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# The Effect of Using Powtoon Media on Elementary School Students' Motivation

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**ABSTRACT**

The integration of technology-based media into elementary education has the potential to enhance students' motivation to learn, particularly in science subjects. This study aimed to examine the effect of Powtoon media on the learning motivation of elementary school students in Pekanbaru City. A quasi-experimental design with a non-equivalent control group was employed, involving 59 students divided into an experimental group (n = 30) and a control group (n = 29). Learning motivation was measured using a validated questionnaire administered before and after the intervention. Data were analyzed using normality and homogeneity tests, paired and independent samples t-tests, and N-gain calculations. Results indicated a significant increase in learning motivation in the experimental group, with mean scores rising from 59.03 to 84.63 and an N-gain of 0.60 (moderate to high). A significant difference was also observed between the experimental and control groups ($t = 5.625$; $p < 0.05$). These findings suggest that Powtoon media is an effective digital learning tool for enhancing elementary students' motivation in science education. The study contributes to educational practice by demonstrating that animation-based media can create engaging, interactive, and student-centered learning environments, particularly in schools with limited technological resources.



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## 1. INTRODUCTION

The rapid development of digital technology has significantly transformed various sectors, including education. The shift toward digital learning environments has altered instructional practices, moving from teacher-centered to more interactive, creative, and student-centered models [1]. In elementary education, technology integration is not merely complementary but has become an essential component in fostering 21st-century competencies such as critical thinking, creativity, communication, and collaboration [2]. However, despite policy encouragement and increasing availability of digital tools, the

integration of technology in elementary classrooms remains uneven and often superficial [3].

A critical problem observed in many elementary schools is the low level of meaningful technology utilization to enhance students' learning motivation. Motivation plays a fundamental role in determining students' engagement, persistence, and academic achievement [4]. According to self-determination theory, learning motivation is influenced by students' sense of autonomy, competence, and relatedness within the learning environment [5]. When instructional strategies fail to stimulate interest and active participation, students tend to show low enthusiasm, reduced concentration, and minimal classroom interaction. Several studies have reported that conventional teaching methods, dominated by lectures and textbooks, contribute to declining student motivation, particularly at the elementary level, where learners require concrete, visually rich experiences [6].

The theoretical foundation of this study is grounded in motivational and multimedia learning theories. Keller's ARCS model emphasizes that attention, relevance, confidence, and satisfaction are key components in fostering learning motivation [7]. In addition, Mayer's Cognitive Theory of Multimedia Learning explains that students learn more effectively when information is presented through integrated visual and auditory channels rather than through text alone [8]. These theories suggest that animation-based instructional media may provide a more stimulating learning environment, thereby enhancing students' motivation.

One digital medium that aligns with these theoretical perspectives is Powtoon. Powtoon is a web-based platform that allows educators to create animated instructional videos by combining text, images, sound, and motion graphics in an engaging format [9]. Its features support visual storytelling and interactive presentations, making it particularly suitable for elementary school learners in the concrete operational stage of cognitive development [10]. Previous research has shown that animation-based media can increase students' attention and improve learning outcomes [11]. Studies on Powtoon have primarily focused on the feasibility of media development and its impact on cognitive achievement in secondary or higher education contexts [12]. While these findings indicate positive results, most of them emphasize learning outcomes rather than students' learning motivation as the central variable.

This situation reveals a research gap. Although Powtoon has been widely examined for instructional effectiveness and academic achievement, few empirical studies have specifically investigated its impact on elementary school students' learning motivation in authentic classroom settings, particularly in schools where technology integration remains minimal. Moreover, previous studies tend to examine digital media implementation in well-supported technological environments, leaving less explored contexts in which teachers face constraints in digital competence and infrastructure.

This condition was also identified at one elementary school in Pekanbaru City, where preliminary observations indicated that classroom instruction was predominantly conducted using conventional methods, with minimal integration of instructional media. Interviews with teachers revealed limited use of interactive digital tools, which appeared to influence

students' low enthusiasm, passive participation, and reduced interest during lessons. Given the central role of motivation in shaping learning success [4], addressing this issue becomes a pedagogical priority.

