Alacrity : Journal Of Education
e-ISSN : 2775-4138
Volume 5 Issue 1 February 2025
The Alacrity : Journal Of education is published 4 times a year in **(February, June, October)**
Focus : Learning, Education, Including, Social, Curriculum, Management Science, Educational Philosophy And Educational Approaches.
LINK : http://lpppipublishing.com/index.php/alacrity

The Influence of Google Chrome Applications on Learning Independence: A Literature Review

Habib Chaliq Sya'af[1], Surya Bakti[2]
[1,2] *Institut Syekh Abdul Halim Hasan Binjai, Indonesia*

ARTICLE INFO
Article history:
Received
26 March 2025
Revised
10 April 2025
Accepted
15 April 2025

ABSTRACT

This study aims to analyze the influence of Google Chrome applications on students' learning independence, focusing on applications such as Google Docs, Google Classroom, and Google Meet. The method used is a literature review, by collecting and analyzing various relevant journal articles, books, and research reports published between 2014 and 2024. The results show that these applications make a significant contribution to supporting independent learning by providing tools for task management, collaboration, and flexible access to learning materials. Google Docs allows students to work collaboratively, while Google Classroom provides a platform for more structured learning management. Google Meet supports remote learning, allowing for in-person interaction between students and teachers. In addition, Google Chrome extensions such as PointerViz and Datasets2Tools enrich students' learning experience, allowing them to explore complex concepts independently. However, challenges related to privacy, data security, and cross-browser compatibility need to be addressed to maximize the use of these apps in support of self-paced learning. This study concludes that Google Chrome applications have great potential to increase learning independence, but there needs to be attention to technical and security aspects to support a more effective and safe learning experience.

Keywords
Google Chrome, Educational App, Self-Learning, Collaboration, Educational Technology

Corresponding Author :
habibchaliqsyaafhabib@gmail.com

INTRODUCTION

Technological developments in education have had a huge impact on the way of learning and teaching at various levels of education (Mayasari et al., 2013; Sabirin & Sulistiyarini, 2020; Santoso et al., 2018; Santoso & Marzuki, 2020; Sulisworo, 2016; Izzati et al., 2019; Yuliati & Saputra, 2020). Technology has changed the way we approach education, driving innovation in more effective teaching and learning methods. Maritsa et al. (2021) noted that the application of technology in vocational high schools (SMK) makes a significant contribution

to improving the quality of teaching and learning. In addition, Zen (2019) emphasized that advances in Information and Communication Technology (ICT) play a crucial role in creating a more innovative and efficient educational platform. Educational technology, as explained by Awaluddin et al. (2021), allows the management of various resources to enhance a more structured and dynamic learning experience.

Rapid social, technological, and economic changes are forcing educational institutions to continue to adapt and integrate technology in a more effective way. Pahira et al. (2023) show that the application of ICT in education opens up opportunities to create a more inclusive educational environment and reach more people. With rapid advances in technology, schools and colleges are now faced with the challenge of integrating these digital tools to the maximum to improve the quality of education. This is supported by the findings of Mulyani & Haliza (2021), which explains that technology not only simplifies the learning process, but also introduces more flexible and modern teaching methods.

One of the important concepts in modern education is self-directed learning, known as self-directed learning (SDL). Self-paced learning allows students to manage and organize their own learning process, which includes the ability to set goals, select resources, as well as assess their learning outcomes (Lo, 2010). SDL is very relevant in today's educational context, as it provides students with the skills needed to learn independently and continue to learn throughout their lives (Ersyandi, 2023; Yurdakul, 2017). Research shows that SDL contributes to students' academic success and supports their personal development and adaptability in a variety of contexts (Guo & Li, 2017; Yurdakul, 2017).

Technology plays an important role in supporting independent learning. Various digital tools, such as mobile learning apps and web-based platforms, have proven to be effective in increasing student independence (Aminatun & Oktaviani, 2019; Min, 2024). In the context of technology-based learning, students can access learning resources anytime and anywhere, giving them the flexibility to learn according to their time and style. Therefore, technology plays an inseparable role in shaping students to become more efficient and productive independent learners.

