



Role of Internet in the Educational Sectors of Malaysia to Increase the Literacy Rate

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Abstract:

In order to analyse the transformational influence that the Internet has had on the gains in educational results and the growth in the number of people in Malaysia who are literate, the purpose of this research is to examine the impact that the Internet has caused. As the availability of digital connection increases in both urban and rural regions, the Internet has emerged as an indispensable instrument for bridging educational gaps, providing easily available learning resources, and providing support for programs undertaken by both the government and commercial organizations with the goal of enhancing literacy. The purpose of this essay is to investigate the following topics: the introduction of online platforms into educational institutions; the effect of e-learning both during and after the COVID-19 outbreak; and the role of digital education in terms of reaching populations that are not adequately served. All of these topics are intended to be investigated in order to explore the aforementioned topics. This study inquiry reveals the several ways in which education that is supplied via the Internet helps to the development of reading abilities. This is accomplished through the use of data analysis, policy assessments, and case studies. In addition to this, the study deals with issues such as the digital divide and the limits that are brought about by infrastructure. The findings make it abundantly evident that digital technology possesses the potential to assist Malaysia in accomplishing its objective of providing every individual with access to education that is not only inclusive but also of a high quality.

1. Introduction

In Malaysia's educational system, the internet has become a transforming tool that significantly influences initiatives to raise national literacy rates. Online learning is become somewhat common in Malaysia. With 33.59 million users of the internet as of the beginning of the year 2024, Malaysia is among the countries with the highest internet penetration rate worldwide. Malaysia is therefore among the nations with the greatest internet penetration rate.

The simpler integration of digital learning platforms made possible by the great availability of the internet allows students to access a wide range of educational resources not available in conventional classroom environments. The JENDELA Program, which aims to give access to high-speed internet in currently underdeveloped rural areas, is one government endeavour aiming at closing the digital divide. This was ensured that, anywhere in the world, everyone has access to educational possibilities. Still, difficulties exist, especially in rural areas where

differences in digital infrastructure and technological access to still be somewhat common. In rural places particularly, this is true. Rural students have an average score of 3.24 out of 5, far lower than the 3.34 average score urban students obtain. This is not at all like the marks urban students get. This discrepancy is shown in the study "Digital Competency Score (DCS) 2023". Notwithstanding the difficulties Malaysia has faced, internet connection is still very important for efforts to increase literacy rates. It provides special approaches to help one overcome the usual difficulties sometimes faced in the educational system. The aim of this study is to investigate the several functions the internet performs in Malaysian educational environments. This study aims to look at how the internet has contributed to the increase in literacy rates as well as the continuous initiatives meant to correct digital inequalities (Mukundan & Letchamanan, 2021).

2. Background of the Study

It is obvious that the inclusion of the internet into Malaysia's educational system has had a major impact on the several initiatives taken to raise the literacy rate all throughout the nation. Having a high internet penetration rate of 97.4% as of the beginning of the year 2024, Malaysia is happy to have a strong digital infrastructure capable of supporting national educational projects. This infrastructure helps Malaysia to raise the calibre of its educational system. The JENDELA Program, which aims to give access to high-speed internet in currently underdeveloped rural areas, is one government endeavour aiming at closing the digital divide (Hamid et al., 2024). This was ensured that, anywhere in the world, everyone has access to educational possibilities.

Notwithstanding these developments, problems still exist especially in rural areas where differences in digital infrastructure and access to technology are still somewhat common. In rural places particularly, this is true. Rural students have an average score of 3.24 out of 5, far lower than the 3.34 average score urban students obtain. This is not at all like the marks urban students get. This discrepancy is shown in the research "Digital Competency Score (DCS) 2023". Targeted initiatives are essential to ensure that every citizen of the nation has equitable access to digital educational materials. This difference makes it absolutely necessary to use customized remedies. With an especially focus on the impact of the internet on literacy rates and the difficulties connected with digital education, this study intends to investigate the part the internet plays in Malaysia's educational sectors. Malaysia was hosted the research. This

study aims to offer understanding of how digital technology could be applied to improve educational fairness and literacy in Malaysia. Analyzing the current laws, infrastructural improvements, and student performance can help one to achieve this. Especially Malaysia was the main focused of the research (Ahmad et al., 2019).