In response to this problem, this study proposes integrating Powtoon-based instructional media as an innovative strategy to enhance students' learning motivation. The author plans to implement Powtoon media in classroom instruction and empirically examine its effect on students' motivation levels compared to conventional learning approaches. By positioning learning motivation as the primary dependent variable, this study seeks to provide a more focused evaluation of digital media effectiveness from a motivational perspective. Therefore, the objective of this research is to examine the effect of using Powtoon media on the learning motivation of elementary school students. Specifically, this study aims to determine whether integrating animation-based digital media significantly improves students' motivation compared to traditional instructional methods.

The expected results of this study are twofold. Theoretically, the findings are expected to contribute to educational technology research by strengthening empirical evidence on the relationship between animation-based media and learning motivation in elementary education. In practice, the study is expected to provide teachers with concrete guidance on designing more engaging and motivating learning experiences through accessible digital platforms. Furthermore, the results may help schools optimize technology integration strategies to create more interactive, student-centered classrooms.

## 2. METHOD

The present study employed a quantitative, quasi-experimental design, specifically a non-equivalent control group design. This design was selected because the researchers were unable to assign participants to groups randomly. As a result, the experimental and control groups were determined based on existing classes. The study aimed to examine the effect of Powtoon media on elementary school students' motivation to learn IPAS.

The study was conducted at an elementary school in Pekanbaru City, Riau Province. The participants were divided into two groups: an experimental group and a control group. The experimental group consisted of 30 students who learned IPAS using Powtoon media, while the control group comprised 29 students who received IPAS instruction through conventional methods without Powtoon. Both groups were taught the same material and allocated the same amount of instructional time. Student learning motivation was measured using a questionnaire developed from indicators of learning motivation among elementary school students. The questionnaire was administered to both groups before and after the intervention to assess changes in learning motivation. It employed a Likert-scale format with multiple response options reflecting varying levels of motivation. Prior to data collection, the instrument underwent validation to ensure each item aligned with the study's objectives.

The research procedure began with the administration of a pretest, a learning motivation questionnaire. The pretest was administered to both the experimental and control groups to determine students' initial levels of learning motivation. The experimental group then received IPAS instruction using Powtoon media, whereas the control group was taught using conventional methods. After completing the instructional sessions, both groups were

given a posttest using the same learning motivation questionnaire to assess changes in students' motivation following the intervention.

Data were analyzed using both descriptive and inferential statistical techniques. Descriptive analysis was conducted to summarize the characteristics of the students' learning motivation data, including the mean, minimum, maximum, and standard deviation. Prior to hypothesis testing, prerequisite analyses were performed, including tests of normality and homogeneity. The normality test was used to assess the distribution of the data, and the homogeneity test was used to determine whether the variances across groups were equivalent.

A paired-sample t-test was conducted to examine differences in students' learning motivation before and after the intervention within each group. An independent-sample t-test was used to compare posttest learning motivation scores between the experimental and control groups. To determine the magnitude of improvement in students' learning motivation following the intervention, an N-gain analysis was performed in order to classify the level of improvement in each group. All statistical analyses were conducted using statistical software with a significance level set at 0.05. The results of these analyses were used to determine the effect of Powtoon media on elementary school students' motivation to learn IPAS.

## 3. RESULTS AND DISCUSSION

### 3.1. Results

A descriptive statistical analysis was conducted to provide an overview of students' motivation to learn IPAS before and after the treatment in both the experimental and control groups. The analysis included mean scores, standard deviations, and minimum and maximum values to identify initial trends in learning motivation, changes following the learning process, and differences in achievement patterns between the two groups. The use of descriptive statistics also enabled comparisons of baseline conditions across groups and a more detailed examination of students' learning motivation after the implementation of Powtoon media in IPAS instruction. A summary of the descriptive statistics for students' IPAS learning motivation in both groups is presented in Table 1.