The Google Chrome app, as one of the most widely used browsers, plays an important role in facilitating self-paced learning. Google Chrome not only provides access to various educational resources over the internet, but also allows integration with various educational applications that support students' learning independence (Arruji, 2020; Ellyandhani, 2019; Windriyani, 2019). Some apps, such as Google Classroom, Google Docs, and Google Meet, allow

students to learn independently by accessing learning materials, collaborating with classmates, and interacting directly with teachers in a more flexible environment (Bicen & Arnavut, 2020; Rahmad et al., 2019).

The extension features available in Google Chrome also enhance the learning experience of students. For example, extensions like PointerViz that help novice programmers visualize complex concepts, or Datasets2Tools that allow students to access biomedical data repositories independently, providing them with the tools necessary to delve into specific topics and increase independence in their learning process (Venigalla et al., 2020; Torre et al., 2018). Thus, Google Chrome facilitates various ways of learning that support the development of students' self-learning skills.

In addition to supporting self-directed learning, apps in Google Chrome also play an important role in facilitating collaboration and inclusive learning. Collaboration is an important aspect of modern learning, allowing students to work together on assignments and projects. Apps like Google Docs allow students to collaborate in real-time, which increases their engagement in group assignments and strengthens their communication and cooperation skills. This is important to encourage more active and dynamic learning in the classroom and in the context of distance learning (Mansori et al., 2024; Wulayalin & Suprihatiningrum, 2024).

On the other hand, inclusive learning is also increasingly driven by the use of technology. Technology tools within Google Chrome, such as screen readers and apps to support students with special needs, allow students from diverse backgrounds to participate in the learning process on an equal footing (Sabaniah et al., 2021; Suprihatiningrum, 2016). This inclusive learning ensures that every student, regardless of their condition, can be actively engaged in meaningful learning experiences.

While the Google Chrome app offers many benefits in supporting self-paced learning, challenges related to its use remain. One of the main challenges is the privacy and security issues that arise from the use of third-party extensions within Google Chrome. Some extensions used for educational purposes may pose a risk to users' personal data if extension permissions are not properly managed (Marouf & Shehab, 2012). Users are often not fully aware of the permissions granted to the extension, potentially threatening their security and privacy (Sangaroonsilp et al., 2023).

In addition, cross-browser compatibility issues are also a concern. The user experience often varies when they access web pages through various browsers, which can affect the effectiveness of using web-based applications (Sabaren et al., 2018). Therefore, developers and users need to ensure that web-

based learning apps and platforms can function optimally across multiple devices and browsers to maximize the benefits of digital learning.

This study aims to explore the influence of Google Chrome applications on students' learning independence, focusing on how applications such as Google Docs, Google Classroom, and Chrome-based extensions can support the self-learning process. In addition, this research also aims to identify the challenges faced in the application of this technology in the context of education and provide recommendations to overcome existing problems. Through this research, it is hoped that it can provide deeper insights into the potential of the Google Chrome application in creating a more independent, inclusive, and collaborative learning environment.

METODE PENELITIAN

This study uses a literature review method to analyze the influence of Google Chrome applications on students' learning independence. The main data used is literature that includes journal articles, books, research reports, and other academic sources relevant to the topic of using digital applications in education. The selected literature must have been published between 2014 and 2024 and come from credible sources, such as indexed journals and reputable books. The study will explore various Google Chrome applications, such as Google Docs, Google Classroom, and Google Meet, and how these applications contribute to self-directed learning, improve collaboration, and support inclusive learning. The data collection technique is carried out by searching for relevant sources through academic platforms, such as Google Scholar.

After data collection, thematic analysis will be used to filter and categorize information based on key topics, namely the influence of Google Chrome applications on learning independence, the benefits of collaborative learning, and the challenges in implementing the applications. The findings from the collected literature will be synthesized to provide a comprehensive overview of the influence of Google Chrome applications on students' independent learning. This research will also ensure validity and reliability by using sources that have gone through a peer-review process.

