching and student performance. The study explored the impact of four factors—quality of instruction, course design, instructor feedback, and student expectations—on perceived satisfaction. Findings confirmed that these factors significantly enhanced student satisfaction, and higher satisfaction levels were linked to improved student performance.

However, Wei and Chou (2020) found contrasting results. Their study indicated no statistically significant relationship between students' perceptions of online learning and both their learning performance and course satisfaction. This outcome contradicted their hypothesis, which predicted a strong positive correlation between online learning perceptions, performance, and satisfaction.

Thus, satisfaction factor will be tested under hypothesis that:

H4: Satisfaction has a strong significant relationship with effectiveness of online.

F. Theoretical Framework

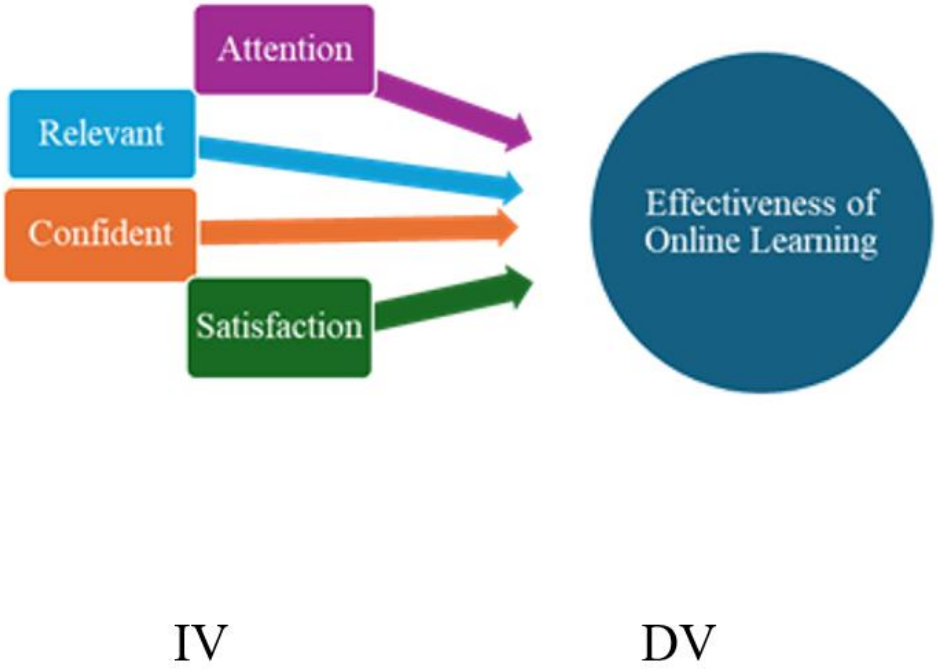

Fig. 1 Framework of the study

The framework depicted in Figure 1 outlines the approach used to assess the effectiveness of online learning. Four independent variables—attention, relevance, confidence, and satisfaction—are considered in this model. These variables are grounded in prior research that employs the ARCS Motivation Theory. This theory was applied to evaluate the effectiveness of online learning, which serves as the dependent variable in this analysis.

METHODOLOGY

A. Introduction

This chapter proceeds as follows: it begins by reviewing of the operationalization of the constructs. Next, it delves into the discussion of the population and sampling methods used for data collection. Finally, it concludes by outlining the data analysis techniques that will be employed to evaluate the collected raw data.

B. Operation of Construct

This research utilized a quantitative method for data collection, employing a survey instrument to gather information from selected respondents. According to Mukesh et al. (2013), quantitative research identifies statistical patterns by analysing large datasets. Conducting surveys is one technique commonly used in quantitative methods. The researcher chose questionnaires as the data collection tool, as it aligns with the study's objective of examining the effectiveness of online learning.

The questionnaire was developed based on variables identified in the literature review, utilizing the Likert scale technique. A five-point scale will be used (1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree) to measure each item within the variables. In this research, the questionnaire method was chosen as the primary data collection tool, and it was administered in English.

The questionnaire consists of 22 questions, organized into three sections. Part A focuses on demographic information, Part B assesses the ARCS motivation factors, and Part C evaluates the effectiveness of online learning. The structure of the questionnaire is summarized in Table 1 below.

