AG EDITOR

Relationship between Emotional Intelligence and Multiple Literacy among Secondary School Students in the Socio-Technological Transformation Era

Relación entre inteligencia emocional, alfabetización digital y alfabetización cívica en estudiantes de secundaria en la era de la transformación sociotecnológica

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ABSTRACT

Introduction: multiple literacy is an important skill that students must have to face academic, social, and technological challenges in the 21st century. In the context of rapid socio-technological transformation, emotional intelligence is seen as having an important role in supporting students' ability to understand, filter, and utilize various forms of literacy, including literacy, digital, and civic literacy. This study aims to analyze the relationship and influence of emotional intelligence on multiple literacy among secondary school students in the socio-technological transformation era.

Method: this study used a quantitative approach with a correlational design. Data were collected from 200 secondary school students in Pekanbaru, Indonesia, actively involved in the school literacy program. The research instrument consisted of two parts: one to measure five indicators of emotional intelligence, and one to measure three dimensions of multiple literacy, namely literacy, digital literacy, and civic literacy.

Results: the results of the descriptive analysis showed that the level of emotional intelligence and multiple literacy of students was in the high category. Inferential analysis using the Pearson correlation test showed a significant positive relationship between emotional intelligence and multiple literacy. These findings indicate that the higher the emotional intelligence of students, the higher their multiple literacy skills.

Conclusion: emotional intelligence contributes significantly to supporting students' literacy skills in various aspects, especially in interacting critically, ethically, and responsibly with information and in social citizenship life in the socio-technological transformation.

Keywords: Emotional Intelligence; Read-Write Literacy; Digital Literacy; Civic Literacy; English Classroom; Socio-Technological Transformation Era.

RESUMEN

Introducción: la alfabetización múltiple es una habilidad fundamental que los estudiantes deben poseer para afrontar los retos académicos, sociales y tecnológicos del siglo XXI. En el contexto de la rápida transformación sociotecnológica, la inteligencia emocional desempeña un papel fundamental en el apoyo a la capacidad de los estudiantes para comprender, filtrar y utilizar diversas formas de alfabetización, como la alfabetización digital y la alfabetización cívica. Este estudio tiene como objetivo analizar la relación y la influencia de la inteligencia emocional en la alfabetización múltiple de estudiantes de secundaria en la era de la transformación sociotecnológica.

Método: este estudio utilizó un enfoque cuantitativo con un diseño correlacional. Se recopilaron datos de 200 estudiantes de secundaria de Pekanbaru, Indonesia, que participan activamente en el programa de

alfabetización escolar. El instrumento de investigación constó de dos partes: una para medir cinco indicadores de inteligencia emocional y otra para medir tres dimensiones de la alfabetización múltiple: alfabetización, alfabetización digital y alfabetización cívica.

Resultados: el análisis descriptivo mostró que el nivel de inteligencia emocional y alfabetización múltiple de los estudiantes se situó en la categoría alta. El análisis inferencial mediante la prueba de correlación de Pearson mostró una relación positiva significativa entre la inteligencia emocional y la alfabetización múltiple. Estos hallazgos indican que a mayor inteligencia emocional de los estudiantes, mayores son sus habilidades de lectoescritura múltiple.

Conclusión: la inteligencia emocional contribuye significativamente a apoyar las habilidades de lectoescritura de los estudiantes en diversos aspectos, especialmente en la interacción crítica, ética y responsable con la información y en la vida ciudadana social en la transformación sociotecnológica.

Palabras clave: Inteligencia Emocional; Alfabetización en Lectura y Escritura; Alfabetización Digital; Alfabetización Cívica; Aula de Inglés; Era de la Transformación Sociotecnológica.