Table 1. Descriptive Statistics of Learning Motivation Scores

| SN | Group | Test | Mean | Std. Deviation | Minimum | Maximum |
|---|---|---|---|---|---|---|
| 1 | Experimental | Pretest | 59.03 | 7.47 | 45.00 | 78.00 |
| 2 | Experimental | Posttest | 84.63 | 6.10 | 74.00 | 93.00 |
| 3 | Control | Pretest | 58.97 | 7.66 | 45.00 | 73.00 |
| 4 | Control | Posttest | 74.31 | 7.91 | 62.00 | 90.00 |

As shown in Table 1, the descriptive statistics illustrate the initial and final levels of students' motivation to learn science in both the experimental and control groups. Prior to the treatment, the mean motivation scores did not differ substantially between the experimental group (M = 59.03; SD = 7.47) and the control group (M = 58.97; SD = 7.66).

The similarity in the initial mean scores indicates that both groups had comparable levels of motivation before the integration of Powtoon media into the instructional process. Therefore, any differences observed in subsequent stages can be attributed to the implementation of Powtoon media in science instruction rather than to disparities in students' baseline motivation.

After the treatment, an increase in IPAS learning motivation was observed in both groups, although the magnitude of improvement differed. The experimental group, which received instruction supported by Powtoon media, demonstrated a higher posttest mean score (M = 84.63; SD = 6.10) than the control group (M = 74.31; SD = 7.91). The experimental group also exhibited a narrower distribution of scores following the intervention than the control group. These findings indicate that integrating Powtoon media enhances students' motivation to learn science and promotes more consistent levels of motivation among students. The descriptive results suggest that Powtoon media may have a stronger effect on increasing elementary school students' motivation to learn science.

Prior to hypothesis testing, preliminary analyses were conducted to ensure that the required statistical assumptions, namely normality and homogeneity, were satisfied. The results of the normality test are presented in Table 2.

Table 2. Normality Test Results

| Tests of Normality | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | Kolmogorov-Smirnov[a] | | | Shapiro-Wilk | | |
| | Kelas | Statistic | df | Sig. | Statistic | df | Sig. |
| Learning Motivation | Pretest Eksperimen | .064 | 30 | .200* | .986 | 30 | .955 |
| | Posttest Eksperimen | .110 | 30 | .200* | .939 | 30 | .084 |
| | Pretest Kontrol | .076 | 29 | .200* | .974 | 29 | .676 |
| | Posttest Kontrol | .132 | 29 | .200* | .949 | 29 | .176 |

The results of the normality tests using the Kolmogorov-Smirnov and Shapiro-Wilk methods indicated that all data from both the pretest and posttest in the experimental and control groups had significance values greater than 0.05. This result suggests that the data on students' motivation to learn science were normally distributed. The results of the homogeneity test are presented in Table 3.

Table 3. Homogeneity Test Results

| Test of Homogeneity of Variance | | | | | |
|---|---|---|---|---|---|
| | | Levene Statistic | df1 | df2 | Sig. |
| Motivation | Based on Mean | 2.832 | 1 | 57 | .098 |
| | Based on Median | 2.739 | 1 | 57 | .103 |
| | Based on Median and with adjusted df | 2.739 | 1 | 54.596 | .104 |
| | Based on trimmed mean | 2.812 | 1 | 57 | .099 |

The results of the variance homogeneity test using Levene's Test yielded a p-value of 0.098, which exceeded 0.05, indicating that the variances between groups were

homogeneous. Since both statistical assumptions were satisfied, parametric statistical analysis was deemed appropriate.

To determine the magnitude of the increase in students' motivation to learn science in the experimental group, a paired-samples t-test was conducted to compare pretest and posttest scores. The results of the paired samples t-test are presented in Table 4.