Table 1: Construct of Questionnaire

Part	Category	No. of Item
A	Demographic	4
B	ARCS Motivation Factors	15
C	Effectiveness of Online Learning	3
	Total	22

C. Population and Sampling

This study focuses on accounting and pre-diploma business students enrolled in the Fundamental of Entrepreneurship (ENT300) and Introduction to Business (MGT028) courses at UiTM Perak. These courses were selected due to the challenges students often face in understanding the content, which involves various theories and facts. Some students experience stress while trying to adapt and perform well. To address these difficulties, online learning techniques were introduced to diversify teaching methods and enhance learning approaches. However, this study specifically targets students who are utilizing online learning in these subjects.

The study population consists of 150 students divided into five groups (A, B, C, D, and E). The sampling technique was determined using the Krejcie and Morgan table, which indicated that with a population of 150, a sample size of 108 students was sufficient for data collection. Data collection commenced in mid-June.

D. Questionnaire Distribution

The questionnaire was designed using Google Forms to facilitate online distribution. The researcher shared the survey link with students across the different groups via the WhatsApp application. Before distributing the link, the researcher explained the survey's purpose and provided instructions on how to select the appropriate responses. A total of 78 questionnaires were completed, resulting in a 52% response rate. The data were initially recorded in an Excel file and subsequently transferred to SPSS for analysis.

E. Data Analysis Procedures

The latest version of SPSS software was used to analyse the raw data. The data analysis procedures start with frequencies. Frequency analysis is a statistical technique used to explore the distribution of values within a dataset. It helps identify patterns, trends, and outliers by examining how often each value or category occurs. This method is commonly used to summarize categorical data and understand the overall structure of the dataset. Then, correlation, which examines the relationship between the independent and dependent variables. It also measures the strength of these relationships.

FINDINGS AND DISCUSSIONS

A. Introduction

This section presents the major findings from the study which are divided into two parts. The first section discusses the impact of various consumption tax structures on the prices of goods and services. The findings in this part specifically focus on the impacts to the production-side of the economy. As the continuity, the second part links the findings to cost of living. In specific, the impacts from the price movements are assessed for households based on strata and income group.

B. Respondents' Profile

The researcher employed frequencies analysis to describe the profile of the respondents. Frequencies analysis was used to gather statistics for categorical variables (Pallant, 2011). This approach was applied to

indicate the number of individuals who provided each response. In this study, four variables were analysed using frequencies analysis: gender, semester, program and student experience in using online learning.

The Table 2 below shows that the sample consists of 22 males (28.2%) and 56 females (71.8%), totalling 78 respondents. This indicates that nearly three-quarters of the respondents are female.

Table 2: Descriptive Analysis (Frequencies) for Gender

Gender	Frequency	Percentages (%)
Male	22	28.2
Female	56	71.8
Total	78	100.0

Besides that, the table below indicates that 59 students, accounting for 75.6%, were in semester 5. The remaining 19 students were distributed between semesters 1 and 4. This breakdown is detailed in the Table 3 below.

Table 3: Descriptive Analysis (Frequencies) for Semester

Semester	Frequency	Percentages (%)
Sem 1	18	23.1
Sem 4	1	1.3
Sem 5	59	75.6
Total	78	100.0

In the variance program, the majority of respondents are accounting students, making up 66.7%, while 33.3% are pre-diploma students. This disparity is due to the low enrolment of pre-diploma students during this semester compared to other courses offered at a different campus. The Table 4 below presents this analysis.

Table 4: Descriptive Analysis (Frequencies) for Program

Program	Frequency	Percentages (%)
Pre-Diploma	26	33.3
Accounting	52	66.7
Total	78	100.0

Additionally, respondents were asked about their prior experience with online learning methods. According to the frequency analysis, the majority of students, 96.3%, had previous experience with online learning, while only 3.8% had less experience. The Table 5 below presents the data on family involvement in business.

Table 5: Descriptive Analysis (Frequencies) for Experience

Experience	Frequency	Percentages (%)
Yes	75	96.2
No	3	3.8
Total	78	100.0

C. Reliability Analysis Results

The primary purpose of testing reliability is to assess the internal consistency of the scale (Pallant, 2011). This measures how well the items within a construct are correlated with each other. The Cronbach's Alpha coefficient is the most commonly employed method for evaluating reliability. In this study, four independent variables were tested: attention (4 items), relevance (4 items), confidence (3 items), and satisfaction (4 items). Additionally, the reliability test was applied to the dependent variable, which is the effectiveness factor (3 items), yielding its own Cronbach's Alpha coefficient.

