

A study on Adoption of Digital Technologies for Sustainable Practices Among Students with Special Reference to Kalyan Taluka

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Abstract

The increasing use of digital technology in education has been an important factor in sustainable practices, particularly in the reduction of paper use and the promotion of resource efficiency. The study investigates students' knowledge and use of digital technology and its contribution to sustainable behaviors. A descriptive study was carried out to collect primary data from 100 students using a structured questionnaire. The study is primarily concerned with digital tools like cloud storage, e-learning platforms and paperless documentation systems. The results indicate that students use digital tools for academic purposes and have a moderate to high level of awareness. The application of these technologies has improved the efficiency of the learning processes and less paper has been used. Still, problems like internet access and a penchant for traditional methods remain. The study emphasizes the importance of promoting digital adoption for sustainability and suggests that educational institutions should promote students' digital tool use for the development of ecologically conscious behaviors.

Keywords

Digital Technologies, Sustainable Practices, Students, E-learning, Paperless Systems, Awareness

Introduction

The rapid growth of digital technologies has caused a huge transformation in the education sector, making traditional teaching methods more flexible and effective. Through tools such as digital documentation, cloud storage and e-learning platforms, students have access to, can exchange and save information without relying substantially on physical resources. This is a

particularly interesting change in the space of sustainability, where global concerns have been raised about reducing paper consumption and saving natural resources.

Students are a key player in the uptake of these technologies, as their consumption patterns directly influence the effectiveness of sustainable practices in educational environments.

The increasing number of digital tools is making it easier for students to engage in paperless learning, online collaboration and digital submissions. However, students' awareness and actual use of these devices may differ according to the accessibility and convenience of use, as well as individual preferences.

The project aims to explore students' use of digital tools and how they contribute to sustainable practices. The study provides insight into the role of digital technologies in enhancing ecologically conscious behaviour in education through the analysis of awareness and usage patterns.

Review of Literature

Recent studies have highlighted the increasing importance of digital technologies in education and the role of sustainability.

The move to digital learning has reduced the reliance on printed resources and increased accessibility (Bond et al., 2021).

Similarly, the OECD (2021) argued that digital tools, such as cloud platforms and e-books, enable effective learning with fewer resources.

George et al. (2021) described how digital innovation contributes to sustainability and how digital systems can minimize environmental impact and maximize resource use.

Digital learning solutions facilitate paperless procedures and enhance learning efficiency, as stated by the World Bank (2022).

Moreover, through digital connectivity and reduced reliance on physical artifacts, technology used in education may promote sustainability, according to UNESCO (2023).

Even though they depend on the users' competence, the digital technologies are crucial for sustainability based on the literature sources.

Objectives

- To assess the level of awareness of digital technologies among students.
- To analyze the usage patterns of digital technologies for academic purposes.

Methodology

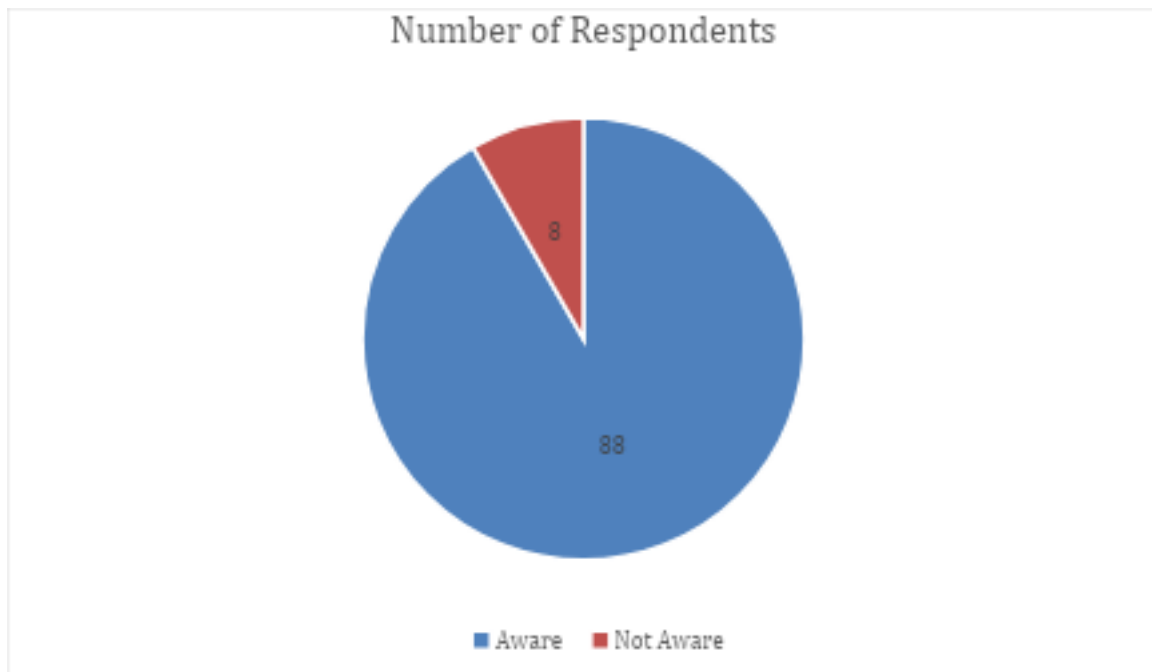
Study Area

The current study focuses on how students use digital tools for sustainable academic practices. Students from various educational levels provided the data.