INTRODUCTION

Rapid technological developments in the era of socio-technological transformation require students to have various forms of literacy, such as digital literacy, information literacy, and civic literacy. Currently, the world is experiencing a massive social transformation as a direct impact of advances in digital technology. Technological developments such as artificial intelligence (AI), social media, and digital globalization have fundamentally changed the way humans interact, learn, and work.[1,2] Especially in English language learning, this change has driven the emergence of various online learning platforms, the use of AI-based chatbots, and cross-cultural digital literacy. Massive digitalization has made English not only a subject, but also a primary tool for participating in and navigating the global digital space.[3]

Students' literacy skills are still greatly influenced by the quality of learning resources, including the textbooks used.[4] In the context of higher education, there is a significant correlation between digital literacy and students' academic achievement through their meta-analysis, reinforcing the importance of literacy skills as important capital in the digital era.[5] In addition, internet skills and attitudes towards technology are determining factors in the development of digital citizenship among Indonesian students.[6]

However, mastery of literacy alone is not enough without the ability to manage emotions and interact socially effectively. Emotional intelligence in the classroom has a positive influence on students' academic performance, indicating the importance of the affective aspect in the learning process.[7] In a broader context, emotional intelligence also plays an important role in leadership and teamwork, which are essential skills in the 21st century.[8] Therefore, there is a need to explore the relationship between emotional intelligence and various forms of literacy comprehensively, especially at the secondary education level.

The era of digital transformation has not only changed the way of learning, but also demands integration between technological capabilities and socio-emotional aspects in education. The importance of digital readiness in education 4.0, where students are not only users of technology, but must also be able to think critically, collaboratively, and adaptively.[9,10] Meanwhile, that technology has become a major factor in the formation of modern social structures, so that the integration of emotional intelligence and multiple literacy becomes increasingly relevant to study in the context of students in secondary schools.[11] This study is present as an effort to understand the relationship between these two main competencies in responding to contemporary educational challenges.

This digital transformation is not only technical, but also demands social, intellectual, and moral adaptation, especially for the younger generation. Secondary school students who are the digital native generation are not only expected to be able to understand English content, but also to be able to use it critically, ethically, and reflectively on various digital platforms.[12,13] In the learning process, students must have the ability to sort information from various foreign language sources, understand complex cultural contexts, and express opinions argumentatively and responsibly. Therefore, the development of literacy skills in reading and writing, digital literacy, and civic literacy must be supported by adequate emotional and social intelligence.

In the context of online learning environment that uses English, emotional intelligence (EI) plays an important role. The ability to manage emotions helps students overcome anxiety when speaking a foreign language, accepting criticism from international classmates, or facing academic failure in the digital space.[14,15] In addition, EI encourages students' courage to actively participate in online discussions that are often colored by social pressure. Thus, emotional intelligence functions not only as a self-control tool but also as a supporter of learning success.

Emotional intelligence is also the main foundation in cross-cultural communication and digital collaboration

in English learning. Global collaboration activities such as e-twinning projects, co-authoring, and online discussions require empathy and effective communication skills across different cultures.[16,17] Without EI, differences in communication and expression styles can trigger conflicts and misunderstandings. Therefore, strengthening emotional intelligence in English learning is the key to building healthy and productive cross-cultural cooperation.

More specifically, the concept of multiple literacy in the digital era includes read-write literacy, digital literacy, and civic literacy. Read-write literacy not only includes the ability to understand and produce English texts well, but also develops critical and analytical thinking skills towards various types of texts.[18] Digital literacy requires students to be able to access, evaluate, and produce information in a foreign language while paying attention to cultural nuances and potential bias in digital content.[19] Meanwhile, civic literacy teaches students to understand their rights and obligations as global citizens, respect cultural diversity, and express opinions ethically and politely, especially in the context of global and digital interactions.[20,21]

In practice, digital-based English learning faces challenges in the form of hoaxes, misinformation, privacy violations, and difficulties in distinguishing educational content from propaganda in cyberspace.[22,23] Many students still have difficulty understanding the cultural context and idioms that cause misunderstandings. Therefore, digital literacy must include affective and cultural aspects that are integrated into the English curriculum. In addition, civic literacy is currently also developing into the ability to actively participate in online discussions on global social issues such as climate change and gender equality, which are an important part of digital citizenship education.[24,25]

Students with strong digital citizenship literacy can understand their role in an interconnected global society, are able to respond critically to English-language content, appreciate cultural diversity, and contribute to discussions without violating digital ethics.[26] This competency is crucial in modern English learning that emphasizes cross-cultural communication and diversity. Thus, the development of multiple literacy is an important foundation for forming a young generation that is not only academically competent, but also wise and responsible in digital social interactions.