Table 6: Cronbach's Alpha Results

Construct	Component	Cronbach's Alpha
Attention	4	0.924
Relevant	4	0.927
Confident	3	0.937
Satisfaction	4	0.917
Effectiveness	3	0.891

Pallant (2011) suggests that a Cronbach's Alpha coefficient exceeding 0.7 is generally considered acceptable for a scale. In this study, all reliability values surpassed the 0.7 threshold, indicating they meet the acceptable standard. The Cronbach's Alpha coefficients for all the components were calculated, as presented in Table 6 above.

D. Correlation Analysis

Correlation analysis is employed to examine the strength and direction of a linear relationship between two variables typically the dependent and independent variables (Pallant, 2011). In this study, correlation analysis was conducted to explore the relationship between each independent variables (attention, relevance, confidence, and satisfaction) and the dependent variable, which is the effectiveness of online learning. As noted by Pallant (2011), correlation coefficients range between -1 and +1.

The sign preceding the correlation coefficient indicates whether the relationship between two variables is positive or negative. A positive sign means that as one variable increases, the other also increases, while a negative sign suggests that an increase in one variable may lead to a decrease in the other. Additionally, the strength of the correlation is determined by the value of the coefficient. According to Cohen (1988), a small relationship is indicated by r = .10 to .29, a medium relationship by r = .30 to .49, and a large relationship by r = .50 to 1.0.

The correlation results for each variable are presented in Table 7. All components demonstrated a significant relationship, with $p < 0.001$, although the strength of these relationships varied. The results indicated that three components (relevance, confidence, and satisfaction) exhibited a strong positive relationship with the effectiveness of online learning. Specifically, the correlation coefficients were r = .585, r = .566, and r = .567, respectively, with n = 78 and $p < 0.01$. This suggests that higher levels of relevance, confidence, and satisfaction are strongly associated with higher levels of online learning effectiveness.

The correlation results for each variable are presented in Table 7. All components demonstrated a significant relationship, with $p < 0.001$, although the strength of these relationships varied. The results indicated that three components (relevance, confidence, and satisfaction) exhibited a strong positive relationship with the effectiveness of online learning. Specifically, the correlation coefficients were r = .585, r = .566, and r = .567, respectively, with n = 78 and $p < 0.01$. This suggests that higher levels of relevance, confidence, and satisfaction are strongly associated with higher levels of online learning effectiveness.

For the attention factor, the results showed a moderate positive correlation between the two variables, with r = .498, n = 78, and p < 0.01. This indicates that higher levels of attention are moderately associated with higher levels of online learning effectiveness.

Table 7: Correlation Analysis

Items	Effectiveness	Attention	Relevant	Confident	Satisfaction
Effectiveness	1				
Attention	0.498 (**)	1			
Relevant	0.585 (**)	0.859 (**)	1		
Confident	0.566 (**)	0.843 (**)	0.842 (**)	1	
Satisfaction	0.567 (**)	0.820 (**)	0.853 (**)	0.842 (**)	1

E. Discussion

Based on the results, all the independent variables (attention, relevance, confidence, and satisfaction) demonstrated a strong to moderate positive correlation with effectiveness, with correlation coefficients (r) ranging from 0.498 to 0.585 and a significance level of p < 0.001. This indicates that higher levels of attention, relevance, confidence, and satisfaction are associated with greater effectiveness of online learning methods.

Supporting evidence comes from various studies. For instance, Md Sallehuddin et al. (2024) found that the ARCS model components—attention, relevance, and satisfaction—are interrelated. In their study on Language Learning Strategies (LLS), consistent class attendance and seeking assistance contributed to satisfaction, while students employed strategies such as identifying key concepts and linking them to prior knowledge to capture attention and maintain relevance. Rereading materials was used to build confidence in learning Arabic.

Keller's ARCS model is particularly notable among motivational theories for its focus on instructional design, as shown in a study by Kao (2023), which explored factors influencing online course design in China. This study highlighted the ARCS model's practical categories as central to effective online teaching.

