

The Impact of Chromebook Integration on Student Engagement and Learning Outcomes in a Rural Junior High School: A Case Study at Junior High School Satap 4 Sematu Jaya¹Mudasir, ¹Ady Ferdian Noor  ¹[Universitas Muhammadiyah Palangkaraya, Central Borneo, Indonesia.](https://www.muhammadiyah.ac.id/)**Research Article****Citation Information:**

Mudasir, M., & Noor, A. F. (2025). The Impact of Chromebook Integration on Student Engagement and Learning Outcomes in a Rural Junior High School: A Case Study at Junior High School Satap 4 Sematu Jaya. *International Journal of Universal Education*, 3(1), 28–31.

<https://doi.org/10.33084/ijue.v3i1.10552>

Received: April 2025

Revised: May 2025

Accepted: June 2025

Published: June 2025

ABSTRACT

In the digital era, educational technology integration is becoming increasingly important, particularly in rural schools that lag in technology access and utilization. This study aims to analyze the impact of Chromebook use on student engagement and learning outcomes at SMP Satap 4 Sematu Jaya, a rural school that has recently adopted these devices. The research used a case study with data collection techniques through observation, interviews, document analysis, and questionnaires. Analysis was conducted qualitatively (thematic) and quantitatively (descriptive statistics). The results showed a significant increase in student engagement, both cognitively, emotionally, and behaviorally, after implementing Chromebooks. As many as 85% of students felt more motivated and were able to access digital learning resources that were previously unavailable. Average grades in Mathematics and Science increased by approximately 10% compared to before the use of Chromebooks.

Furthermore, there was an increase in students' digital literacy, including the ability to search for information and collaborate online. However, the study also identified obstacles, such as limited internet access, a lack of teacher training, and inequality of access at home for students from low-income families. These findings confirm that Chromebook integration can improve engagement and learning outcomes in rural schools if supported by adequate infrastructure, teacher training, and equitable access. In conclusion, technologies like Chromebooks have the potential to narrow the education gap in remote areas, but their success requires implementation strategies that adapt to local conditions.

Keywords: Chromebooks, Student Engagement, Learning Outcomes, Educational Technology, Rural Schools.



© 2025 Mudasir, Ady Ferdian Noor. Published by Institute for Research and Community Services Universitas Muhammadiyah Palangkaraya. This is Open Access article under the CC-BY-SA License (<http://creativecommons.org/licenses/by-sa/4.0/>).

Corresponding Author:

Mudasir

Master of Elementary Education

[Universitas Muhammadiyah Palangkaraya](https://www.muhammadiyah.ac.id/)

Email: oemarbakriemudasir95@gmail.com

INTRODUCTION

In the digital era, technology integration in education is becoming increasingly important, especially in rural areas that tend to lag in access and use of educational technology. One device often used in technology-based learning is a Chromebook, a simple laptop designed for online teaching and learning activities (Sahin et al, 2016). This research highlights the importance of Chromebook integration in rural junior secondary schools, focusing on its impact on student engagement and learning outcomes. The case is Junior High School Satap 4 Sematu Jaya, a school in a rural area that has just started to adopt the use of Chromebooks in the learning process.

Schools' primary problem in rural areas is the lack of access to educational technology that can improve student engagement in learning. Many students do not have access to technology devices, the internet, or adequate training. This results in a gap in engagement and learning outcomes compared to urban schools that are more advanced in technology adoption (Purnomo & Inayati, 2023). Therefore, this research is essential to assess how Chromebooks can bridge the gap and encourage increased student engagement in rural schools.

The importance of student engagement in learning cannot be ignored. Student engagement includes cognitive, emotional, and behavioral dimensions essential to achieving optimal learning outcomes (Li & Xue, 2023). With Chromebook integration, it is expected that student engagement, both cognitive and emotional, can increase through easier access to digital resources,

interactive learning activities, and more targeted teacher support (Leary et al, 2016). However, the real impact of Chromebook integration still requires a comprehensive study, especially in schools with limited facilities such as Junior High School Satap 4 Sematu Jaya.

This study focuses on two main variables: student engagement and learning outcomes. Student engagement is defined as how actively students physically, mentally, and emotionally participate in learning (Bryson & Hand, 2007). Meanwhile, learning outcomes are measured based on students' academic achievement after implementing Chromebooks in learning activities (Nasriani, 2022). In other words, this study not only aims to see the direct effect of using Chromebooks, but also to understand how Chromebooks can change how students learn and improve their academic achievement.