Table 4. Results of The Paired Samples T-test

| Paired Samples Test | | | | | | |
|---|---|---|---|---|---|---|
| | Paired Differences | | | T | df | Sig. (2-tailed) |
| | Mean | Std. Deviation | Std. Error Mean | | | |
| Pretest - Posttest | -25.60000 | 10.92798 | 1.99517 | -12.831 | 29 | .000 |

The statistical analysis of the test results revealed an average difference of -25.60, with a t-value of -12.831 and a significance level of p = 0.000, which is less than 0.05. The findings indicate a highly significant increase in science learning motivation after students participated in learning using Powtoon media. In summary, the use of Powtoon media in science education has been shown to enhance students' learning motivation, demonstrating a statistically significant outcome.

To quantitatively determine the extent of the increase in learning motivation, an N-gain analysis was conducted. The results of the gain test are presented in Table 5.

Table 5. N-gain Test Results

| Descriptive Statistics | | | | | |
|---|---|---|---|---|---|
| | N | Minimum | Maximum | Mean | Std. Deviation |
| N-gain | 30 | .20 | .87 | .6029 | .18900 |

The analysis results indicate an average N-gain value of 0.6029, which is classified as moderate to high. This value indicates that the increase in students' motivation to learn science in the experimental group was not only statistically significant but also highly effective in practice. Consequently, Powtoon media can promote positive changes in students' learning motivation in the context of science education. To determine the difference in science learning motivation between the experimental and control groups after the treatment, an independent samples t-test was conducted, as illustrated below.

Table 6. Independent Samples Test

| Independent Samples Test | | | | | | |
|---|---|---|---|---|---|---|
| | | Levene's Test for Equality of Variances | | t-test for Equality of Means | | |
| | | F | Sig. | t | df | Sig. (2-tailed) |
| Motivation | Equal variances assumed | 2.832 | .098 | 5.625 | 57 | .000 |
| | Equal variances not assumed | | | 5.600 | 52.644 | .000 |

The statistical analysis yielded a Levene's significance value of 0.098, which exceeds the 0.05 threshold and is greater than the critical value for a two-sided test. This finding indicates that the assumption of equal variance is satisfied, and the subsequent analysis was conducted under this assumption. The t-test value of 5.625, with a p-value of 0.000 (< 0.05), indicates a very significant difference in IPAS learning motivation between the experimental and control groups. The mean difference of 10.32 indicates that the IPAS learning motivation of students who used Powtoon media was significantly higher than that of students who used conventional learning.

### 3.2. Discussion

The findings of this study suggest that incorporating Powtoon media into science education positively affects the motivation to learn among elementary school students. As indicated by previous research, students who participated in learning supported by Powtoon media demonstrated higher motivation than those in conventional learning [13]. These results suggest that integrating digital animation media into science education can foster more engaging learning environments and promote active student participation. The findings also support the hypothesis that technology-based learning media play a pivotal role in enhancing students' affective aspects, particularly their learning motivation [14].

The observed phenomenon can be attributed to the distinctive features of Powtoon media, which integrate moving visuals, text, and narration into a unified presentation. The presentation of IPAS material in an animated, engaging manner has been shown to effectively capture students' attention from the beginning of the lesson and sustain their engagement throughout the learning process. Within the context of learning motivation, attention is considered a pivotal prerequisite for students to actively engage in learning [15]. Maintaining students' attention has been shown to increase their interest in learning, which, in turn, contributes to more intensive engagement in learning activities. In addition to capturing attention, Powtoon media has been shown to facilitate a more meaningful learning experience for students. The conceptual framework of IPAS, often conveyed through verbal or textual explanations, can be presented as concrete, contextual animations. This visualization has been shown to enhance students' comprehension, thereby strengthening their sense of competence regarding the subject matter. [16] A stronger sense of competence and achievement fosters higher learning motivation, as students no longer perceive the academic material as overly challenging or pressurizing.