Although a number of studies have discussed emotional intelligence, digital literacy, and citizenship literacy separately, very few have examined the relationship between the three simultaneously in the context of English learning. In fact, these three aspects influence each other in shaping students' personality and critical thinking capacity, especially in facing the challenges of learning a foreign language in the digital era.[27,28] English learning that utilizes digital technology requires a multidimensional approach that not only emphasizes cognitive aspects, but also emotional and social aspects. Therefore, it is important to examine the relationship between emotional intelligence and multiple literacy holistically in the context of secondary school education.

Secondary school students as a generation that is forming their social and academic identities in the era of socio-technological transformation really need to strengthen their emotional abilities, reading and writing literacy, digital literacy, and civic literacy simultaneously.[29,30] With this integrative strengthening, the English learning process will be more meaningful and have a long-term positive impact. This also shows the need for cross-disciplinary and integrative research.

Based on the description above, this study aims to analyze the relationship and influence of emotional intelligence on multiple literacy (reading-writing, civic, and digital literacy) in secondary school students in the socio-technological transformation era. The results of this study are expected to provide a real contribution to the development of an English curriculum that is more contextual and relevant to the challenges of the digital era, as well as support the formation of an inclusive and ethical digital society through language and technology-based character education.[3,12] This goal reflects an effort to understand the extent to which the ability to manage emotions, empathy, and social skills contributes to the literacy skills that students need to face the complexities of the digital world and the demands of 21st century citizenship.

METHOD

This study used a quantitative approach with a correlational design to examine the relationship between emotional intelligence and multiple literacy in secondary school students in the era of socio-technological transformation. This method was chosen because it is able to statistically describe the relationship between two variables based on numerical data obtained from standardized instruments.

Research Design

This type of research was a quantitative correlational study that aimed to measure the strength and direction of the relationship between two main variables, namely emotional intelligence as an independent variable and multiple literacy as a dependent variable. This study was conducted in five secondary schools in Pekanbaru City, Indonesia, that actively implement literacy programs. The research sample consisted of 200 students selected randomly (random sampling) from the five schools, to ensure proportional representation of the population.[31,32]

The measurement instruments used include two scales. The emotional intelligence scale consisted of 40

statement items covering five main aspects: recognizing one's own emotions, managing emotions, motivating oneself, recognizing other people's emotions, and building social relationships. This instrument used a 3-graded response format and had high reliability with a Cronbach's Alpha value of 0,92. Meanwhile, the multiple literacy instrument was developed based on the concept of Binkley et al. consisted of 40 items that reflected three main dimensions of literacy: reading and writing literacy, digital literacy, and civic literacy.[33] This scale used a 5-point Likert scale and had a reliability value of 0,854.

Table 1. Research Instruments		
Variable	**Dimension**	**Sample Item**
Emotional Intelligence	Self-emotion	I get angry with my friends because: a. I am stressed and lose my patience b. I want to be known as someone who is feared c. I have a temperamental nature
	Emotional regulation	During the learning process in class, I tend to: a. not pay much attention because I can study it again later b. listen to the teacher while occasionally telling stories with friends c. listen actively to the teacher who is explaining in class
	Motivation	I will be a great person if I: a. if I have connections with great people without having to study seriously b. study normally and have some connections with great people c. focus on studying so that I have the ability
	Empathy	I don't like it when my friends: a. don't think about the effects of their negative words at all b. don't really think about the effects of their negative words c. think a lot about the effects of their negative word
	Social relations	I feel afraid when I meet older people, I: a. don't try to greet them first because I'm afraid b. interact normally even though I'm a little afraid c. try to interact calmly and respond well
Multiple Literacy	Read-write literacy	I can filter information related to assignments and learning in class through read-write literacy. I can find information that is appropriate for assignments and learning in class because I am able to choose and determine the right sources through read-write literacy.
	Citizenship literacy	I am able to filter and respond to western cultural values through cultural and civic literacy. I have the ability to communicate verbally and easily get along with friends from different cultures in Indonesia through cultural and civic literacy.
	Digital literacy	I am better able to understand correct information from the internet by utilizing digital literacy. I am more able to use ICT (Information, Communication, and Technology) in classroom learning that is needed for daily life skills by utilizing digital literacy.