Survey Method

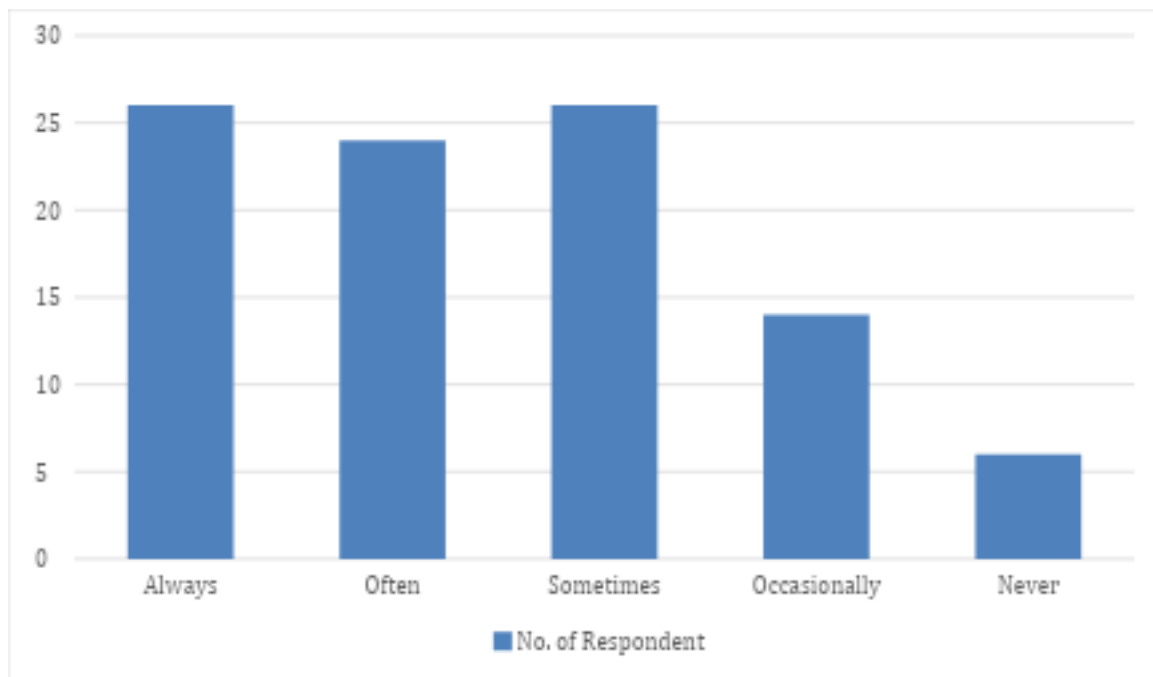
Google Forms was employed in conducting a structured survey among 96 respondents. The students were asked regarding their familiarity with the use of digital resources and the hindrances that they face while using such digital resources. Various types of charts like pie, bar, and table have been used for organizing the collected data.

Pie Chart 1: Awareness of Digital Technologies



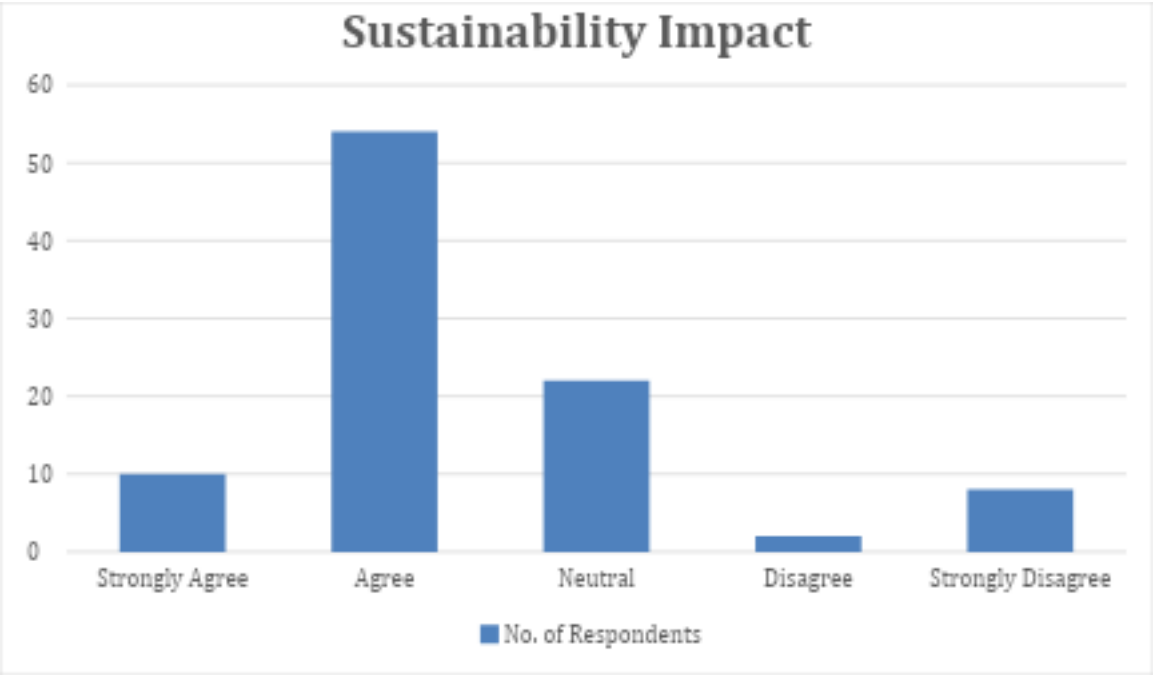
From above pie chart, it is observed that **91.7% are aware** of digital technologies used for sustainable practices, whereas only **8.3% are not aware**. This shows that awareness among students is significantly high.