The integration of Powtoon fosters heightened emotional engagement among students, thereby enhancing the overall learning experience. The use of appealing animations, a coherent narrative, and illustrations that resonate with students' everyday experiences fosters a stronger sense of connection to the subject matter [17]. The emotional engagement cultivated in this manner has been shown to play an important role in developing a positive attitude toward science learning. This, in turn, ultimately strengthens students' long-term motivation to learn [18].

From a pedagogical perspective, the use of Powtoon aligns with the principles of student-centered learning. This technology enables educators to present material in a more varied and interactive manner, ensuring that students are not merely passive listeners but are

also mentally and emotionally engaged in the learning process. Such an environment fosters intrinsic motivation, as students perceive learning as more enjoyable and relevant to their individual needs. A comparative analysis indicates that learning facilitated by Powtoon, a software program that incorporates animated media, offers distinct advantages over instruction that does not use such technology. Specifically, Powtoon-assisted learning promotes a dynamic and non-monotonous learning environment. This finding aligns with the present study's conclusions, which demonstrate that implementing appropriate digital media can enhance learning effectiveness, particularly by fostering motivation [19]. Powtoon media function not only as a visual aid but also as a means of enhancing students' interest and enthusiasm in learning IPAS.

It is important to acknowledge the limitations of this study when interpreting the findings. First, the study was conducted exclusively in educational institutions with a relatively modest sample size. Therefore, the results should be generalized with caution to a broader elementary school context [20]. Second, the study focused predominantly on learning motivation and did not provide a comprehensive examination of the impact of Powtoon media on other aspects, such as cognitive learning outcomes, critical thinking skills, or students' scientific attitudes [21]. Third, the duration of Powtoon media use in this study was relatively brief, limiting the ability to examine its long-term effects on students' learning motivation. In light of these limitations, several recommendations are proposed for future research and educational practice in schools [22]. Future studies are encouraged to involve larger samples and to be conducted across diverse school contexts with varying student characteristics. Subsequent research may also examine the impact of Powtoon media not only on learning motivation but also on learning outcomes, 21st-century skills, and students' attitudes toward IPAS learning. [23] From a practical perspective, educators are encouraged to integrate Powtoon media into the IPAS curriculum using creative approaches to enhance student engagement. Student-centered learning models should complement this integration to maximize its positive impact on learning motivation [24].

The findings indicated that incorporating Powtoon media into science education significantly enhanced elementary school students' learning motivation. The learning motivation of students in the experimental group improved markedly, as reflected in the increase in the mean score from 59.03 on the pretest to 84.63 on the posttest. This change represents a substantial increase in students' learning motivation, placing it in the moderate to high category, as indicated by an N-gain of 0.60 [25]. A significant difference in learning motivation was also observed between the experimental and control groups ($t = 5.625$; $p < 0.05$). These findings suggest that Powtoon media can serve as an effective alternative digital learning medium to enhance elementary school students' motivation to learn IPAS, particularly in schools with limited technological integration [26].

## 4. CONCLUSION

This study concludes that integrating Powtoon media into IPAS instruction strengthens elementary school students’ learning motivation by fostering a more engaging, interactive, and student-centered learning environment aligned with motivational and multimedia learning theories. The findings imply that animation-based digital media can serve as an

accessible and practical strategy for teachers, particularly in schools with limited technological integration, to enhance students' affective engagement in learning. Nevertheless, the study is limited to a single school context, a relatively small sample, a short intervention period, and a primary focus on motivation without examining broader cognitive or long-term outcomes. Future research is recommended to involve more diverse samples, longer implementation periods, and additional variables, such as academic achievement and 21st-century skills, to strengthen generalizability and practical application. Overall, this research contributes to the field of education by emphasizing the importance of purposeful digital media integration to support motivating, technology-responsive elementary classroom practices.

