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Student Innovation Adoption in Digital Media Literacy-Based Educational Communication

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Abstract

Education is not only a process of transforming knowledge and skills but also developing characteristics of mindset, mental, and behaviour that are creative, productive, and innovative, humanistic with a social spirit, adhering to ethics and legal norms, thus becoming a soul with idealism to be truly beneficial to the public..Education is a knowledge transmission process that shapes and develops students' interests, abilities, and skills through constructive educational communication in the digital age, which is fascinating to research. This study included qualitative approaches, including participatory learning and action, as well as data collection by questionnaire distribution to 30 students from 10 favorite high schools, with the results refined through focus group discussions, interviews, observation, and documentation. Quota sampling was used to choose three informants as organizational administrators of those favorite high schools. Data analysis involved descriptive analysis and constructive engagement. The findings revealed that educational communication via digital technology media creates four categories: followers, learners, creators, and innovators. Research implications recommend the utilization of digital technology media in learning; it is necessary to implement educational communication theory to support the development of creative and productive digital literacy to minimize phubbing and conduct disorder as a negative impact of digital media usage.

Keywords: digital literacy, educational communication, media technology, innovation adoption, student learning.

1. Introduction

Education is an important and strategic aspect in preparing, shaping, and developing human resources as communicators, actors, and catalysts of development. Education is planned, implemented, and evaluated in stages, starting from early childhood education to higher education. It is hoped that from the stages and targets of tiered education until the age of 23, human resources as the next generation will have quality competencies in knowledge, experience, and skills to be ready to work, accept, and answer the challenges of the times for the advancement of development.

The Indonesian government supports the education process and targets with a policy of requiring every citizen to be educated for 9 years by waiving education fees from primary to secondary school levels. As stated in the mandate of the 1945 Constitution of the Republic of Indonesia in Article 31 Paragraph 1 that e*very citizen has the right to education*, then government policy in Government Regulation No. 47 of 2008 Article 12 paragraph 3 that *District/city governments are obliged to strive so that every Indonesian citizen of compulsory education age follows the 9-year compulsory education program*. Even in the Draft Law on the National Education

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System, it is proposed to be revised to 13 years of compulsory education consisting of 10 years of basic education from pre-school to primary school graduation, then continuing junior high school.

The large number of people is a burden on development because the number of unemployed is quite large based on the Central Statistics Agency (BPS) report in August 2022, it has reached 8.4 million people or 5.86 % of the total national labor force, the most unemployed in the age group 20-24 years as many as 2.54 million people or 30.12 % of the total national unemployment.

Several studies show that development requires human resources both in quantity and quality to determine the progress of development in terms of economic, socio-cultural, and welfare. However, a large population is also a problem of development and population such as poverty, unemployment, overcrowding in urban areas, inequality, and socio-economic conflict (Handoko et al., 2024; Meadows et al., 2023; Prastyanti et al., 2024).

The adoption of communication technology innovation is a decisive factor in building and developing digital learning media literacy through several applications that need to be mastered starting from being understood to appearing to use it. The adoption of technological innovation requires processes and actors as facilitators, instructors, and assistants to provide digital technology literacy (Gledson, 2022).

Shock in digital media makes the public or internet citizens fall into several categories according to Everett Rogers, namely innovators as pioneers who initiate mastery and transfer of technology, then adapters who are fast and interested in technological change, are also adapters who are slow to accept or master technology, and there are even those who are very slow and reject technological change (Dutta, Sarma, 2023; Zasa et al., 2023).

The learning process with digital online media is a form of mass communication where the communication process uses electronic or print media that is uploaded and can be downloaded by all parties as long as access and media are owned. The era of new media and the era of disruption has emphasized that electronic media expands perception (thinking) in the context of a global village. Internet media is called cyberspace society and virtual world which is deliberately created as Netizen-Computerization-Internet-Digital. The era of disruption occurs from technology, namely fundamental changes from the old system to a new system (innovation) in various aspects of socio-economic life (McMullan, 2020; Nurlatifah, Mutmainnah, 2021; Pamuji et al., 2022).