Alacrity : Journal Of Education
Volume 5 Issue 1 February 2025
Page : 763-776

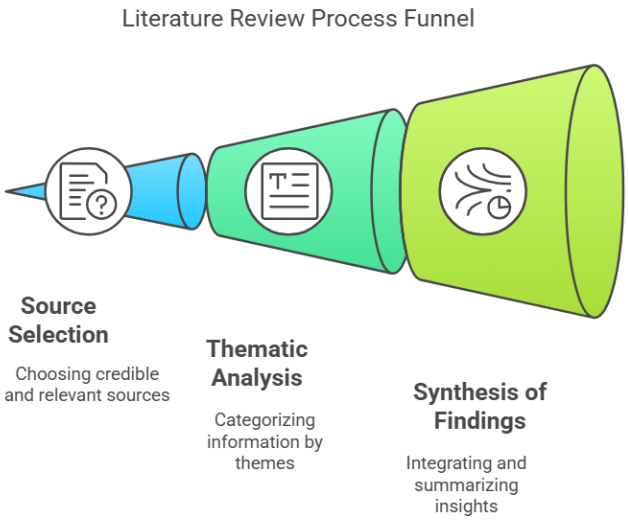

Figure 1.
Literature Review Process Funnel

RESULT AND DISCUSSION

Result

The Effect of Google Chrome Apps on Learning Independence

Based on the literature review conducted, applications that are integrated with Google Chrome, such as Google Docs, Google Classroom, and Google Meet, have a significant influence on increasing student learning independence. Research shows that the use of Google Docs for collaboration in group assignments allows students to be actively engaged in learning, manage assignments independently, and communicate with classmates efficiently (Bicen & Arnavut, 2020). Google Classroom also plays an important role in supporting self-paced learning by providing an organized platform for learning materials, assignment collection, and communication between students and teachers, allowing students to learn at their own pace and time (Rahmad et al., 2019). Research by AboArab et al. (2024) also emphasizes that the integration of Google Classroom through Google Chrome allows for flexible access to a wide range of learning materials, which in turn increases student engagement in the learning process independently.

Extensions available in Google Chrome such as PointerViz and Datasets2Tools have also been proven to strengthen students' learning independence. These extensions help students understand complex concepts, such as in biomedical programming and research, allowing them to explore and

analyze data independently (Venigalla et al., 2020; Torre et al., 2018). The ease of accessing educational resources and learning aids through an application that integrates with Google Chrome gives students the freedom to control how they learn, increasing autonomy in their education.

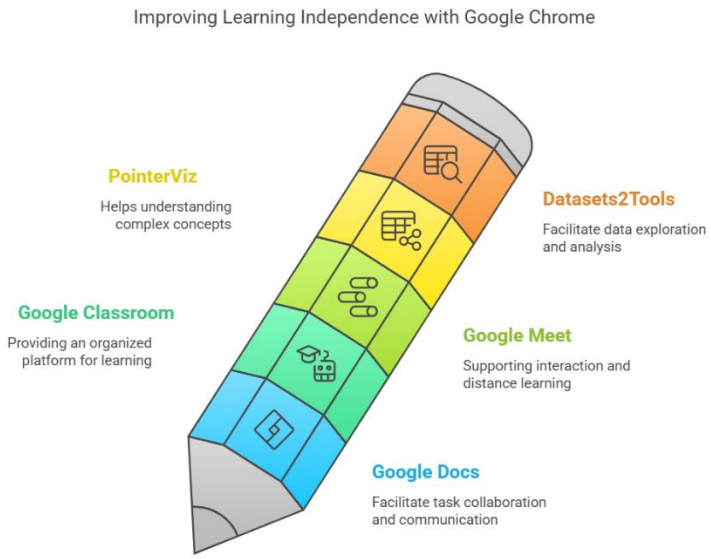

Figure 2.
Improving Learning Independence with Google Chrome

Benefits of Collaboration in Independent Learning

The Google Chrome app not only supports self-paced learning, but also encourages effective collaboration between students. Google Docs, as a collaborative tool, allows students to work together in real-time in completing group assignments, improving their communication and cooperation skills. This is especially important in project-based learning or group assignments, where collaboration is a key element in the learning process. Mansori et al. (2024) showed that technologies that support collaboration in learning drive higher student engagement, which in turn strengthens their independent learning.