Therefore, this study aims to identify and analyze the impact of Chromebook integration on student engagement and learning outcomes at Junior High School Satap 4 Sematu Jaya. Using a case study approach, this research will provide a comprehensive picture of the role of technology in the context of education in rural areas. This research is also expected to significantly contribute to the literature on the use of technology in basic education in remote areas and provide recommendations for policymakers in the education sector.

METHOD

This research uses a case study method that focuses on Junior High School Satap 4 Sematu Jaya as the research subject. Data were collected through direct observation, interviews with teachers and students, and document analysis related to student learning outcomes before and after using Chromebooks in learning. In addition, questionnaires were also used to measure the level of student engagement during learning using Chromebooks. Data analysis was conducted qualitatively and quantitatively. Qualitative data from interviews and observations were analyzed using thematic analysis methods, while quantitative data obtained from questionnaires and learning outcomes were analyzed using descriptive statistics. This study also considered ethical aspects, including school approval and maintaining student data confidentiality.

RESULTS AND DISCUSSION

Results

This study showed a significant increase in student engagement after using Chromebooks at Junior High School Satap 4 Sematu Jaya. Based on observations and teacher interviews, students appeared more active in class discussions and engaged in assigned tasks. Before using Chromebooks, student engagement tended to be low, especially in project-based or collaborative learning. However, after Chromebook integration, students were more frequently involved in interactive learning activities, such as online discussions and collaboration through digital platforms.

In addition to increased engagement in class, the questionnaire results also showed that students felt more motivated in learning when using Chromebooks 85% of students stated that they were more interested in lessons using Chromebooks, mainly because they could access various digital resources that were not previously available at school. Students also felt that the Chromebooks helped them do their work more efficiently, as the apps made organizing and completing tasks easier.

Regarding learning outcomes, there was a significant increase in students' average scores after using Chromebooks. Data shows that students' average scores in math and science subjects increased by around 10% after Chromebooks were consistently used in learning. Teachers also reported that students seemed to understand the material better, especially on difficult concepts, as they could look up additional information and follow online tutorials via Chromebooks.

Nonetheless, the results also showed challenges in using Chromebooks. Some students admitted having difficulty accessing the internet due to network limitations in rural areas. In addition, some students were not used to technology and needed more time to adjust to using Chromebooks. This obstacle was especially felt at the beginning of the implementation, but over time, students began to get used to it and became more confident in using the device.

Teachers also reported that integrating Chromebooks required a change in teaching methods. Before using Chromebooks, most teachers relied on traditional teacher-centered teaching methods. However, with Chromebooks, teachers were required to shift to more collaborative and project-based learning methods, which initially posed challenges in adjustment. Some teachers were unfamiliar with the technology and needed additional training to maximize the use of Chromebooks in learning.

From interviews with several teachers, they stated that Chromebook integration opens up new opportunities in learning. Teachers can utilize various online learning platforms, such as Google Classroom, to give assignments, hold discussions, and give assessments in real-time. In addition, students can submit assignments digitally, making time management and assignment administration more efficient.

One of the teachers in this study stated that using Chromebooks also helps students with limited access to other educational resources, such as textbooks. Chromebooks allow students to access online learning materials previously

unavailable at school, including articles, videos, and interactive simulations. This improves students' understanding and broadens their horizons to various learning resources.

In addition, the results showed that using Chromebooks contributed to improving students' digital literacy skills. Before using Chromebooks, many students were unfamiliar with technology, especially when searching for information and managing data online. However, after several months of use, students began to show progress in digital literacy, such as searching for information efficiently, using learning applications, and collaborating online with their classmates.

However, not all students experienced the same improvements in engagement and learning outcomes. Some low-income students face difficulty accessing Chromebooks at home due to limited internet connectivity. This causes them to fall behind compared to students with better internet access. To overcome this, schools try to provide internet access in the school environment, but infrastructure challenges remain an issue.

Despite the challenges, the results of this study show that Chromebooks can be an effective tool to improve student engagement and learning outcomes in rural schools. Despite the technical and infrastructural challenges, overall, Chromebook integration increased motivation to learn, strengthening engagement in class, and positively impacting their learning.