Based on the phenomenon, the author is interested in researching the phenomenon of the educational process among students during the COVID-19 period, especially starting in 2020 and ahead of the new normal era in 2022 and 2023. The results of the research are expected to construct a student learning model in the adaptation of digital technology media. The research question is how student innovation adoption in digital media literacy-based educational communication?

2. Materials and methods

The research was conducted from May 2023 to June 2024 as the end and post-COVID-19 pandemic period or entering the new normal era. The research target is students in grade 11 high schools with the consideration that grade 11 students have the adoption of digital learning media and are sufficiently literate in digital media.

The 30 informants were determined based on a quota sample that selected 3 high school students from 5 favorite high schools in Purwokerto City, Central Java Province, Indonesia with a composition of 5 schools from Senior High Schools, Vocational High Schools in the city center and 5 schools in rural areas so that there is diversity represented from different location characteristics.

Research used the Participatory Learning and Action (PLA) method is a way of conducting a research process through indicators (1) The learning process is carried out based on participatory practices. (2) Methods of empowering the community to be able to explore sharing knowledge and experience. (3) Making and making decisions, planning to implementing change actions. (4) Identifying needs, planning, and evaluating development program activities. (5) Counseling media and providing opportunities to encourage active community participation in problems and interventions in all aspects of community life. (6) Improving the quality of life of individuals and communities (Windiasih et al., 2022).

PLA was carried out in three stages, as follows: (1) The orientation stage, preliminary study activities at the research location to obtain a clear and complete description of the problem under study; (2) The exploration stage, carrying out data collection on research subjects oriented to the objectives and focus of the research. (3) The member check stage, on research subjects and

documents as findings based on procedures, data validity, and appropriate data revision according to systematics to obtain the final report (Sulaiman, Ahmadi 2020).

The research data was collected by distributing questionnaires to research informants. The results of the questionnaire were then questioned and deepened by dialog and discussion, followed by direct observation, and important documentation. Data were analyzed using descriptive analysis for the distribution of questionnaires, then data from interviews and discussions with constructive participatory data analysis, namely processing and reducing data to identify, describe, triangulate, and verify data to categorize and build models (Hart, 2008).

3. Discussion

Indicators of evaluation of the adoption of innovations in the use of technological media that assist in learning, then indicators of experiments on technological media that can be practiced are categorized as Moderately High. Students need adaptation both time, learning, practice, and assistance regarding the use, utilization, and assignment of learning from teachers, instructors, and families (Dou, 2024; Fernández-Batanero et al., 2020; Mingot, Marin, 2024; Šušterič et al., 2025).

Meanwhile, the adoption indicator in the form of technological media that can find new things in learning is categorized as very high. Students get various new applications and platforms such as Google Classroom, Google Meeting, Zoom Meeting, Microsoft Teams, and WhatsApp video calls. Including several websites and YouTube addresses for learning and creative learning. Students' computational thinking self-efficacy is influenced indirectly by their digital literacy skills and also contributes to social cognitive growth (Gümüş et al., 2024; Kilic, 2023; Slakmon, 2024; Yen et al., 2025). Further, more effective outcomes for teaching, learning, and motivating learners, it is necessary to integrate digital and social skills with media literacy across flexible routes.Teachers also prioritize investing in digital technologies to create a successful learning environment (Almaki et al., 2025; Hernández, 2025; Johnson, 2021).

It requires digital media literacy to utilize and optimize the interests and technological capabilities of the younger generation to be more directed, healthy, productive, creative, and innovative (Ahmadi et al., 2023; Lestari, Fitri., 2021; Lestari et al., 2024; Prasetiyo et al., 2022; Prastyanti et al., 2022; Suswanto et al., 2021).