Research Procedure

The research procedure was conducted in four main stages: 1. determining the population and taking samples using random sampling techniques; 2. compiling and validating instruments; 3. distributing questionnaires directly to respondents in schools; and 4. collecting and verifying data to ensure completeness and accuracy before being analyzed. The entire process was carried out with attention to educational research ethics.

Data Analysis

The data were analyzed using the Pearson Product Moment correlation technique to determine the strength and direction of the relationship between emotional intelligence and multiple literacy. This technique was used because both variables were interval scaled and met the assumption of normality. The correlation coefficient ranged from -1 to +1, with positive values indicating a unidirectional relationship and negative values indicating an opposite relationship.

RESULTS

Data analysis in this study began with testing classical assumptions including normality, linearity, and heteroscedasticity tests to ensure the feasibility of the linear regression model used.

Normality Test

Table 2. Normality Test						
	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Unstandardized Residual	0,043	200	0,200	0,991	200	0,222

The normality test is conducted to determine whether the residual data from the regression model is normally distributed, which is one of the important prerequisites in linear regression analysis. In this study, the normality test was conducted using two methods, namely Kolmogorov-Smirnov because the data was 200. The test results showed that the significance value in Kolmogorov-Smirnov was 0,200. This value is greater than the significance limit of 0,05, which means that the data is normally distributed. It can be concluded that the normality assumption has been met, therefore, the regression model used in this study is worthy of further statistical analysis.

Linearity Test

Table 3. Linearity Test							
			Sum of Squares	df	Mean Square	F	Sig.
Multiple Literacy Emotional Intelligence	Between Groups	(Combined)	7362,190	38	193,742	22,829	0.000
		Linearity	7107,226	1	7107,226	837,451	0.000
		Deviation from Linearity	254,964	37	6,891	0,812	0.768
	Within Groups		1366.365	161	8,487		
	Total		8728.555	199			

The results of the linearity test between the variables Emotional Intelligence and Multiple Literacy show that there is a significant linear relationship between the two variables. This is indicated by the F value of 837,451 with a significance value of 0,000, which means that this linear relationship is very strong and statistically significant. In addition, the Deviation from Linearity test provides an F value of 0,812 with a significance of 0,768, which indicates that there is no significant deviation from linearity in the relationship between the two variables. Thus, it can be concluded that the linearity assumption in the regression model is met and the relationship between Emotional Intelligence and Multiple Literacy can be modeled linearly.
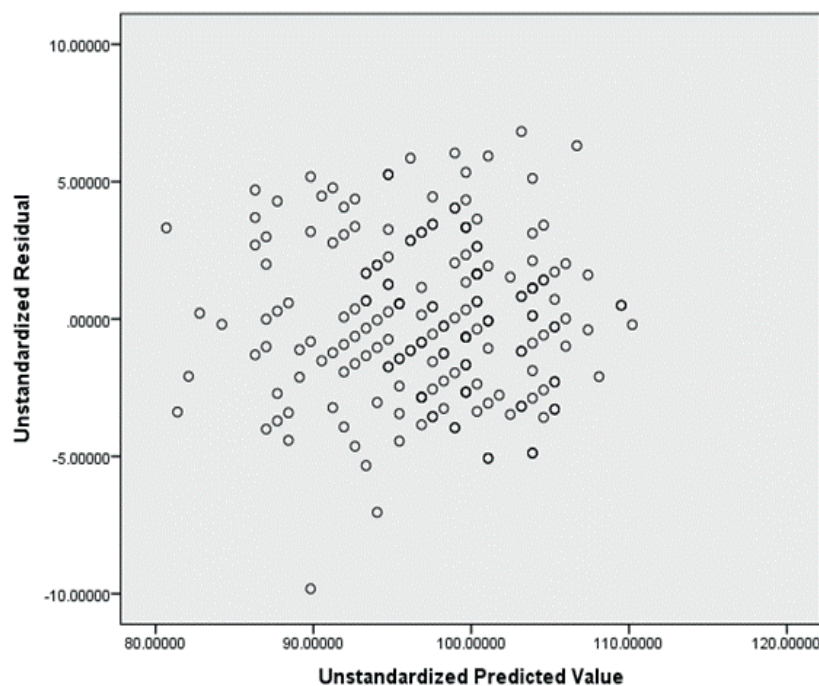
Heteroscedasticity Test