3. Purpose of the Research

In order to research the role that e-learning, which is made possible by the internet, plays in the process of improving the literacy rate within the educational sectors of Malaysia, the goal of this study is to investigate the role that e-learning plays in the process. For the purpose of being more specific, the purpose of this research is to evaluate the ways in which digital learning platforms, resources, and online tools have contributed to the growth of literacy abilities among students, particularly in areas that have traditionally been considered to be disadvantaged or rural (such as rural areas). As well as determining whether or not digital education techniques are beneficial in improving an individual's reading and writing abilities, the purpose of this research is to explore the larger influence that these tactics have on educational equity and accessibility. Specifically, the research was focused on determining whether or not these strategies are effective. An examination of the link between the efforts made into e-learning and the results of literacy exams was carried out in order to accomplish this objective. This research aims to give crucial insights for policymakers, educators, and stakeholders on how to make use of e-learning in order to further enhance literacy rates in Malaysia. In the end, the purpose of this research is to provide these insights. In the ongoing efforts that the nation is doing to reduced educational gaps and to support learning that continues throughout an individual's whole life, this was aid to the efforts that are being made.

4. Literature Review

Numerous studies conducted in recent years have shed light on the substantial influence that the internet is having on the educational system in Malaysia, particularly in regard to the rise in the percentage of people who are literate. In addition to the more traditional abilities of reading and writing, digital literacy is being promoted as a necessary aptitude. The availability of instructional resources has altered as a result of the incorporation of internet-based technology into traditional learning contexts. Digital literacy is vital for increasing students' involvement and performance in the

classroom, according to (Shuhidan et al., 2021), who state that this is especially true for primary school children and secondary school students. Based on the findings of the study, it was shown that students who regularly utilize digital tools had a greater likelihood of actively participating in classroom activities and demonstrating growth in their comprehension abilities. Regardless of these advancements, the digital divide continues to be a substantial obstacle. Rural residents of Malaysia, including those living in Sabah, Sarawak, and certain regions of Peninsular Malaysia, continue to face challenges related to inadequate internet access and outdated technology, as pointed out by (Samsuddin et al., 2021). Due to these deficiencies, students are unable to make the most of the opportunities that digital information and online learning presented to them. According to the researchers, children who originate from households with lower incomes (B40) frequently do not have access to the necessary digital tools and connections for continuous learning. It is possible that this was made it more challenging for the students to learn and read. Underprivileged schools in Malaysia have been provided with digital tools and increased access to high-speed internet through the implementation of projects like as JENDELA, which were initiated by the government of Malaysia. With the help of these programs, the researcher are working toward ensuring that all children, regardless of their location or the financial situation of their families, have equal access to internet-based education of the highest possible quality. According to the findings, in order to properly utilize the internet to raise the literacy rates in Malaysia, it would be necessary to make consistent expenditures in infrastructure, teacher training, and student support systems. This is true regardless of the most visible advancements that have been made (Devisakti et al., 2023).

5. Research Questions

What is the impact of e-learning on increase the literacy rate?

6. Research Methodology

6.1 Research design:

The quantitative data analysis used SPSS version 25. The odds ratio and 95% confidence interval were used to determine the degree and direction of the statistical association. The researchers established a statistically significant criteria at $p < 0.05$. A descriptive analysis was conducted to identify the main features of the data. Quantitative methods are often used to assess data collected via surveys, polls,

and questionnaires, as well as data altered by computing tools for statistical analysis.