However, there is a negative impact if it is not managed, supervised, and channeled properly, namely dependence on the use of digital media such as online games and other entertainment shows, so that they forget time, do not want to study, and do not want to interact normally or tend to enjoy themselves as a characteristic of Phubbing. Another negative impact is a conduct disorder, where digital media users have violated norms and ethics and even violated the law due to the desire to fulfill their needs due to the negative influence of digital media, such as lying, disrespectful and violent behavior, or acts of violence, immorality, stealing and other (Bergmark, 2020;Bowman et al., 2020; Cents-Boonstra et al., 2020; Erwinda, 2023; Solecki, 2022; Sulaiman et al., 2024; Wang et al., 2023).

This research uses the Participatory Learning and Action (PLA) method as part of the constructivist paradigm which is a process of building and composing new knowledge in the cognitive structure of students based on student experience. The constructivism paradigm approach with the PLA method is very relevant in analyzing the phenomenon of the educational communication process in digital literacy from students' knowledge, skills, and experiences. Based on the results of observations, interviews, and Focus Group Discussions (FGD) with 30 students as informants, it was found that there are 3 categories of research results, namely (1) Followers Category, namely students who do not have the initiative and courage to try new things in the digital media literacy process in learning. Students are waiting to be instructed, need to get attention, be motivated, and be accompanied to carry out learning activities. It has a low level of innovation adoption indicators in terms of awareness, interest, evaluation, trial, and adoption.

(2) Learner category, this type of student has an interest and desire to know by wanting to learn something new such as several applications in digital media. Students prefer to be directed, given tasks, and still accompanied for the digital media literacy process in learning. Learner-type students are generally the stage after the Followers type which needs to adapt to be introduced, tried, and directed in the digital learning process. Learner types need to get digital media facilities in the learning process so that they are more interested and motivated to utilize them in learning. It has a fairly high level of innovation adoption indicators in terms of awareness, interest, evaluation, trial, and adoption.

(3) The Creators category, this type of student is very enthusiastic and interested in trying something new and can develop learning from digital media that is introduced or taught. Students can

do and make more creative, interesting, and unique results of their learning tasks by only being given examples. The Creators type is the phase after the Learner type who already has the attraction, and courage to try and learn digital media. The Creator type will maximize digital media to make something that wants to be different and interesting from what is exemplified. So that it has a high level of innovation adoption indicators in terms of awareness, interest, evaluation, trial, and adoption.

This type of student will look for various application facilities in digital media on their own and can even find new things that have not been taught, assigned, and exemplified. Student type

Innovators will be given the space to become motivators and facilitators for their peers in utilizing digital media in learning. Innovator students love challenges and are given media to compete to produce something new. It has a very high level of innovation adoption indicators in terms of awareness, interest, evaluation, experimentation, and adoption.

The four types of students follow the innovation adoption process (Rogers, 2003), which has several aspects, namely (1) Awareness, which is the existence of new knowledge and innovation for policy action, (2) Interest, gathering information to foster desire, (3) Evaluation, reflecting on advantages and disadvantages, so that there is a decision to accept or reject, (4) Experimentation, the process of testing innovation changes through implementation and practice, (5) Adoption, is the acceptance and application of innovation by confirming. Matrix of constructive educational communication models in digital media literacy shows in Figure 1.