Another study by Susanti et al. (2022) found a strong relationship between the use of Web 2.0 technologies, ARCS motivational model-based learning strategies, and student performance at STIPAK Malang, with a correlation coefficient of 0.717** and a significance value of p < 0.01.

Similarly, Li and Moore (2018) identified patterns of learners selectively paying attention, finding relevance for self-determined reasons, building confidence, and gaining satisfaction from multiple sources as key factors impacting the effectiveness of Massive Open Online Courses (MOOCs).

Taken together, these studies affirm the relationship between the ARCS motivational model and the effectiveness of online learning tools. Consequently, all the hypotheses in this study were accepted.

CONCLUSIONS

This study aimed to explore the relationship between the ARCS motivation model and the effectiveness of online learning tools in an Entrepreneurship and Management course for tertiary education students. Using a quantitative approach, data were collected via questionnaires from 78 Accountancy and pre-diploma students at UiTM Perak. Pearson correlation analysis was applied to assess the connection between the ARCS motivational factors and the effectiveness of the online learning tools.

The results showed that the ARCS model components—attention, relevance, and confidence—had a positive influence on the effectiveness of online learning tools. Attention demonstrated a moderate correlation with

effectiveness, with r = .498, while other motivational factors showed stronger relationships, with r values of .585, .566, and .567. These findings emphasize the importance of maintaining relevance, confidence, and student satisfaction in optimizing the online learning experience in the context of Entrepreneurship and Management courses.

The study's insights offer several key implications. Educators and instructional designers should focus on strategies that enhance and sustain student engagement and relevance in online learning, such as incorporating interactive elements like real-time quizzes, game-based learning, and multimedia content to boost motivation. Additionally, increasing students' confidence in using digital game-based learning (DGBL) tools can further improve their effectiveness, highlighting the need for adequate support and training. Moreover, satisfaction is crucial; linking DGBL tools to practical, real-world applications in Entrepreneurship and Management can deepen understanding and foster student interest.

In conclusion, this research contributes to the expanding body of literature on educational technology by providing insights into how motivational theories can improve learning in higher education. By emphasizing relevance, confidence, and satisfaction, educators can refine instructional strategies and maximize the potential of online learning tools, leading to enhanced learning outcomes in Entrepreneurship and Management courses. Implementing these insights into teaching practices can help create more dynamic and effective learning environments, preparing students for success in a complex business landscape.

REFERENCES

1. Anderson, T. (2011). The Theory and Practice of Online Learning (2th ed.). AU Press, Athabasca University.
2. Allen, I. E., & Seaman, J. (2017). Digital learning compass: Distance education enrollment report 2017. Babson Survey Research Group. https://www.onlinelearningsurvey.com/reports/digtiallearningcompassenrollment2017.pdf
3. Bates, T. (2015). Teaching in a digital age: Guidelines for designing teaching and learning. BCcampus OpenEd. https://opentextbc.ca/teachinginadigitalage/
4. Brewin, N. J., Centre, J. I., & Lane, C. (1987). Development and Use of the ARCS Model of Instructional Design. 10(3), 95–125.
5. Chen, S. W., Yang, C. H., Huang, K. S., & Fu, S. L. (2019). Digital Games for Learning Energy Conservation: A Study of Impacts on Motivation, Attention, and Learning Outcomes. Innovations in Education and Teaching International, 56(1), 66–76. https://doi.org/10.1080/14703297.2017.1348960
6. Cohen, J. (1988). Statistical Power Analysis for the Behavioural Sciences (2nd ed.). Hillsdale, NJ: Lawrence Erlbaum Associates, Publishers
7. Conati, C., Jaques, N., & Muir, M. (2013). Understanding Attention to Adaptive Hints in Educational Games: An Eye-Tracking Study. 136–161. https://doi.org/10.1007/s40593-013-0002-8
8. Dziuban, C., Graham, C. R., Moskal, P. D., Norberg, A., & Sicilia, N. (2018). Blended learning: The new normal and emerging technologies. International Journal of Educational Technology in Higher Education, 15(1), 3. https://doi.org/10.1186/s41239-017-0087-5
9. Gopal, R., Singh, V., & Aggarwal, A. (2021). Impact of Online Classes on The Satisfaction and Performance of Students During the Pandemic Period of COVID 19. Education and Information Technologies, 26(6), 6923–6947. https://doi.org/10.1007/s10639-021-10523-1
10. Hampton, D., Culp-Roche, A., Hensley, A., Wilson, J., Otts, J. A., Thaxton-Wiggins, A., Fruh, S., & Moser, D. K. (2020). Self-Efficacy and Satisfaction with Teaching in Online Courses. Nurse Educator, 45(6), 302–306. https://doi.org/10.1097/NNE.0000000000000805
11. Jaafar, N. I. (2020, July). Embracing Online Platform in Gig Economy: Are We Ready? Malaysia National News Agency. https://www.bernama.com/en/thoughts/news.php?id=1855862
12. Jokelova, A. (2013). ARCS Motivational Model: Theoretical Concepts and Its Use in Online Courses. ICETA 2013 - 11th IEEE International Conference on Emerging E-Learning Technologies and Applications, Proceedings, 189–194. https://doi.org/10.1109/iceta.2013.6674427