Figure 1. Heteroscedasticity Test

In this study, the results of the heteroscedasticity test show that the scatterplot between the predicted values and residuals is spread randomly and evenly without a particular pattern. This indicates that the assumption of homoscedasticity is met, so that the residual variance is constant across the range of Emotional Intelligence values. Thus, the linear regression model used to analyze the effect of Emotional Intelligence on Multiple Literacy is reliable and the results are statistically valid.

Furthermore, a simple linear regression analysis was conducted to test the relationship and influence of emotional intelligence on multiple literacy in secondary school students. This analysis aims to determine the extent to which emotional intelligence can predict multiple literacy among secondary school students in the socio-technological transformation era.

						Change Statistics			
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change
1	0,902a	0,814	0,813	2,862	0,814	867,949	1	198	0,000

Table 4. Linear Regression Model

Notes: a. Predictors: (Constant), Emotional Intelligence, b. Dependent Variable: Multiple Literacy

The results of the simple linear regression analysis show that Emotional Intelligence is a very significant predictor of Multiple Literacy. In the Model Summary table, the R value = 0,902 indicates a very strong relationship between the two variables. The R Square value = 0,814 means that 81,4 % of the variation in Multiple Literacy can be explained by Emotional Intelligence. This indicates a very good regression model. The Adjusted R Square value = 0,813, which is almost the same as R Square, indicates that the model remains strong even when adjusted for the number of variables in the model.

Table 5. Test Anova

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	7107.226	1	7107,226	867,949	0,000b
	Residual	1621.329	198	8,189		
	Total	8728.555	199			

The results of the ANOVA test strengthen this finding, with an F value of 867,949 and a significance (p-value) of 0,000. Since the p-value is much smaller than 0,05, it can be concluded that the overall regression model is significant, or in other words, Emotional Intelligence has a statistically significant influence on Multiple Literacy.

Table 6. Coefficients Result

Model		Unstandardized Coefficients		Standardized Coefficients			95,0 % Confidence Interval for B		Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound	Tolerance	VIF
1	(Constant)	29,361	2,316		12,677	0,000	24,794	33,929		
	Emotional Intelligence	0,703	0,024	0,902	29,461	0,000	0,656	0,750	1,000	1,000

In the Coefficients table, the regression coefficient of Emotional Intelligence is 0,703, with a significance value of 0,000, indicating that every 1 unit increase in Emotional Intelligence will increase Multiple Literacy by 0,703 units. The t value = 29,461, which is very high, indicates that the contribution of this variable is very strong in the model. The confidence interval for this coefficient is between 0,656 to 0,750, not crossing zero, which means that this effect is consistently statistically significant. There is no multicollinearity problem, because the Tolerance and VIF values are each 1,000.

DISCUSSION

From the findings, emotional intelligence (EI) has been shown to be closely related to multiple literacy in students. In read-write literacy, EI helps students understand the implied meaning in the text and convey ideas and emotions in writing effectively.[27] In the context of civic literacy, EI enables students to develop empathy and social awareness, which are essential for active involvement in national and social life.[20] Meanwhile, in digital literacy, EI plays a role in the ability to critically assess information and interact ethically and positively in the digital space.[2,28] Therefore, EI is an important foundation for students to develop comprehensive literacy in the era of socio-technological transformation.