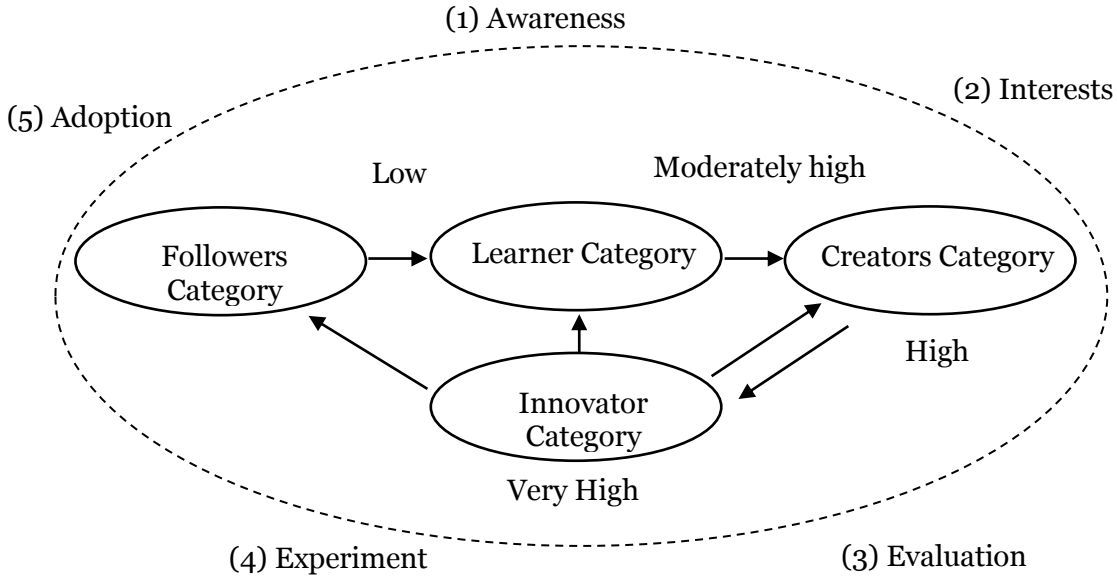

Fig. 1. Student Categories in the Adoption of Digital Media Literacy Innovations

The constructivist learning theory is a learning theory rooted in cognitive learning theory and is a new theory in educational psychology (Firmansyah, Saepuloh, 2022; Leijon et al., 2022; Selwyn, 2023; Ye et al., 2025).

For students to effectively process and apply knowledge, they must concentrate on problem solving, self-discovery, and idea development. According to this theory, teachers cannot simply provide knowledge to students; instead, teachers must be able to design learning that allows students to build their knowledge, provide opportunities, and provide students with steps that can lead to a higher understanding, with a note that the students do the work and the teacher only assists. Applying a creative problem-solving technique helps to develop students higher-order thinking abilities (Børte et al., 2020; Qureshi et al., 2021; Williamson, 2020; Yen et al., 2025; Yu, Couldry, 2020; Zakharova, Jarke, 2022).

The study of educational communication (Rina, 2021) is extended to the effects of media on children, the process of child development, and the use of pedagogical methods and new technologies to facilitate classroom or distance education. Educational communication theories that can be used for research approaches and indicators are (1) The communication process of what programs are taught in the classroom. (2) How topics are selected. (3) Teaching methods to

students. (4) Methods of evaluating and assessing student learning either in class or through out-of-class assignments. (5) Feedback after teaching and assignments.

4. Results

The process of adopting technological innovations is a process of accepting new things, which can be seen from the behavior of individuals or groups, while technological innovations are the process of creativity to produce new products or modify products to provide more utility, and meet market tastes.

The results of the answers were analyzed by calculating and determining the average score of the research object based on the assessment of the variables studied by determining the category through the calculation of the highest answer score minus the lowest answer score and then divided by the number of criteria's scale 4 (Table 1). The range of criteria can be determined, namely 1 to 1.75 low categories, 1.76 to 2.50 moderately high categories, 2.51 to 3.25 high categories, and 3.26 to 4.00 very high categories.

Table 1. Adoption of Digital Media Innovation in Learning

Indicators of Innovation Adoption	*Total*	*Criteria Range*	*Categories*
It's important to know about digital media technology in learning	21		
There is no need to become proficient in digital media technology to learn	9		
Awareness	30	3	Height
Interested in mastering digital media technology in learning	21		
Uninterested in mastering digital media technology in learning	9		
Interests	30	3	Height
Digital media technology helps in learning	19		
Digital media technology complicates learning	11		
Evaluation	30	2	Moderately High
Digital technology media is easy to practice in learning	19		
Digital technology media is difficult to practice in learning	11		
Experiment	30	2	Moderately High
Digital technology media can discover new things in learning	22		
Digital technology media can't reinvent learning	8		
Adoption	30	3,5	Very High

Based on Table 1, this is because students are categorized as Generation Z, which has an age range between 11 and 26 years old, is a digital generation that is familiar with the world of smartphones, the internet, and gadgets.