In addition, platforms like Google Meet that allow virtual meetings also support collaboration and interaction between students, regardless of their physical distance. The use of technology in collaborative learning also facilitates a broader exchange of ideas, which is essential for enriching students' understanding and skills in learning independently (Mansori et al., 2024). This is also in line with research by Mulya & Fauziah (2023), which shows that collaboration between regular students and students with special needs in

Alacrity : Journal Of Education
Volume 5 Issue 1 February 2025
Page : 763-776

technology-based learning can increase empathy attitudes and encourage active participation from all students.

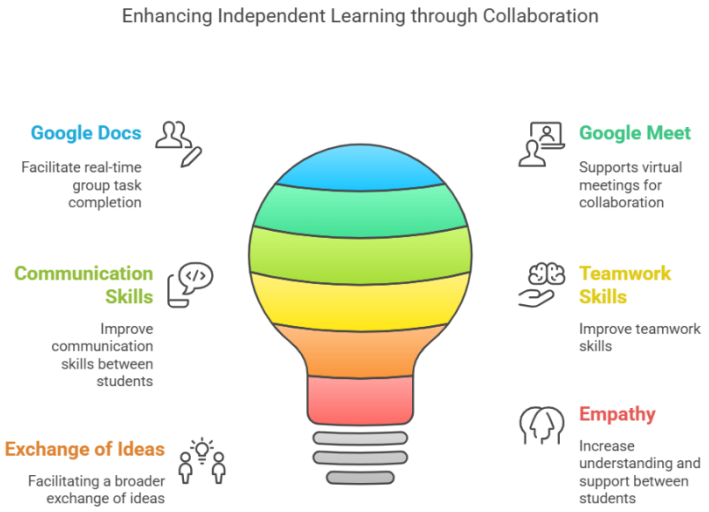

Figure 3.
Enhancing Independent Learning through Collaboration

Challenges in Using Google Chrome Apps

Although there are many benefits obtained, the use of the Google Chrome application also faces a number of challenges that need to be overcome. One of the main challenges found in the literature review is the privacy and security issues associated with the use of third-party extensions within these browsers. Users are often unaware of the permissions granted to the extension, which can pose a risk to their personal data. Therefore, it is important to increase user awareness of the potential risks and improve the management of extension permissions so that users can use the app more safely (Sangaroonsilp et al., 2023).

In addition, cross-browser compatibility issues are also a concern. Research shows that differences in user experience when accessing web pages through various browsers can affect the effectiveness of web-based applications used for learning (Sabaren et al., 2018). For this reason, developers need to improve compatibility testing and documentation so that apps that integrate with Google Chrome can function optimally across various devices and platforms.

Alacrity : Journal Of Education
Volume 5 Issue 1 February 2025
Page : 763-776

Figure 4.
Challenges in Using Google Chrome

Increasing Use of Technology in Inclusive Education

Technology also plays an important role in creating an inclusive learning environment, where students from different backgrounds, including those with special needs, can learn more effectively. Google Chrome and its related applications, such as Google Docs and Google Meet, provide better access to students with special needs to participate in collaborative learning and share knowledge with their classmates (Suprihatiningrum, 2016). Research by Wulayalin & Suprihatiningrum (2024) shows that technology tools can create more accessible learning content, allowing more students to engage in the learning process.

The use of technology in inclusive learning has also been proven to improve social interaction between students. Sabaniah et al (2021) noted that technology allows students to collaborate on joint projects more efficiently, even in the context of distance learning, which is important in ensuring an inclusive and responsive education to students' various needs.

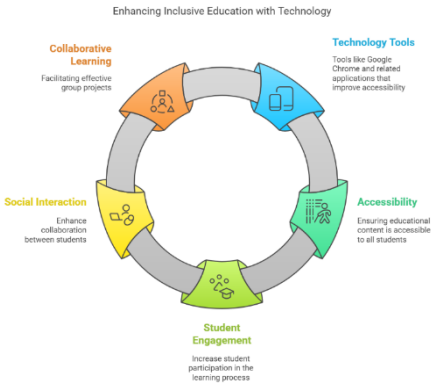

Figure 5.
Enhancing Inclusive Education with Technology

Alacrity : Journal Of Education
Volume 5 Issue 1 February 2025
Page : 763-776

The Link Between Independent Learning and Academic Success

Research shows that self-paced learning not only contributes to increased student engagement in the learning process, but also has a positive impact on their academic outcomes. Apps like Google Docs and Google Classroom give students the freedom to manage their study time, access educational materials flexibly, and collaborate with classmates. This is in line with findings that show that a learning environment that supports student independence increases their motivation and engagement in learning, which in turn contributes to improved academic outcomes (Rahmad et al., 2019).