6.2 Sampling:

A convenient sampling technique was applied for the study. The research relied on questionnaires to gather its data. The Rao-soft program determined a sample size of 1460. A total of 1600 questionnaires were distributed; 1550 were returned, and 45 were excluded due to incompleteness. In the end, 1505 questionnaires were used for the research.

6.3 Data and Measurement:

The primary method of collecting data for research was questionnaire surveys. In section A, participants were requested to provide fundamental demographic data; in section B, they were instructed to evaluate the significance of many channels, both online and offline, using a 5-point Likert scale. A diverse array of secondary sources, including online databases, was meticulously examined to get the necessary information.

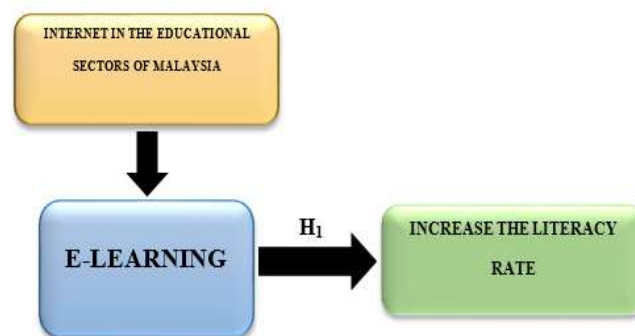
6.4 Statistical Software:

The statistical analysis was conducted using SPSS 25 and MS-Excel.

6.5 Statistical Tools:

To grasp the fundamental character of the data, descriptive analysis was used. The researcher is required to analyse the data using ANOVA.

7 Conceptual Framework



8 Result

Factor Analysis

One typical use of Factor Analysis (FA) is to verify the existence of latent components in observable

data. When there are not easily observable visual or diagnostic markers, it is common practice to utilise regression coefficients to produce ratings. In FA, models are essential for success. Finding mistakes, intrusions, and obvious connections are the aims of modelling. One way to assess datasets produced by multiple regression studies is with the use of the Kaiser-Meyer-Olkin (KMO) Test. They verify that the model and sample variables are representative. According to the numbers, there is data duplication. When the proportions are less, the data is easier to understand. For KMO, the output is a number between zero and one. If the KMO value is between 0.8 and 1, then the sample size should be enough. These are the permissible boundaries, according to Kaiser: The following are the acceptance criteria set by Kaiser:

A pitiful 0.050 to 0.059, below average 0.60 to 0.69
Middle grades often fall within the range of 0.70-0.79.

With a quality point score ranging from 0.80 to 0.89.
They marvel at the range of 0.90 to 1.00.

Table1: KMO and Bartlett's Test

Testing for KMO and Bartlett's

Sampling Adequacy Measured by Kaiser-Meyer-Olkin .980

The results of Bartlett's test of sphericity are as follows: approx. chi-square

df=190

sig.=.000

This establishes the validity of assertions made only for the purpose of sampling. To ensure the relevance of the correlation matrices, researchers used Bartlett's Test of Sphericity. Kaiser-Meyer-Olkin states that a result of 0.980 indicates that the sample is adequate. The p-value is 0.00, as per Bartlett's sphericity test. A favourable result from Bartlett's sphericity test indicates that the correlation matrix is not an identity matrix.

Table: KMO and Bartlett's Test

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.980
Bartlett's Test of Sphericity	Approx. Chi-Square	3252.968
	df	190
	Sig.	.000

This demonstrates that comments made for sampling purposes are legitimate. Researchers used Bartlett's Test of Sphericity to determine the significance of the correlation matrices. A sample is considered good by the Kaiser-Meyer-Olkin measure when the

result is 0.980. The p-value obtained from Bartlett's sphericity test is 0.00. The correlation matrix is not identical to an identity matrix, as shown by a statistically significant result from Bartlett's sphericity test.