5. Conclusion

Learning media and services based on digital technology innovation can continue to be used as a complement to the learning process and media in the new normal or post-COVID-19 pandemic era which is very effective, creative, productive, and innovative. So the need for the availability of internet media access and facilities at school and home is a demand and need for a variety of learning media in the digital era which is not only because there is a COVID-19 Pandemic.

The use of innovative and interesting internet media still cannot replace students' desire to interact directly in the learning process such as meeting and chatting directly with teachers and friends, playing and joking. The students generally still want face-to-face in the learning process at school.

Adoption of innovations in the use of digital technology media in learning has a high category on indicators of student awareness and interest in knowing and mastering digital technology media

in learning. Indicators of evaluation and experimentation of digital technology media have a moderately high category to help students and are easily practiced by students in learning. Then the innovative indicator, students enter a very high category to find new and interesting things in learning bynamely followers with low adoption of innovation, learner categories with high adoption of innovation, creator category with high innovation adoption and innovator criteria with very high innovation adoption.The such as Phubbing, namely dependence or addiction to online games and entertainment so that they forget time, forget to study and are asocial, then Conduct Disorder, which is uncontrolled behavior that violates ethics, norms, and laws.

References

Ahmadi et al., 2023 – *Ahmadi, D., Sulaiman, A.I., Runtiko, A.G., Noegroho, A., Ar Raqi, R.I., Maryani, A., Yuniati, Y., Yulianita, N.* (2023). Marketing communications for tourism development in ecoethno leadcamp site. *Studies in Media and Communication*. 11(4): 67-77. DOI: https://doi.org/10.11114/smc.v11i4.5909

Almaki et al., 2025 – *Almaki, S.H., Gunda, M., Gambo, M., Waked, H.N.* (2025). The adoption of remote digital technology and platforms for early childhood during emergency remote teaching: a systematic review. *Technology, Pedagogy and Education:* 1-17. DOI: https://doi.org/10.1080/1475939X.2025.2481208

Børte et al., 2020 – *Børte, K., Nesje, K., Lillejord, S.* (2020). Barriers to student active learning in higher education. *Teaching in Higher Education*. 28(3): 597-615. DOI: https://doi.org/10.1080/13562517.2020.1839746

Bergmark, 2020 – *Bergmark, U.* (2020). Teachers' professional learning when building a research-based education: context-specific, collaborative and teacher-driven professional development. *Professional Development in Education*. 49(2): 210-224. DOI: https://doi.org/10.1080/19415257.2020.1827011

Bowman et al., 2020 – *Bowman, M.A., Vongkulluksn, V.W., Jiang, Z., Xie, K.* (2020). Teachers' exposure to professional development and the quality of their instructional technology use: The mediating role of teachers' value and ability beliefs. *Journal of Research on Technology in Education*. 54(2): 188-204. DOI: https://doi.org/10.1080/15391523.2020.1830895

Carlos, 2023 – *Carlos, V., Reses, G., Soares, S.C.* (2023). Active learning spaces design and assessment: a qualitative systematic literature review. *Interactive Learning Environments*. 32(6): 2925-2942. DOI: https://doi.org/10.1080/10494820.2022.2163263

Cents-Boonstra et al., 2020 – *Cents-Boonstra, M., Lichtwarck-Aschoff, A., Denessen, E., Aelterman, N., Haerens, L.* (2020). Fostering student engagement with motivating teaching: an observation study of teacher and student behaviours. *Research Papers in Education*. 36(6): 754-779. DOI: https://doi.org/10.1080/02671522.2020.1767184

Fernández-Batanero et al., 2020 – *Fernández-Batanero, J.M., Montenegro-Rueda, M., Fernández-Cerero, J., García-Martínez, I.* (2020). Digital competences for teacher professional development. Systematic review. *European Journal of Teacher Education*. 45(4): 513-531. DOI: https://doi.org/10.1080/02619768.2020.1827389

Dou, 2024 – *Dou, X.* (2024). Can free-view media processing technology improve classroom performance? *Technology, Pedagogy and Education*. 33(4): 421-435. DOI: https://doi.org/10.1080/1475939X.2024.2342328