13. Jones, A., & Smith, B. (2023). The role of online learning tools in higher education. Journal of Educational Technology, 45(2), 123-145. https://doi.org/10.1234/educationaltools
14. Kao, Q. (2023). Enhancing learner motivation by adapting strategies from the ARCS model: experience from Chinese online course design and teaching. Journal of China Computer-Assisted Language Learning, 3(1), 168–187. https://doi.org/10.1515/jccall-2023-0014
15. Keller, J. M. (2016). Motivation, Learning, and Technology: Applying the ARCS-V Motivation Model. Participatory Educational Research, 3(2), 1–15. https://doi.org/10.17275/per.16.06.3.2
16. Lajane, H., Arai, M., Gouifrane, R., & Qaisar, R. (2021). A Scenario of the Formative E-assessment Based on the ARCS Model: What Is the Impact on Student Motivation in Educational Context? International Journal of Emerging Technologies in Learning (IJET), 16(24), 135–148.
17. Landrum, B. (2020). Examining Students' Confidence to Learn Online, Self-Regulation Skills and Perceptions of Satisfaction and Usefulness of Online Classes. 24(3), 128–146.
18. Li, K., & Moore, D. R. (2018). Motivating Students in Massive Open Online Courses (MOOCs) Using the Attention, Relevance, Confidence, Satisfaction (ARCS) Model. Journal of Formative Design in Learning, Keller 2008.
19. Md Sallehuddin, N. H., Ammar, A., Mohammed Raffi, M. S., & Amat Suparia, F. A. (2024). Exploring Effective Learning Strategies in Arabic Language Through the Arcs Model. INSIGHT Journal, 11(1), 108–126. https://doi.org/10.24191/ij.v0i0.24895
20. Means, B., Toyama, Y., Murphy, R., Bakia, M., & Jones, K. (2014). The effectiveness of online and blended learning: A meta-analysis of the empirical literature. Teachers College Record. https://doi.org/10.1177/016146811402600104
21. Mukesh, K., Salim, A. T., & Thurasamy, R. (2013). Business Research Methods (1st ed.). Oxford Fajar Sdn. Bhd.
22. Özhan, Ş. Ç., & Kocadere, S. A. (2020). The Effects of Flow, Emotional Engagement, and Motivation on Success in a Gamified Online Learning Environment. Journal of Educational Computing Research, 57(8), 2006–2031. https://doi.org/10.1177/0735633118823159
23. Pallant, J. (2011). SPSS SURVIVAL MANUAL (4th ed.). Allen & Unwin.
24. Papanastasiou, G., Drigas, A., Skianis, C., & Lytras, M. D. (2016). Serious Games in K-12 Education: Benefits and Impacts on Students with Attention, Memory and Developmental Disabilities.
25. Susanti, L., Tinggi, S., Agama, P., & Stipak, K. (2022). Web 2.0 Technologies Use in ARCS Motivational Model-Based Online Learning on Student Performance in STIPAK Malang. 669(Iconthce 2021), 236–240.
26. Wei, H. C., & Chou, C. (2020). Online Learning Performance and Satisfaction: Do Perceptions and Readiness Matter? Distance Education, 41(1), 48–69. https://doi.org/10.1080/01587919.2020.1724768
27. Zawacki-Richter, O., & Anderson, T. (Eds.). (2014). Online distance education: Towards a research agenda. Athabasca University Press. https://www.aupress.ca/index.php/books/120233