Independent Variable

Internet in the educational sectors of Malaysia

Within the framework of Malaysia's educational institutions, the term "internet" describes the integration of digital technologies and online connections meant to improve the teaching, learning, and administrative operations conducted in Malaysia's colleges, universities, and other educational institutions. Access to a wide range of digital resources—which include e-books, academic journals, virtual labs, and multimedia material—is very vital. One needs this tool to be able to access these resources. This assortment of resources is meant to improve formal and informal education equally. Over the past five years, the government of Malaysia has started several initiatives aiming at improving internet access and digital literacy within the educational system by means of platforms like the Digital Educational Learning Initiative Malaysia (DELima), which provides centralized access to applications including Google Classroom, Microsoft Teams, and Apple Learning Centre. These sites let professors create online courses, give tests, and interact with students instantly. They can therefore help to advance both teacher-centered and student-centered learning. Apart from the National Digital Network (JENDELA) and the National Fiberization and Connectivity Plan (NFCP), the country has made notable progress in the manner the internet infrastructure is being upgraded especially in rural areas. As a result, both a decrease in the digital gap and an improvement in educational equity have resulted. As a consequence, the internet has evolved into a vital part of the process of encouraging creativity, diversity, and learning that lasts a lifetime—the basis of Malaysia's whole educational system (Krishnamoorthy & Soh, 2021).

Factor

E-learning

"E-learning," or "electronic learning," is the use of digital technology and the internet to help to simplify and enhance this process of learning. Online platforms, virtual classrooms, and multimedia tools allow one to engage in educative acts. It spans a broad spectrum of instructional pursuits. E-learning gives students access to instructional resources,

interactive exercises, and remote instruction; it also gives them chances for flexible and self-paced learning. Students could also make use of the chances e-learning offers. With the goal of supporting and improving the learning process, it makes accessible a broad spectrum of online resources including as e-books, video lectures, discussion forums, and interactive simulations. Online learning offers a range of advantages, some of which are more accessibility, convenience, and the capacity to customize instruction to match the special requirements of every learner. Not only does it make asynchronous learning possible but it also promotes cooperation and communication by use of internet tools. Students can thus interact with the course's material at their own speed and on their own time. Two types of e-learning that are accessible are mixed e-learning—that which combines traditional face-to-face instruction with online learning—and completely online learning. It has drawn a lot of attention over the past several years, especially in view of the technological developments and the growing demand for flexible and ongoing learning opportunities spanning its totality (Lazarenko & Hapchuk, 2024).

Dependent Variable

Increase the literacy rate

The literacy rate is the evident increase in the proportion of a population capable of reading and writing with understanding. One gauges this development by a rise in literacy rate. Because of the close relationship between literacy and personal empowerment, employment possibilities, public health, and civic participation, this progress is usually considered as a fundamental sign of the social and economic evolution of a society. Efforts to raise literacy rates highlight not just the acquisition of more general cognitive abilities like comprehension, critical thinking, and communication but also of teaching basic reading and writing skills. Over the past several years, the concept of literacy has expanded to include, among other things, digital literacy and pragmatic skills fit for daily life. Governments and international organizations have carried out several initiatives all throughout the world aiming at raising literacy rates, especially among underprivileged groups such women, rural communities, and young people not already engaged in education. In India, for example, programs like the Ullas-Nav Bharat Saksharta Karyakram have aimed at adult students aged 15 and above in order to close the educational disparity and increase learning opportunities all through one's lifetime. Particularly among women, the Indian

Ministry of Education has lately published figures showing that the rural literacy rate has sharply rise during the past ten years. This rise is a mirror of the effects of regular policy campaigns and community involvement. Digital technology, inclusive and equitable access to learning, and quality education are underlined in the worldwide plan for youth and adult literacy (2020–2025) published by the United Nations Educational, Scientific, and Cultural Organization (UNESCO). In a society going more knowledge-driven, raising the literacy rate is about promoting social inclusion, economic progress, and national achievement as well as improving individual capacities. These projects show that this is really the situation (Surianshah, 2021).