Emotional intelligence is not only related to, but also has a significant influence on students' literacy skills. Research shows that students with high EQ tend to show better academic performance because they are better able to manage stress, have high internal motivation, and are able to work together in social contexts.[17,30] In terms of reading and writing literacy, EI supports the development of critical thinking and self-expression skills. For civic literacy, EI helps students respond to social issues constructively.[34] Meanwhile, in digital literacy, EI allows students to avoid online conflicts and manage digital interactions wisely.[3,14] The influence of EI on this multiple literacy is increasingly important along with the rapid digital transformation and the demand for 21st century skills.[12]

When emotional intelligence is not well developed, students face major challenges in understanding and implementing multiple literacy. Without EI, students are more susceptible to academic stress, have difficulty interacting socially, and are less able to manage negative emotions that arise during the learning process.[29] In the digital context, the lack of EI can trigger unethical behavior such as cyberbullying or the spread of false information.[2] In the field of citizenship, the lack of EI can lead to apathy and intolerance towards social diversity.[24] This shows that EI is an important prerequisite for students to be able to adapt and succeed in the modern education system that demands literacy in various dimensions of life.[15]

Multiple literacy is essential in the era of socio-technological transformation because it helps students navigate the complexities of the modern world. Emotional intelligence plays an important role in the development of secondary school students' literacy, especially in the context of complex social interactions and changing technological dynamics. Students with high emotional intelligence tend to have better self-awareness and emotional regulation skills, which support their ability to critically understand and interpret texts and express ideas effectively. The study from previous relevant research revealed that emotional intelligence in the classroom is positively correlated with students' academic performance, including in the aspect of academic literacy.[7] This is in line with the findings showed that EI helps English as a foreign language learners develop their academic literacy.[27] The quality of teaching materials also supports this process, as stated by previous relevant research highlighted the importance of literacy materials that support students' emotional understanding through relevant and reflective contexts.[4]

In the context of civic education, emotional intelligence helps students understand social issues, show empathy for differences, and actively engage in public discussions. Civic literacy in the digital era is not enough to only cover theoretical understanding of law and rights, but also demands the ability to participate actively, ethically, and empathetically in the digital space. As stated by previous relevant research, civic literacy in the digital era demands critical thinking skills and empathy to actively learn democracy.[35] Civic literacy not only includes an understanding of laws and civil rights, but also the ability to interact in a diverse society. As stated by previous relevant research, social-emotional skills underlie students' engagement in democratic and inclusive citizenship activities.[16] Research by previous researchers reinforces this by showing that the actualization of civic literacy in schools is greatly influenced by students' ability to think critically, collaborate, and understand the perspectives of others, all aspects of emotional intelligence.[24,26] In other words, students who are able to manage their emotions tend to be more prepared to participate actively and responsibly in social and digital life.

Digital transformation requires students to not only be able to use technology, but also understand the social and emotional impacts of digital interactions. Emotional intelligence is very relevant in this regard because it helps students navigate digital spaces ethically and empathetically. Research by previous relevant research stated the concept of digital emotional intelligence that describes an individual's ability to apply EI in an online environment, including in managing digital conflict and maintaining ethical communication.[14] Findings from which research showed that EI and self-concept play a role in improving students' digital literacy, especially in facing the challenges of virtual information and communication.[28] The importance of attitudes towards the internet and digital self-efficacy as part of digital literacy competencies in Indonesia.[6] Thus, the integration of EI into digital literacy programs can create students who are not only technologically literate but also responsible in their use.

Overall, the findings of this study confirm that emotional intelligence is an important foundation for the development of various forms of literacy among secondary school students in an era of social and technological transformation. Literacy, citizenship, and digital literacy cannot develop optimally without the ability to recognize, manage, and express emotions in a healthy manner. As education shifts towards a more digital and collaborative direction, the integration of soft skills such as EI and hard skills such as literacy becomes very important.[1,2] Therefore, the school curriculum needs to include the development of emotional intelligence as an integral part of literacy learning so that students are able to respond to global challenges adaptively and humanely.

CONCLUSIONS

Based on the description that has been presented, it can be concluded that emotional intelligence (EI) has

a very crucial role in supporting the development of reading-writing, citizenship, and digital literacy among high school students. In the context of rapid social and technological transformation, EI helps students manage emotions, establish healthy social interactions, and think critically and ethically in responding to various information. Therefore, strengthening emotional intelligence cannot be separated from educational strategies that aim to foster dual literacy comprehensively and sustainably. Schools as the main educational institutions need to make EI an important aspect in the curriculum and daily learning activities.