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## REFERENCES

[1] Aksoy, T. Teacher opinions on the use of technology in the education of preschool children. *Journal of Primary Education*, (2021). *11*, 30–38. https://doi.org/https:// doi. org/ 10. 52105/ temel egitim. 11.3

[2] Alan, Ü. Distance education during the COVID 19 pandemic in Turkey: Identifying the needs of early childhood educators. *Early Childhood Education Journal*, (2021).*49*(5), 987–994. https://doi.org/https:// doi. org/ 10. 1007/ s10643- 021- 01197-y

[3] Alim, J. A., Hermita, N., Alim, M. L., Wijaya, T. T., & Pereira, J. Developing a Math Textbook using realistic Mathematics Education Approach to increase elementary students' learning motivation. *Jurnal Prima Edukasia*, (2021). *9*(2), 193–201. https://doi.org/10.21831/jpe.v9i2.39393

[4] Anggriani, M. D., & Atmojo, S. E. The Impact of Problem-Based Learning Model Assisted by Mentimeter Media in Science Learning on Students' Critical Thinking and Collaboration Skills. *International Journal of Elementary Education*, (2022).*6*(2), 350–359. https://doi.org/10.23887/ijee.v6i2.46837

[5] Bakır, E. E., & Sönmez, E. *The metaverse in early childhood education]. In Y. Doğan & N. Şen Ersoy (Eds.), Eğitimde Metaverse: Kuram ve Uygulamalar [Metaverse in Education: Theory and Applications]*. Efe Academy Publications. (2022).

[6] Bartan, S. Opinions of preschool teachers regarding the distance education process implemented during the Covid-19 pandemic period. *Dumlupınar University Graduate School of Education Journal*, (2022). *6*(1), 1–24.

[7] Canbeldek, M., & Işıkoğlu, N.. Exploring the effects of "productive children: Coding and robot- ics education program" in early childhood education. *Education and Information Technologies*, (2023)*28*, 3359–3379. https://doi.org/https:// doi. org/ 10. 1007/ s10639- 022- 11315-x

[8] DeCoito, I., & Estaiteyeh, M.. Transitioning to online teaching during the COVID 19 pandemic: An exploration of STEM teachers' views, successes, and challenges. *Journal of Science Education and Technology*, (2022) *3*(31), 340–356. https://doi.org/https:// doi. org/ 10. 1007/ s10956- 022- 09958-z

[9] Degner, M., Moser, S., & Lewalter, D. Digital media in institutional informal learning places: A systematic literature review. *Computers and Education Open*, (2022) *1*(100068). https://doi.org/https://doi.org/10.1016/j.caeo.2021.100068

[10] Dhaas, A. (2024). Augmented Reality in Education: A Review of Learning Outcomes and Pedagogical Implications. *American Journal of Computing and Engineering*, *7*(3), 1–18. https://doi.org/10.47672/ajce.2028

[11] Dogan, B., & Gogus, A.. The Effect of the 'Instructional Technologies' Course on the Competencies of Teacher Candidates in Using Web 2.0 Tools: The Case of Early Childhood Education Program. *Technology, Knowledge and Learning*, (2025)*30*(2), 883–910. https://doi.org/10.1007/s10758-025-09842-w

[12] Fazira, N. K., Prayitno, S., & Tyaningsih, Ratna Yulis, S. Pengaruh Penggunaan Media Powtoon Pada Pembelajaran Materi Teorema Pythagoras Terhadap Motivasi Dan Hasil Belajar Siswa. *Journal of Classroom Action Research*, (2025).*7*(1), 104–1117.

[13] Foti, P. Research in distance learning in Greek kindergarten schools during the pandemic of COVID-19: Possibilities, dilemmas, limitations. *Journal of Open Education and E-Learning Studies*, (2020). *5*(1), 19–40. https://doi.org/https:// doi. org/ 10. 5281/ zenodo. 38390 63

[14] Haslinda, Harianto, O., & Wahid, A. The Impact of Powtoon-Based Animated Video Media on Storytelling Appreciation among Elementary School Students. *Jurnal Pendidikan Dan Pengajaran*, (2024).*57*(3), 480–492. https://doi.org/10.23887/jpp.v57i3.81628