Relationship Between E-Learning and Increase the Literacy Rate

E-learning is closely related to the development of literacy rates by means of flexible, easily available, scalable learning options. These opportunities answer to the different needs of students. Conventional education systems in many nations, especially in rural or underdeveloped areas, might face challenges like inadequate resources, teachers without enough training, or remote locations. These challenges let students struggle to develop basic reading and writing skills. Conversely, e-learning systems offer a possibility to close some of these gaps. Digital materials include interactive lessons, videos, e-books, and quizzes provide students access tools that help them build fundamental reading abilities at a pace fit for each of them. Others going toward their adult education or others who might have missed their official schooling was fond this extremely useful. By means of e-learning, people have the chance to raise their literacy not only by strengthening their capacity to read and write but also by acquiring skills in digital literacy, which are becoming more and more crucial in the modern society. Furthermore, many e-learning systems mix gamification with interactive exercises, which enhances the entertaining and efficient nature of the learning process. Particularly when combined with national initiatives concentrated on digital education, it has been shown that the increase in literacy rates might be attained by means of accessibility, customizing, and participation. But first the researcher must tackle issues such the digital divide, internet access, and technological development infrastructure if e-learning is to have a more general impact on the process of raising literacy rates all around. Generally speaking, e-learning has shown to be a successful approach for raising literacy rates. It offers flexible, inclusive

learning opportunities able to reach a broad spectrum of people (Ying et al., 2024).

Based on the above discussion, the researcher generated the following hypothesis to examine the link between E-Learning and Increase the Literacy Rate.

“H₀₁: There is no significant relationship between E-Learning and Increase the Literacy Rate.”

“H₁: There is a significant relationship E-Learning and Increase the Literacy Rate.”

Table 2: H₁ ANOVA Test

ANOVA					
Sum					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	39588.620	544	5385.526	1,025.814	.000
Within Groups	492.770	960	5.250		
Total	40081.390	1504			

The results will be noteworthy in this research.

With a p-value of .000 (less than the .05 alpha level), the value of F, which is 1,025.814, approaches significance. Thus, it follows that, “H₁: There is a significant relationship between E-Learning and Increase the Literacy Rate.” is accepted and the null hypothesis is rejected.

9 Discussion

The primary objective of this research was to determine whether or not and how the use of online learning has contributed to an increase in the literacy rates in Malaysian schools. The data points demonstrate that the internet has a substantial impact on the rising literacy rates and the developing educational opportunities. This influence is seen mostly through the use of e-learning systems. Electronic learning has become a powerful instrument in the fight for a more adaptable, individualized, and engaging educational experience for students all over the world. This, in large part, is due to the pervasive influence that digital technology has had in the classroom. E-learning environments provide students with access to a wealth of digital information which is readily available to them. Literacy abilities, which include reading and writing, may be significantly improved with the use of this content, which includes instructional films, electronic books, and interactive games. This is a very welcome development for low-income rural areas, who may have limited access to regular schools due to their location. By allowing students to practice and review skills whenever it is most convenient for them, students who select self-paced

learning have the opportunity to validate their reading improvement. Additionally, students have the chance to increase their digital literacy via the use of online learning, which is a trait that is vitally necessary in today's complex culture. The overall literacy rate is significantly impacted as a result of this.

Even if there has been a good effect, there are still problems that need to be solved. Along with a lack of access to digital technology and poor internet connections in rural regions, the digital divide makes it more difficult to distribute the advantages of e-learning in an equitable manner. Because of these impediments, certain groups are unable to make effective use of the opportunities that e-learning presents, which in turn exacerbates the unequal educational opportunities that already exist. In an effort to address this issue, initiatives such as the National Fiberization and Connectivity Plan (NFCP) have been initiated. These initiatives aim to enhance digital infrastructure and, as a result, close the gaps that exist.