Bar Graph 1: Frequency of Usage



From Bar graph 1, it is clearly understood that 26 respondents (27.1%) always use, 24 respondents (25%) often use, and 26 respondents (27.1%) sometimes use digital technologies. Only a small proportion rarely or never use these tools. This indicates that the majority of students actively engage with digital technologies.

Graph 2: Sustainability Impact



From Graph 2, it is evaluated that **27 respondents (56.3%) agree** and **5 respondents (10.4%) strongly agree** that digital technologies promote sustainable practices. Only a small percentage disagrees. This shows a positive perception among students.

Table 4: Preference for Digital Materials

Sr. No	Preference	No. of Respondents
1	Yes	62
2	Maybe	26
3	No	8
	Total	96

Source: Primary Data

From Table 4, it is inferred that **62 respondents (64.6%) prefer digital materials**, while **only a few prefer printed materials**. This shows a clear shift toward digital learning.

Table 5: Barriers to Adoption

Sr. No	Barrier	No. of Respondents
1	Internet Issues	28
2	Lack of Awareness	10
3	Cost	9
	Total	48

Source: Primary Data

From Table 5, it is observed that internet issues (58.3%) are the major barrier, followed by lack of awareness and cost factors. This indicates that infrastructure plays a crucial role in adoption.

FINDINGS

- Most of the learners know that digital technologies can be applied to sustainable activities.
- Digital technology is extensively used by the students for educational purposes.
- It is the opinion of most respondents that digital technologies promote sustainability.
- Learners prefer digital materials to paper-based ones.
- Internet connectivity is the main impediment to its implementation.
- There are learners who rely on traditional methods.
- The level of implementation is quite high among the learners.

SUGGESTIONS

- Develop robust online infrastructure in educational facilities.
- Launch campaigns to create awareness on digital sustainability.
- Support educational activities that do not involve the use of paper.
- Provide students with affordable digital tools.
- Facilitate the use of online learning materials.

- Train the students in efficient use of digital technology.

CONCLUSION

Students use devices a lot and they really help to encourage sustainable practices. We can see that students are really open to learning because they know a lot about it and they use it all the time. Students like resources because they are better and they do not use as much paper.. There are still some problems that make it hard for students to use digital devices like not being able to get on the internet. Digital technology can really help make education more sustainable if we can just get the internet to work better and get more people to understand how it works. The study shows that we need to keep working on getting students to use devices if we want a sustainable future. Digital devices are very important, for a future and digital learning is a big part of that.

References (with Links)

1. Bond, M., Bedenlier, S., Marín, V. I., & Händel, M. (2021). *Emergency remote teaching in higher education: Mapping the first global online semester*. International Journal of Educational Technology in Higher Education, 18(1).
<https://doi.org/10.1186/s41239-021-00282-x>
2. OECD. (2021). *21st-Century Readers: Developing Literacy Skills in a Digital World*. OECD Publishing. <https://doi.org/10.1787/a83d84cb-en>
3. George, G., Merrill, R. K., & Schillebeeckx, S. J. D. (2021). *Digital sustainability and entrepreneurship: How digital innovations are helping tackle climate change*. Entrepreneurship Theory and Practice, 45(5), 999–1027.
<https://doi.org/10.1177/1042258721999466>

4. World Bank. (2022). *Remote Learning During COVID-19: Lessons from Today, Principles for Tomorrow*. World Bank Publications.
<https://www.worldbank.org/en/topic/edutech>
5. UNESCO. (2023). *Global Education Monitoring Report 2023: Technology in education*.
UNESCO Publishing. <https://www.unesco.org/gem-report>
6. Selwyn, N. (2021). *Education and Technology: Key Issues and Debates*. Routledge.
<https://www.routledge.com>
7. Dwivedi, Y. K., Hughes, D. L., Rana, N. P., et al. (2022). *Metaverse beyond the hype: Multidisciplinary perspectives*. *International Journal of Information Management*, 66.
<https://doi.org/10.1016/j.ijinfomgt.2022.102542>