The success of Google Chrome applications in improving self-learning also shows that technology not only supports task management, but also encourages the development of skills that are important for long-term education, such as time management skills, problem-solving, and communication skills (Rahmi et al., 2020; Wei, 2021).

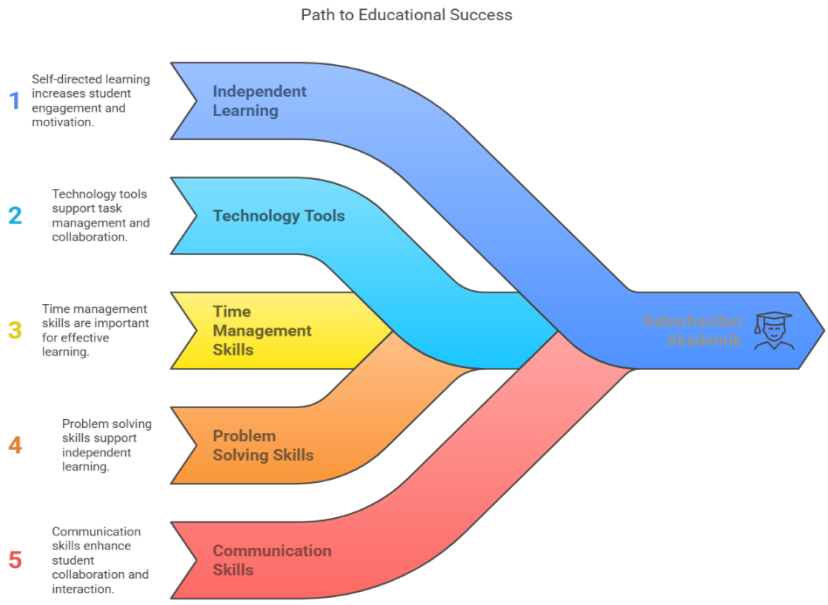

Figure 6.
Path to Educational Success

Discussion

Based on the results of the study, applications that are integrated with Google Chrome, such as Google Docs, Google Classroom, and Google Meet, make a significant contribution to improving student learning independence. The use of these apps allows students to manage their learning process more efficiently, by providing flexible access to learning materials and allowing for active collaboration between students and teachers. This is in line with previous

findings that show that educational technology not only facilitates the learning process, but also encourages the development of self-sufficient skills, such as time management and problem-solving (Guo & Li, 2017). With these apps, students can take the initiative in organizing how and when they learn, increasing their independence in education.

However, while Google Chrome applications provide significant benefits, privacy and security-related challenges are issues that need to be considered. The use of third-party extensions in Google Chrome risks causing privacy and security issues with users' personal data, which can reduce the effectiveness and convenience of users in using these applications. Therefore, stricter management of extension permissions as well as increased user awareness of the risks are essential to minimize potential threats to their personal data. This step will strengthen users' trust in the platform and allow them to use technology more optimally for self-learning.

On the other hand, Google Chrome apps also encourage inclusive learning, allowing students with a variety of needs to participate in learning equally. Technology not only improves collaboration between regular students and students with special needs, but also supports learning that is more adaptive and responsive to various student conditions. Research by Wulayalin & Suprihatiningrum (2024) shows that technology tools such as Google Classroom provide a more inclusive platform, allowing more students to engage in the learning process, both in person and through distance learning media. Therefore, technology not only supports learning independence but also enriches the learning experience for students from diverse backgrounds.