[15] Hasugian, R., Siagian, G., & Silaban, W. Pengembangan Media Pembelajaran Berbasis Powtoon untuk Meningkatkan Hasil Belajar Siswa pada Materi Sistem Ekskresi Manusia. *Edu Cendikia: Jurnal Ilmiah Kependidikan*, (2024). *4*(01), 15–19. https://doi.org/10.47709/educendikia.v4i01.3776

[16] Indriani, L., Ekaningrum, R. E., & Rahardi, P. Powtoon as Digital Learning Media in Academic Writing Class: Students' Perspective and Challenges. *IJELTAL (Indonesian Journal of English Language Teaching and Applied Linguistics)*, (2023). *8*(2), 185–198. https://doi.org/10.21093/ijeltal.v8i2.1552

[17] Katona, B., Venkataragavan, J., Nina, E., Ulrika, B., & Björn, O.. Use of Visual Learning Media to Increase Student Learning Motivation. *World Psychology*, (2023) *1*(3), 89–105. https://doi.org/10.55849/wp.v1i3.381

[18] Kleftodimos, A.. Computer-Animated Videos in Education: A Comprehensive Review and Teacher Experiences from Animation Creation. *Digital*, (2024) *4*(3), 613–647. https://doi.org/10.3390/digital4030031

[19] Kurniati, Rejeki, S., & Winata, A.. Student Learning Using Powtoon and PowerPoint Learning Media with a Contextual Teaching Approach. *Journal of Education Research and Evaluation*, (2024) *8*(3), 473–483. https://doi.org/10.23887/jere.v8i3.76430

[20] Li, J., Zhang, J., Chai, C. S., Lee, V. W. Y., Zhai, X., Wang, X., & King, R. B. (2025). Analyzing the network structure of students' motivation to learn AI: a self-determination theory perspective. *Npj Science of Learning*, *10*(1). https://doi.org/10.1038/s41539-025-00339-w

[21] Lubis, L. H., Febriani, B., Yana, R. F., Azhar, A., & Darajat, M.. The Use of Learning Media and its Effect on Improving the Quality of Student Learning Outcomes. *International Journal Of Education, Social Studies, And Management (IJESSM)*, (2023) *3*(2), 7–14. https://doi.org/10.52121/ijessm.v3i2.148

[22] Macaruso, P., Wilkesb, S., Franzenb, S., & Schechte, R. Three-year longitudinal study: Impact of a blended learning program Lexia Core5 Reading on reading gains in low-SES kindergarteners. *Computers in the Schools*, (2019).*36*(1), 2–18. https://doi.org/https:// doi. org/ 10. 1080/ 07380 569. 2018. 15588 84

[23] Nafi', I., & Rafsanjani, M. A. Penerapan Media Pembelajaran Powtoon Dalam Meningkatkan Motivasi dan Hasil Belajar Siswa di Kelas 10 SMAS IPIEMS Surabaya. *Jurnal Pengabdian Masyarakat Dan Riset Pendidikan*, (2025). *4*(1), 3555–3559. https://doi.org/10.31004/jerkin.v4i1.2147

[24] Nurhasanah, A., Handoyo, E., Widiyatmoko, A., & Rusdarti, R. Digital-Based Learning Media Innovation: Improving Motivation and Science Learning Outcomes. *International Journal on Social and Education Sciences*, (2025). *7*(2), 185–194. https://doi.org/10.46328/ijonses.723

[25] Nurjanah, A., Susilawati, D., Yusup, J. M., & Hendriyanto, A. Use of Powtoon as a Technology-Based Creative Learning Medium: A Systematic Literature Review *Engineering Proceedings*, (2025 *107*(1), 1–9. https://doi.org/10.3390/engproc2025107054

[26] Praveen, C. K., & Srinivasan, K. Psychological Impact and Influence of Animation on Viewer's Visual Attention and Cognition: A Systematic Literature Review, Open Challenges, and Future Research Directions. *Computational and Mathematical Methods in Medicine*, *2022*, 1–29. https://doi.org/10.1155/2022/8802542