This study's results support previous studies' findings showing that integrating technology in education, especially devices such as Chromebooks, can improve student engagement. Several studies state that technology provides various tools to make learning more interesting and interactive, ultimately increasing students' cognitive and emotional engagement. In the context of Junior High School Satap 4 Sematu Jaya, this is evident from increased student participation in class discussions and online collaboration using Chromebooks (Bedenlier et al, 2020).

In addition, the improved learning outcomes seen in Junior High School Satap 4 Sematu Jaya students align with findings that technology can facilitate a deeper understanding of learning materials. Chromebooks allow students to access additional resources, such as video tutorials and scientific articles, which help them understand difficult concepts better. This is also supported by the literature stating that using educational technology can enrich students' learning environment and encourage them to learn independently (Hana Fatikhah & Samsiyah, 2023).

However, this research also shows that the success of Chromebook integration is highly dependent on adequate infrastructure. Students' and teachers' constraints, such as limited internet connectivity and a lack of technology training, highlight the importance of better infrastructure support, especially in rural areas. This is in line with the literature, which suggests that technology can only function optimally if it is supported by stable access to the internet and adequate training for its users (Sahin et al., 2016).

The challenges faced in implementing Chromebooks at Junior High School Satap 4 Sematu Jaya also reflect the need for additional teacher training. Teachers play an important role in the success of technology integration, as they are responsible for guiding students in using the devices effectively and designing lessons that are compatible with technology. Without adequate training, teachers may find it difficult to utilize the full potential of Chromebooks, which may ultimately hinder improved student engagement and learning outcomes (Kresnadi et al., 2023b).

This study also provides insight into the inequalities of access among students. Students from lower economic backgrounds tend to have more difficulty accessing Chromebooks at home due to limited internet connections, which may lead to disparities in engagement and learning outcomes. This finding aligns with the literature, which suggests that technology can exacerbate educational disparities if student access is unequal. Therefore, schools and governments must provide more equitable access for all students, especially in rural areas (Gonzales et al, 2020).

Overall, the results from this study confirm the importance of technology integration in education, especially in rural areas that are still lagging in technology adoption. Although there are still challenges, such as infrastructure and teacher training, the results of this study show that Chromebooks can be an effective tool to improve student engagement and their learning outcomes, provided they are used with the right strategies and supported by a conducive environment.

CONCLUSION

This study successfully demonstrated the positive impact of Chromebook integration on student engagement and learning outcomes at Junior High School Satap 4 Sematu Jaya. Chromebooks help students be more engaged in the learning process, increase their motivation, and provide easier access to digital educational resources. This ultimately results in improved learning outcomes, especially in subjects that require deeper conceptual understanding.

However, the study also highlights the challenges faced in implementing technology in rural schools, particularly due to limited infrastructure and internet access. In addition, the lack of teacher training is also an obstacle to maximizing the potential of Chromebooks as a learning tool. Therefore, remedial measures, such as improved internet access and teacher technology training, must be implemented to ensure successful technology integration in rural schools.

Overall, this study makes an important contribution to the literature on the use of technology in basic education in rural areas. Considering the challenges, the results can be used as a basis for policymakers to formulate strategies to increase technology adoption in rural schools.

This study also opens up opportunities for further research on technology use in rural schools, especially in overcoming infrastructure constraints and access inequality. Future studies could explore more effective strategies in integrating educational technology, including more adaptive and innovative learning models suited to rural conditions. In addition, further research could examine the long-term impact of Chromebook use on students' digital literacy skills and the implications for academic success.