However, another challenge to address is cross-browser compatibility issues, which can impact the user experience in accessing and using web-based applications. Users who access platforms like Google Classroom through various browsers may experience differences in functionality and interface appearance, which can interfere with their learning experience. This demonstrates the importance of more responsive app testing and development across multiple platforms, to ensure that all users, regardless of the browser they are using, can access and utilize the app optimally. By addressing these compatibility issues, the digital learning experience can be improved, and students' learning independence can be further strengthened.

CONCLUSION

Based on the results of a literature review, applications that are integrated with Google Chrome, such as Google Docs, Google Classroom, and Google Meet, have a significant influence on increasing student learning independence.

These apps allow students to manage their learning process more flexibly, improve collaboration between students and teachers, and provide easy access to learning materials. In addition, the existence of extensions that support learning also provides additional tools that enrich students' learning experience, allowing them to delve into certain topics independently.

However, emerging challenges, such as privacy and security issues related to the use of third-party extensions, as well as cross-browser compatibility issues, need to be addressed so that the Google Chrome app can be used to its full potential in supporting self-paced learning. Stricter management of extension permissions and more responsive app development across multiple platforms can improve the user experience, allowing students to learn more effectively and safely. Overall, Google Chrome apps have great potential to support self-paced learning, but it's important to pay attention to technical and security aspects in order to maximize their benefits for students around the world.

REFERENCES

AboArab, M. A., Potsika, V. T., Theodorou, A., Vagena, S., Gravanis, M., Sigala, F., & Fotiadis, D. I. (2024). Advancing Progressive Web Applications to Leverage Medical Imaging for Visualization of Digital Imaging and Communications in Medicine and Multiplanar Reconstruction: Software Development and Validation Study. *JMIR Medical Informatics*, *12*, e63834. https://doi.org/10.2196/63834

Aminatun, D., & Oktaviani, L. (2019). Memrise: Promoting Students' Autonomous Learning Skill Through Language Learning Application. *Metathesis Journal of English Language Literature and Teaching*, *3*(2), 214. https://doi.org/10.31002/metathesis.v3i2.1982

Arruji, E. (2020). Pengaruh Media Google Classroom Terhadap Hasil Belajar Pada Konsep Gerak. *Skripsi UIN SYARIF HIDAYATULLAH*.

Awaluddin, A., Ramadan, F., Charty, F. A. N., Salsabila, R., & Firmansyah, Mi. (2021). Peran Pengembangan dan Pemanfaatan Teknologi Pendidikan dan Pembelajaran Dalam Meningkatkan Kualitas Mengajar. *JURNAL PETISI (Pendidikan Teknologi Informasi)*, *2*(2), 48–59. https://doi.org/10.36232/jurnalpetisi.v2i2.1241

Bicen, H., & Arnavut, A. (2020). Google AI Approach and Statistical Results of Using Google Applications in Mobile Learning. *Brain. Broad Research in Artificial Intelligence and Neuroscience*, *11*(1), 121–130. https://doi.org/10.18662/brain/11.1/18

Ellyandhani, L. A. (2019). Pengaruh Model Blenden Learning Berbantuan

Google Classroom Terhadap Kemampuan Berpikir Kreatif Dan Kemandirian Belajar Peserta Didik Kelas XI Mata Pelajaran Biologi Di SMA AL-AZHAR 3 Bandar Lampung. *Journal of Chemical Information and Modeling*, *53*(9), 1689–1699.

Ersyandi, A. (2023). *Strategi Pembelajaran Yang Mudah Diterapkan Untuk Memfasilitasi Pembelajaran Mandiri*. https://doi.org/10.31219/osf.io/q2dpr

Guo, X., & Li, Y. (2017). A Study of College Students' English Autonomous Learning in the Network Environment. *Destech Transactions on Social Science Education and Human Science*, *icssm*. https://doi.org/10.12783/dtssehs/icssm2017/10436

Hapsah Pahira, S., Rinaldy, R., Wijaya, A. surya, Santika, R., & Prahitaningtyas, S. (2023). Analisis Hak Kekayaan Intelektual pada Pengembangan Teknologi Pendidikan. *Journal of Economics and Business UBS*, *12*(4), 2596–2604. https://doi.org/10.52644/joeb.v12i4.500