Dutta, Sarma, 2023 – *Dutta, D., Sarma, M.K.* (2023). Internet skills as an influencer for adoption of digital innovations in a technologically emerging nation: India. Vilakshan - XIMB. *Journal of Management*.20(1): 25-41. DOI: https://doi.org/10.1108/XJM-12-2020-0259

Erwinda, 2023 – *Erwinda, L.* (2023). Exposing the dark side: phubbing as a detrimental consequence in the digital era. *Jurnal Penelitian Guru Indonesia (JPGI)*. 8(1): 121-129. DOI: https://doi.org/10.29210/022895jpgi0005

Firmansyah, Saepuloh, 2022 – *Firmansyah, D., Saepuloh, D.* (2022). Social learning theory: cognitive and behavioral approaches. *Jurnal Ilmiah Pendidikan Holistik (JIPH)*. 1(3): 297-324.

Gidiotis, Hrastinski, 2024 – *Gidiotis, I., Hrastinski, S.* (2023). Imagining the future of artificial intelligence in education: a review of social science fiction. *Learning, Media and Technology:* 1-13. DOI: https://doi.org/10.1080/17439884.2024.2365829

Gledson, 2022 – *Gledson, B.* (2022). Enhanced model of the innovation-decision process, for modular-technological-process innovations in construction. *Construction Innovation*. 22(4): 1085-1103. DOI: https://doi.org/10.1108/CI-02-2021-0021

Gumus et al., 2024 – *Gümüş, M.M., Kukul, V., Korkmaz, O.* (2024). Relationships between middle school students' digital literacy skills, computer programming self-efficacy, and computational thinking self-efficacy. *Informatics in Education*. 23(3): 571-592. DOI: https://doi.org/10.15388/infedu.2024.20

Handoko et al., 2024 – *Handoko, W., Sulaiman, A.I., Sugito, T., Sabiq, A.* (2024). Empowering former women migrant workers: enhancing socio-economic opportunities and inclusion for sustainable development. *Academic Journal of Interdisciplinary Studies*. 13(1): 199-210. DOI: https://doi.org/10.15388/infedu.2024.20

Hart, 2008 – *Hart, P.* (2008). What comes before participation? Searching for meaning in teachers' constructions of participatory learning in environmental education. In: Reid, A., Jensen, B.B., Nikel, J., Simovska, V. (eds.). *Participation and Learning*. Dordrecht: Springer. DOI: https://doi.org/10.1007/978-1-4020-6416-6_12

Hernández-Serrano et al., 2025 – *Hernández-Serrano, M., Cullen, J., Jones, B., Romo, N.* (2025). A Flexible framework integrating digital and social competences in vocational education across diverse contexts. *Media and Communication*. 13: 8974. DOI: https://doi.org/10.17645/mac.8974

Johnson, 2021 – *Johnson, N.F.* (2021). Digital labour and temporal priorities within a secondary school. *Technology, Pedagogy and Education*. 30(5): 659-671. DOI: https://doi.org/10.1080/1475939X.2021.1946419

Kilic, 2023 – *Kilic, S.* (2023). Effectiveness of gamification on the community of inquiry development in online project-based programming courses conducted on Facebook. *Informatics in Education*. 22(1): 21-44. DOI: https://doi.org/10.15388/infedu.2023.04

Leijon, 2022 – *Leijon, M., Nordmo, I., Tieva, Å., Troelsen, R.* (2022). Formal learning spaces in Higher Education – a systematic review.*Teaching in Higher Education*. 29(6): 1460-1481. DOI: https://doi.org/10.1080/13562517.2022.2066469

Lestari et al., 2024 – *Lestari, E.S., Sajidan, S., Rahmawati, F., Indrowati, M.* (2024). The Inquiry ethnobotanylearning model: an instructional design model to enhance student environmental literacy. *Journal of Baltic Science Education*. 23(2): 377-389. DOI: https://doi.org/10.33225/jbse/24.23.377