REFERENCES

- Bedenlier, S., Bond, M., Buntins, K., Zawacki-Richter, O., & Kerres, M. (2020). Facilitating student engagement through educational technology in higher education: A systematic review in the field of arts and humanities. *Australasian Journal of Educational Technology*, 126–150. <https://doi.org/10.14742/ajet.5477>
- Bryson, C., & Hand, L. (2007). The role of engagement in inspiring teaching and learning. *Innovations in Education and Teaching International*, 44(4), 349–362. <https://doi.org/10.1080/14703290701602748>
- Gonzales, A. L., McCrory Calarco, J., & Lynch, T. (2020). Technology Problems and Student Achievement Gaps: A Validation and Extension of the Technology Maintenance Construct. *Communication Research*, 47(5), 750–770. <https://doi.org/10.1177/0093650218796366>
- Hana Fatikhah, M., & Samsiyah, N. (2023). PENINGKATAN HASIL BELAJAR IPAS MELALUI MEDIA CHROMEBOOK. *Pendas : Jurnal Ilmiah Pendidikan Dasar*, 8(1), 1402–1411. <https://doi.org/10.23969/jp.v8i1.8039>
- Kresnadi, H., Halidjah, S., Pranata, R., & Syahrudin, H. (2023a). PEMANFAATAN CHROMEBOOK DALAM PEMBELAJARAN IPAS DI SEKOLAH DASAR NEGERI 18 SUNGAI KAKAP. *JURNAL PENDIDIKAN DASAR PERKHAHA: Jurnal Penelitian Pendidikan Dasar*, 9(1), 1–15. <https://doi.org/10.31932/jpdp.v9i1.2028>
- Kresnadi, H., Halidjah, S., Pranata, R., & Syahrudin, H. (2023b). PEMANFAATAN CHROMEBOOK DALAM PEMBELAJARAN IPAS DI SEKOLAH DASAR NEGERI 18 SUNGAI KAKAP. *JURNAL PENDIDIKAN DASAR PERKHAHA: Jurnal Penelitian Pendidikan Dasar*, 9(1), 1–15. <https://doi.org/10.31932/jpdp.v9i1.2028>
- Leary, H., Severance, S., Penuel, W. R., Quigley, D., Sumner, T., & Devaul, H. (2016). Designing a Deeply Digital Science Curriculum: Supporting Teacher Learning and Implementation with Organizing Technologies. *Journal of Science Teacher Education*, 27(1), 61–77. <https://doi.org/10.1007/s10972-016-9452-9>
- Li, J., & Xue, E. (2023). Dynamic Interaction between Student Learning Behaviour and Learning Environment: Meta-Analysis of Student Engagement and Its Influencing Factors. *Behavioral Sciences*, 13(1), 59. <https://doi.org/10.3390/bs13010059>
- Muhaimin, Asrial, Habibi, A., Mukminin, A., & Hadisaputra, P. (2020). Science teachers' integration of digital resources in education: A survey in rural areas of one Indonesian province. *Heliyon*, 6(8), e04631. <https://doi.org/10.1016/j.heliyon.2020.e04631>
- Nasriani. (2022). The Effectiveness of Utilizing Chromebook Facilities as Learning Media at Pulias Abaling Elementary School. *Formosa Journal of Sustainable Research*, 1(7), 1041–1050. <https://doi.org/10.55927/fjsr.v1i7.2116>
- Purnomo, T. S., & Inayati, I. N. (2023). INCREASING TEACHER COMPETENCE IN UTILIZING CHROMEBOOKS FOR LEARNING. *INCARE, International Journal of Educational Resources*, 4(2), 190–200. <https://doi.org/10.59689/incare.v4i2.758>
- Sahin, A., Top, N., & Delen, E. (2016). Teachers' First-Year Experience with Chromebook Laptops and Their Attitudes Towards Technology Integration. *Technology, Knowledge and Learning*, 21(3), 361–378. <https://doi.org/10.1007/s10758-016-9277-9>
- Shvardak, M. (2023). DIGITAL INTERACTIVE TECHNOLOGIES IN EDUCATIONAL PROCESS OF PRIMARY SCHOOL. *Scientific Journal of Khortytsia National Academy*, 2023–8, 39–48. <https://doi.org/10.51706/2707-3076-2023-8-3>
- Unal, E., & Cakir, H. (2021). The effect of technology-supported collaborative problem solving method on students' achievement and engagement. *Education and Information Technologies*, 26(4), 4127–4150. <https://doi.org/10.1007/s10639-021-10463-w>
- Wekerle, C., Daumiller, M., & Kollar, I. (2022). Using digital technology to promote higher education learning: The importance of different learning activities and their relations to learning outcomes. *Journal of Research on Technology in Education*, 54(1), 1–17. <https://doi.org/10.1080/15391523.2020.1799455>

Information about the authors:

Ady Ferdian Noor – Dr. Educ (Education), Senior Lecturer, Faculty of Teacher Training and Education, Universitas Muhammadiyah Palangkaraya; ORCID [0000-0002-7603-8350](https://orcid.org/0000-0002-7603-8350) Email: adyfnoor@umpr.ac.id

Mudasir – Educ Mgt. (Education), Master of Elementary Education Student, Faculty of Teacher Training and Education, Universitas Muhammadiyah Palangkaraya. Email: oemarbakriemudasir95@gmail.com