Izzati, M., & Kuswanto, H. (2019). Pengaruh Model Pembelajaran Blanded Learning berbantuan Kahoot terhadap Motivasi dan Kemandirian Siswa. *EDUMATIC: Jurnal Pendidikan Informatika*, *3*(2), 65–75. https://doi.org/10.29408/edumatic.v3i2.1656

Lo, Y. (2010). Implementing Reflective Portfolios for Promoting Autonomous Learning Among EFL College Students in Taiwan. *Language Teaching Research*, *14*(1), 77–95. https://doi.org/10.1177/1362168809346509

Manasa Venigalla, A. S., Lakkundi, C. S., & Chimalakonda, S. (2020). Pointerviz - Towards visualizing pointers for novice programmers. *Proceedings of the Annual Hawaii International Conference on System Sciences*, *2020-Janua*, 118–126. https://doi.org/10.24251/hicss.2020.015

Mansori, M., Rahman, A. H. A., Turmudzi, I., Jumriah, J., & Anggraheni, D. (2024). The Role of Technology in Promoting Collaborative Learning: Case Studies From Multicultural Classrooms. *International Journal of Educational Research Excellence (Ijere)*, *3*(2), 846–853. https://doi.org/10.55299/ijere.v3i2.1131

Maritsa, A., Hanifah Salsabila, U., Wafiq, M., Rahma Anindya, P., & Azhar Ma'shum, M. (2021). Pengaruh Teknologi Dalam Dunia Pendidikan. *Al-Mutharahah: Jurnal Penelitian Dan Kajian Sosial Keagamaan*, *18*(2), 91–100. https://doi.org/10.46781/al-mutharahah.v18i2.303

Marouf, S., & Shehab, M. (2012). Towards improving browser extension permission management and user awareness. *CollaborateCom 2012 - Proceedings of the 8th International Conference on Collaborative Computing: Networking, Applications and Worksharing*, 695–702. https://doi.org/10.4108/icst.collaboratecom.2012.250642

Mayasari, F., Sigit, S., & Dini, O. (2013). Upaya Meningkatkan Kemandirian Belajar Siswa Melalui Penerapan Blended Learning Berbantuan Quipper School. *Jurnal "Tata Arta" UNS*, *2*(3), 1–19.

Min, S. (2024). Evaluation of the Ecological Sustainable Development Strategy of Students' English Autonomous Learning Ability Under Mobile Learning Technology. *Advances in Educational Technology and Psychology*, *8*(1). https://doi.org/10.23977/aetp.2024.080107

Mulyani, F., & Haliza, N. (2021). Analisis Perkembangan Ilmu Pengetahuan dan Teknologi (Iptek) Dalam Pendidikan. *Jurnal Pendidikan Dan Konseling (JPDK)*, *3*(1), 101–109. https://doi.org/10.31004/jpdk.v3i1.1432

Nurull Hary Mulya, & An Nuril Maulida Fauziah. (2023). Pembelajaran IPA Kolaboratif: Siswa Reguler dan Anak Berkebutuhan Khusus Berkontribusi Aktif dalam Mencapai Tujuan Bersama. *Jurnal Pendidikan Mipa*, *13*(2), 473–477. https://doi.org/10.37630/jpm.v13i2.1031

Rahmad, R., Adria Wirda, M., Berutu, N., Lumbantoruan, W., & Sintong, M. (2019). Google classroom implementation in Indonesian higher education. *Journal of Physics: Conference Series*, *1175*(1), 12153. https://doi.org/10.1088/1742-6596/1175/1/012153

Rahmi, D., Pramono, A., & Firmansyah, M. (2020). Analisis Faktor Regulasi Belajar Mandiri Terkait Efikasi Diri, Kesadaran Pengetahuan Metakognitif, Dan Pengalaman Pembelajaran Sebelumnya Terhadap Prestasi Akademik. *Jurnal Kesehatan Islam Islamic Health Journal*, *9*(1), 27. https://doi.org/10.33474/jki.v9i1.8865