For further research, it is recommended that an integrative approach between EI development and literacy be explored in more depth. This approach can involve the integration of educational technology, project-based learning, and context-based learning design that is relevant to students' lives. In addition, it is also important to develop and evaluate intervention models that are directly aimed at improving students' emotional intelligence in the school environment. This will not only strengthen students' literacy capacity, but also form adaptive, empathetic characters that are ready to face global challenges in the digital era and society 5.0.

REFERENCES

1. Ydyrysbayev D, Kakimova LS, Sailaubaikyzy BG, Talgatbekovich SY, Urmatova A, Orazbaev E. Determining the digital transformation in education in the society 5.0 process. Int J Emerg Technol Learn. 2022;17(18):136–45. Available from: https://doi.org/10.3991/ijet.v17i18.32331

2. Bozkurt A, Sharma R. Digital transformation and the way we (mis)interpret technology. Asian J Distance Educ. 2022;17(1):1–8. Available from: https://www.asianjde.com/ojs/index.php/AsianJDE/article/view/630

3. Renyaan AS, Wibowo GA, Erwin E. Information and communication technology for inclusive education: A literature review and its implications for community. J Community Dedication. 2024;4(2):383–96. Available from: https://adisampublisher.org/index.php/pkm/article/view/708

4. Anwas EOM, Afriansyah A, Iftitah KN, Firdaus W, Sugiarti Y, Sopandi E, et al. Students' literacy skills and quality of textbooks in Indonesian elementary schools. Int J Lang Educ. 2022;6(3):233–44.

5. Ardhiani O, Noor M, Hadjam R, Fitriani DR. Digital literacy and student academic performance in unversities: A meta-analysis. J Psychol Instr. 2023;7(3):103–13. Available from: https://doi.org/10.23887/jpai.v5i2

6. Prasetiyo WH, Naidu NBM, Sari BI, Mustofa RH, Rahmawati N, Wijaya GPA, et al. Survey data of internet skills, internet attitudes, computer self-efficacy, and digital citizenship among students in Indonesia. Data Br. 2021;39:1–19.

7. Aritzeta A, Balluerka N, Gorostiaga A, Alonso-Arbiol I, Haranburu M, Gartzia L. Classroom emotional intelligence and its relationship with school performance. Eur J Educ Psychol. 2016;9:1–8.

8. Coronado-Maldonado I, Benítez-Márquez M-D. Emotional intelligence, leadership, and work teams: A hybrid literature review. Heliyon. 2023;9(10):1–19.

9. Vivitsou M. Digitalisation in education, allusions and references. Cent Educ Policy Stud J. 2019;9(3):117–36.

10. Katyeudo KK, de Souza RAC. Digital transformation towards education 4.0. Informatics Educ. 2022;21(2):283–309.

11. Naikoo AA, Thakur SS, Guroo TA, Lone AA. Development of society under the modern technology - A review. Sch Int J Bus Policy Gov ISSN 2394-3351. 2018;5(1):1–8.

12. Pecson R, Sarmiento J, Author C. Integrating 21st-century skills into instructional materials for sustainable education. Indones J Instr Media Model. 2024;6(2):89-99. Available from: https://doi.org/10.32585/ijimm.v6i2.5934

13. Kufi EF, Box PO. The relationship between the technology needs of the youth and institutional resource provision. World J Educ Technol Curr Issues. 2025;17(1):14-23. Available from: https://doi.org/10.18844/wjet.v17i1.8654

14. Audrin C, Audrin B. More than just emotional intelligence online: introducing "digital emotional

intelligence." Front Psychol. 2023;14(1).