10 Conclusion

The findings of this research contribute to a better understanding of the significant role that the internet plays in the educational systems of Malaysia, particularly with regard to the utilization of e-learning as a means of increasing the percentage of its population that is literate. According to the findings, e-learning systems have been a substantial contributor to the overall improvement of literacy rates. This has been accomplished by providing learning opportunities that are easily accessible, adaptable, and individualized. Students have the ability to engage with educational materials at their own speed through the use of these online-powered platforms. This is of great assistance to those who reside in locations that are economically disadvantaged or geographically remote, and where traditional educational resources may not be easily accessible. When students have access to digital tools such as interactive courses, e-books, videos, and other digital resources, they have the potential to improve their reading and writing abilities in a manner that is both dynamic and self-directed. Through the provision of learning opportunities to each and every student, e-learning also solves issues that are associated with traditional educational institutions. Because of the abundance of resources available on the internet, students are able to access high-quality educational content regardless of where they are located. In addition to improving their fundamental reading skills, this helps students become more proficient in the use of digital technology. However, due to the one-of-a-kind

nature of e-learning, students are able to design their own learning environments, which results in improved retention and comprehension of literacy-related skills.

It was important to noted, however, that the research also draws attention to the obstacles that prevent e-learning from completely achieving its potential to raise literacy rates. Examples of these issues include the digital divide, poor internet infrastructure, and a lack of access to necessary technologies. These challenges are especially prevalent in rural regions. It is imperative that these issues be rectified in order to make the most of the significant positive influence that e-learning may have on literacy. In order to accomplish this goal, it would be beneficial to continue making investments in digital infrastructure, to improve internet access, and to make certain that both teachers and students are equipped with the competencies required for digital work.

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- **Ethical approval:** The conducted research is not related to either human or animal use.
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References

- [1] Ahmad, N. A., Ayub, A. F. M., & Khambari, M. N. (2019). Gender digital divide: Digital skills among Malaysian secondary school students. *International Journal of Academic Research in Progressive Education and Development*, 8(4), 668–687.
- [2] Devisakti, A., Muftahu, M., & Xiaoling, H. (2023). Digital divide among B40 students in Malaysian higher education institutions. *Education and Information Technologies*.
- [3] Hamid, H., Ruahim, R. A., & Abdullah, S. H. (2024). Challenges of digital literacy among urban and rural pre-university students. In *Proceedings of the Third International Conference on Communication, Language, Literature, and Culture (ICCoLLiC 2024)* (423–438). Atlantis Press.
- [4] Krishnamoorthy, K., & Soh, T. M. T. (2021). Exploring the impact of internet accessibility in implementation of technology-based pedagogy for science in Malaysian primary schools. *International Journal of Academic Research in Progressive Education and Development*, 10(1), 339–353.
- [5] Lazarenko, N., & Hapchuk, Y. (2024). E-learning and artificial intelligence as key factors in the digital transformation of higher education: Challenges, opportunities, and development prospects.
- [6] Mukundan, S. R., & Letchamanan, H. (2021). When learning goes digital: Reflections on urban youth living in poverty in Malaysia. *United Nations Development Programme*.
- [7] Samsuddin, S. F., Mohamed Shaffril, H. A., Mohamed, N. A., & Bolong, J. (2021). Into the unknown: Do people in low literacy rate areas practise digital reading? *Malaysian Journal of Library and Information Science*, 26(2), 23–36.
- [8] Shuhidan, S. M., Yahaya, W. A., Hashim, H., & Baharudin, M. F. (2021). Influence of digital literacy on learning engagement among secondary students in Malaysia. *Environment-Behaviour Proceedings Journal*, 7(SI10), 4114.
- [9] Surianshah, S. (2021). Digital divide in education during COVID-19 pandemic. *Jurnal Ekonomi Malaysia*, 55(3), 103–112.
- [10] Ying, Y., Karim, A. M., Mondol, E. P., & Helal, M. S. A. (2024). Influence of digital education to uplift the global literacy rate in the age of digital civilization. *International Journal of Academic Research in Accounting, Finance and Management Sciences*, 13(4), 383–394