Sabaniah, S., Ramdhan, D. F., & Rohmah, S. K. (2021). Peran Guru dalam Pelaksanaan Pembelajaran Jarak Jauh di Tengah Wabah Covid - 19. *Edunesia : Jurnal Ilmiah Pendidikan*, *2*(1), 43–54. https://doi.org/10.51276/edu.v2i1.77

Sabaren, L. N., Mascheroni, M. A., Greiner, C. L., & Irrazábal, E. (2018). A Systematic Literature Review in Cross-browser Testing. *Journal of Computer Science and Technology*, *18*(01), e03. https://doi.org/10.24215/16666038.18.e03

Sabirin, F., & Sulistiyarini, D. (2020). Perbandingan Blended Learning Dan Face-To-Face Learning Terhadap Kemampuan Komunikasi Mahasiswa Pada Proyek Desain Website. *Edukasi: Jurnal Pendidikan*, *18*(1), 86. https://doi.org/10.31571/edukasi.v18i1.1630

Sangaroonsilp, P., Choetkiertikul, M., Dam, H. K., & Ghose, A. (2023). An empirical study of automated privacy requirements classification in issue reports. *Automated Software Engineering*, *30*(2). https://doi.org/10.1007/s10515-023-00387-9

Santoso, R., & Marzuki, M. (2020). Assessment of learning outcomes based on Google Forms to reduce paper use. *Teacher Education and Professional Development in Industry 4.0*, 296–302. https://doi.org/10.1201/9781003035978-46

Santoso, R., Pitoewas, B., & Nurmalisa, Y. (2018). Pengaruh program literasi sekolah terhadap minat baca peserta didik SMAN 2 Gadingrejo. *Jurnal Kultur Demokrasi*, *5*(9).

Sulisworo, D. (2016). The Contribution of the Education System Quality to Improve the Nation's Competitiveness of Indonesia. *Journal of Education and Learning (EduLearn)*, *10*(2), 127–138. https://doi.org/10.11591/edulearn.v10i2.3468

Suprihatiningrum, J. (2016). Persepsi Siswa Difabel terhadap Praktik Pendidikan Inklusif di SMA Inklusi di Yogyakarta. *Inklusi*, *3*(2), 225. https://doi.org/10.14421/ijds.030204

Torre, D., Krawczuk, P., Jagodnik, K. M., Lachmann, A., Wang, Z., Wang, L., Kuleshov, M. V., & Ma'Ayan, A. (2018). Datasets2Tools, repository and search engine for bioinformatics datasets, tools and canned analyses. *Scientific Data*, *5*(1). https://doi.org/10.1038/sdata.2018.23

Wei, H. (2021). Cultivation Model for Autonomous Learning Ability of Japanese Majors. *International Journal of Emerging Technologies in Learning (Ijet)*, *16*(04), 201. https://doi.org/10.3991/ijet.v16i04.20481

Windriyani. (2019). *Pengaruh Media Google Classroom Terhadap Hasil Belajar Siswa Ditinjau Dari Aktivitas Belajar Pada Pelajaran Ekonomi Kelas X Man 1 Banyumas*. 15031.

Wulayalin, K. A., & Suprihatiningrum, J. (2024). Creating Accessible Chemistry Content for Students with Disabilities: Findings from Schools Providing Inclusive Education in Indonesia. *Jurnal Penelitian Pendidikan IPA*, *10*(5), 2199–2210. https://doi.org/10.29303/jppipa.v10i5.6755

Yuliati, Y., & Saputra, D. S. (2020). Membangun Kemandirian Belajar Mahasiswa Melalui Blended Learning Di Masa Pandemi Covid-19. *Jurnal Elementaria Edukasia*, *3*(1). https://doi.org/10.31949/jee.v3i1.2218

Yurdakul, C. (2017). An Investigation of the Relationship Between Autonomous Learning and Lifelong Learning. *International Journal of Educational Research Review*, *2*(1), 15–20. https://doi.org/10.24331/ijere.309968

Zen, Z. (2019). Inovasi Pendidikan Berbasis Teknologi Informasi : Menuju Pendidikan Masa Depan. *E-Tech : Jurnal Ilmiah Teknologi Pendidikan*, *6*(2). https://doi.org/10.24036/et.v2i2.101346