Lestari, Fitri, 2021 – *Lestari, A.P., Fitri* (2021). Information disruption in online journalism in the era of the industrial revolution 5.0. *Jurnal The Messenger*. 13(3): 256-270. DOI: http://dx.doi.org/10.26623/themessenger.v13i3.2047

McMullan, 2020 – *McMullan, J.* (2020). A new understanding of New Media: Online platforms as digital mediums. *Convergence*. 26(2): 287-301. DOI: https://doi.org/10.1177/1354856517738159

Meadows et al., 2023 – *Meadows, D., Maclaren, J., Morton, A., Ross D.* (2023). A novel and practical care process framework to inform model of care development. *Healthcare Management Forum*. 36(4): 249-255. DOI: https://doi.org/10.1177/08404704231157215

Mingot, Marin, 2024 – *Mingot, S.G. Marín, V.I.* (2024). Digital educational platforms in primary education: the case of Catalonia. *Technology, Pedagogy and Education*. 33(4): 475-493. DOI: https://doi.org/10.1080/1475939X.2024.2337346

Nurlatifah, Mutmainah, 2021 – *Nurlatifah, M., Mutmainnah, N.* (2021). Disruption and collaboration in digital journalism: ambivalence of social responsibility and political economy practices of media companies. *Jurnal Komunikasi: Malaysian Journal of Communication*. 37(1): 181-195. DOI: https://doi.org/10.17576/JKMJC-2021-3701-10

Pamuji et al., 2022 – *Pamuji, E., Ida, R., Mustain.* (2022). Print media innovation in the digital era: disruptive challenges or opportunities? *Jurnal Studi Komunikasi*. 6(3): 785-804. DOI: https://doi.org/10.25139/jsk.v6i3.5311

Prasetito et al., 2022 – *Prasetiyo, P., Sulaiman, A.I., Prastyanti, S.* (2022). Educational communication in learning batik as preservation of local wisdom products for the young generation. *Technium Education and Humanities*. 3(1): 1-15. DOI: https://doi.org/10.47577/teh.v3i1.7615

Prastyanti et al., 2022 – *Prastyanti, S., Adi, T.N., Sulaiman, A.I., Windiasih, R.* (2022). Education services for students during the Covid-19 pandemic. *Education Quarterly Reviews*. 5(3): 325-333. DOI: https://doi.org/10.31014/aior.1993.05.03.548

Prastyanti et al., 2020 – *Prastyanti, S., Subejo, Sulhan, M.* (2020). New media access and use for triggering the farmers capability improvement in Central Java Indonesia. *Humanities and Social Science Research*. 3(1): 1-9. DOI: https://doi.org/10.30560/hssr.v3n1p1

Prastyanti et al., 2024 – *Prastyanti, S., Wulandari, R., Sulaiman, A.I., Sulaiman, A.I.* (2024). Participatory development communication strategy of an urban farming program in Yogyakarta, Indonesia. *Palabra Clave*. 27(4): 1-34. DOI: https://doi.org/10.5294/pacla.2024.27.4.11

Qureshi et al., 2021 – *Qureshi, M.A., Khaskheli, A., Qureshi, J.A., Raza, S.A., Yousufi, S.Q.* (2021). Factors affecting students' learning performance through collaborative learning and engagement. *Interactive Learning Environments*. 31(4): 2371-2391. DOI: https://doi.org/10.1080/10494820.2021.1884886

Rina, 2021 – *Rina, N.* (2021). Communication education of learning media analysis using science edutainment approach. *Jurnal Ilmiah LISKI (Lingkar Studi Komunikasi)*. 7(2): 112-118. DOI: https://doi.org/10.25124/liski.v7i2.3039

Slakmon, 2024 – *Slakmon, B.* (2024). WhatsApp for pedagogy: initiatives, instructional practices and the nature of knowledge in Israel's secondary education. *Technology, Pedagogy and Education*. 33(5): 647-662. DOI: https://doi.org/10.1080/1475939X.2024.2368612

Solecki, 2022 – *Solecki, S.* (2022). The phubbing phenomenon: The impact on parent-child relationships. *Journal of Pediatric Nursing*. 62: 411-214. DOI: https://doi.org/10.1016/j.pedn.2021.09.027