15. Chaidi I, Drigas A. Emotional intelligence and learning, and the role of ICTs. Tech Soc Sci J. 2022;35:56–78. Available from: https://doi.org/10.47577/tssj.v35i1.7249

16. Esen-Aygun H, Sahin-Taskin C. Teachers' views of social-emotional skills and their perspectives on social-emotional learning programs. Educ Pract. 2017;8(7):205–15. Available from: https://eric.ed.gov/?id=EJ1137527

17. Abiodullah M, Dur-e-Sameen, Aslam M. Emotional intelligence as a predictor of teacher engagement in classroom. Bull Educ Res. 2020;42(1):127–40. Available from: https://files.eric.ed.gov/fulltext/EJ1258049.pdf

18. Nascimbeni F, Vosloo S. Digital literacy for children: Exploring definitions and frameworks. New York: UNICEF Office of Global Insight and Policy; 2019. 41 p.

19. Al-Zou'bi R. The impact of media and information literacy on acquiring the critical thinking skill by the educational faculty's students. Think Ski Creat. 2021;39:1–7. Available from: https://doi.org/10.1016/j.tsc.2020.100782

20. Halimah L, Affandi I, Kartiwi W. The influence of cultural and citizenship literacy on students' critical thinking skill. Cendekia. 2020;18(1):49–66.

21. Lestari LS, Ramadan ZH. The effectiveness of cultural literacy and citizenship through staging creativity against global diversity characters of elementary school students. J Pendidik dan Pengajaran. 2023;56(2):287–98.

22. Erlangga IS, Tarigan FPP, Ternasih L, Umar D. Digital transformation in education: Challenges and risks. Int J Teach Learn. 2021;2(12):3251–60.

23. Bond M, Marín VI, Dolch C, Bedenlier S, Zawacki-Richter O. Digital transformation in German higher education: student and teacher perceptions and usage of digital media. Int J Educ Technol High Educ. 2018;15(1):1–20.

24. Anditasari RD, Sutrisno S, Nur'aini KN, Aristyowati A. Actualization of civic literacy in the learning of citizenship in high school. Int J Educ Qual Quant Res. 2023;2(1):7–11.

25. Ulya A, Waluyo E, Mulyani PK. Implementation of strengthening governance of cultural and citizenship literacy in Gunungpati state kindergarten, Semarang city. Int J Res Rev. 2023;10(10):299–309.

26. Isma N, Yusuf M. Implementation of literacy culture in developing civic intelligence of grade VII students of SMP Negeri 1 Bilah Hulu. 2025;5(1):211–5.

27. Yang L, Duan M. The role of emotional intelligence in EFL learners' academic literacy development. Heliyon. 2023;9:1–7.

28. Alpian Y, Sumantri MS, Yufiarti Y, Wulan Anggraeni S. Self-concept and emotional intelligence in relation with digital literacy. J Nonform Educ. 2023;9(1):47–57.

29. Susanto AH, Abadi IBGS. The influence of emotional intelligence and teacher workload on teacher performance. J Multidisiplin Sahombu. 2021;4(1):606–17.

30. Huda SAN, Suyanto S, Arifi A, Putranta H, Azizah ANM. Experiences of participants in teacher professional education on obtaining soft skills: A case study in Indonesia. Eur J Educ Res. 2021;10(1):313–25.

31. Creswell JW, Creswell JD. Research design: qualitative, quantitative, and mixed methods approaches. Fifth edition. Sage: Los Angeles, SAGE Publication.; 2018. 650 p.

32. Mills GE, Gay LR. Educational research: Competencies for analysis and applications. Twelfth edition. New York: Pearson; 2019. 712 p.

33. Binkley M, Erstad O, Herman J, Raizen S, Ripley M, Miller-Ricci M, et al. Defining twenty-first century

skills. In: Patrick Griffin, McGaw B, Care E, editors. Assessment and Teaching of 21st Century Skills. London: Springer; 2012. p. 362.

34. Yaniawati, P., Maat, S. M., Supianti, I. I., & Fisher D. Soft skills through the prism of primary school teachers. Eur J Educ Res. 2022;11(1):69–81. Available from: https://pdf.eu-jer.com/EU-JER_9_1_395.pdf

35. Prasetiyo WH, Rahmawati N, Rahayu RD. Civic literacy in digital age for learning democracy: A systematic review. In: Proceedings of the 5th International Conference on Education for All. Atlantis Press SARL; 2025. p. 268–85.

FINANCING

CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

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