Sulaiman, Ahmadi, 2020 – *Sulaiman, A.I., Ahmadi, D.* (2020). Empowerment communication in an Islamic boarding school as a medium of harmonization. *Malaysian Journal of Communication*. 36(4): 323-338. https://doi.org/10.17576/JKMJC-2020-3604-20

Sulaiman et al., 2024 – *Sulaiman, A.I., Rosyadi, S., Handoko, Wa., Masrukin, M., Putri, D.D., Wijayanti, I.K.E., Faozanudin, M.* (2024). The Importance of participatory communication in development planning deliberations for agritourism village enhancement. *Journal of Intercultural Communication*. 24(1): 144-160. DOI: https://doi.org/10.36923/jicc.v24i1.246

Šušterič et al., 2025 – *Šušterič, N., Ošljak, K., Tašner, V.* (2025). Exploring media literacy formation at the intersection of family, school, and peers. *Media and Communication*. 13: 9098. DOI: https://doi.org/10.17645/mac.9098

Suswanto et al., 2021 – S*uswanto, B., Sulaiman, A.I., Sugito, T., Weningsih, S., Sabiq A., Kuncoro, B.* (2021). Designing online learning evaluation in times of Covid-19 pandemic. *International Educational Research*. 4(1): 18-28. DOI: https://doi.org/10.30560/ier.v4n1p18

Selwyn, 2023 – *Selwyn, N.* (2023). Digital degrowth: toward radically sustainable education technology. *Learning, Media and Technology*. 49(2): 186-199. DOI: https://doi.org/10.1080/17439884.2022.2159978

Wang et al., 2023 – *Wang, X., Qiao, Y., Wang, S.* (2023). Parental phubbing, problematic smartphone use, and adolescents' learning burnout: A cross-lagged panel analysis. *Journal of Affective Disorders*. 320: 442-449. DOI: https://doi.org/10.1016/j.jad.2022.09.163

Williamson, 2020 – *Williamson, B., Bayne, S., Shay, S.* (2020). The datafication of teaching in Higher Education: critical issues and perspectives. *Teaching in Higher Education*. 25(4): 351-365. DOI: https://doi.org/10.1080/13562517.2020.1748811

Windiasih et al., 2022 – *Windiasih, R., Suswanto, B., Sabiq, A., Sulaiman, A.I., Prasetiyo, P.* (2022). Designing a green-school education model of community development in rural areas. *Technium Social Sciences Journal*. 35(1): 186-198. DOI: https://doi.org/10.47577/tssj.v35i1.7276

Ye et al., 2025 – *Ye, J., Gao, J., Lin, T., He, K., Chen, D.* (2025). Cognitive Load change in chemical concept learning: insights from event-related potentials. *Journal of Baltic Science Education*. 24(1): 92-104. DOI: https://doi.org/10.33225/jbse/25.24.92

Yen et al., 2025 – *Yen, N.L., Lu, H.H., Gwo, J.H.* (2025). Developing students' creative problem-solving strategies in the context of blended sports education. *British Journal of Educational Technology*. 56(1): 190-207. DOI: https://doi.org/10.1111/bjet.13495

Yu, Couldry, 2020 – *Yu, J., Couldry, N.* (2020). Education as a domain of natural data extraction: analysing corporate discourse about educational tracking. *Information, Communication & Society*. 25(1): 127-144. DOI: https://doi.org/10.1080/1369118X.2020.1764604

Zakharova, Jarke, 2022 – *Zakharova, I., Jarke, J.* (2022). Educational technologies as matters of care. *Learning, Media and Technology*. 47(1): 95-108. DOI: https://doi.org/10.1080/17439884.2021.2018605

Zasa et al., 2022 – *Zasa, F.P., Verganti, R., Bellis, P.* (2022). Innovator or collaborator? A cognitive network perspective to vision formation. *European Journal of Innovation Management*. 25(6): 567-588. DOI: https://doi.org/10.1108/EJIM-05-2021-0237