

Digital Pedagogy for Sustainable India: Impact of the G-Shala App on Secondary School Education

Prakash P. Vadaria & Dr. Bhavesh Raval

Abstract

India's pursuit of Sustainable Development Goals (SDGs), particularly Goal 4—**Quality Education**, hinges on reimagining its education system through contextually relevant, technology-driven solutions. The **G-Shala (Gujarat Students' Holistic Adaptive Learning App)** is a landmark initiative aligned with the National Education Policy (NEP) 2020 that aims to promote personalized and self-directed learning. This research paper investigates the impact of the G-Shala App on secondary school students in Gujarat, emphasizing its contribution to **digital pedagogy, student engagement, and educational sustainability**. Using mixed methods—quantitative surveys and qualitative interviews—this study explores how the G-Shala App bridges learning gaps, encourages independent study, and supports the Indian-centric vision of education. Findings suggest that the app positively influences learning motivation, enhances digital skills, and contributes to sustainable learning outcomes when supported by proper digital infrastructure and teacher facilitation.

Keywords: G-Shala App, Digital Pedagogy, Sustainable Development Goals (SDGs), Self-Learning, NEP 2020, Secondary Education, ICT in Education, Indian-Centric Education, Digital Inclusion, E-Learning

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1. Introduction

The 21st-century education paradigm shift emphasizes **sustainability, digital transformation, and equity**. India, with its diverse socio-economic fabric, faces a dual challenge: ensuring access and quality in education. The **Gujarat Students' Holistic Adaptive Learning App (G-Shala)** represents a state-level effort to address this challenge by offering a **customized, curriculum-aligned e-learning platform** for students from Grades 1 to 12. This paper centers on its implementation in **secondary education (Grades 9–12)** and its alignment with **SDG 4**, which seeks inclusive and equitable quality education for all.

NEP 2020 envisions a shift from rote learning to **conceptual understanding**, and G-Shala serves as a practical tool toward this vision. This study investigates the **role of G-Shala in transforming the traditional teacher-centric classroom into a digital, learner-centric environment**, while promoting Indian values, languages, and knowledge systems.

2. Objectives of the Study

1. To examine the role of the **G-Shala App in promoting digital pedagogy** among secondary school students.
2. To evaluate the **impact of G-Shala** on student motivation, academic performance, and engagement.
3. To analyze how G-Shala contributes to the goals of **sustainable development and inclusive education**.
4. To identify challenges in the **implementation and usage** of G-Shala in government and semi-government secondary schools.

3. Review of Literature

Several studies emphasize the importance of **ICT in education** and its correlation with improved learning outcomes. Digital learning platforms such as DIKSHA, Byju's, and Khan Academy have gained attention; however, state-specific tools like **G-Shala** are uniquely tailored to local contexts and languages.

- **Patel (2021)** highlighted that localized digital learning enhances engagement in rural schools.
- **UNESCO (2020)** emphasized that adaptive technologies are critical to bridging learning disparities.
- **NEP 2020** promotes a **blended learning approach**, integrating technology and traditional pedagogy, which G-Shala embodies.

4. Research Methodology

Research Design:

Mixed Method (Quantitative + Qualitative)

Population:

Secondary school students (Grades 9–12) in selected schools of Rajkot district, Gujarat.

Sample Size:

- 150 students (random sampling)
- 10 teachers (purposive sampling)

Tools for Data Collection:

- Structured questionnaire for students
- Interview schedule for teachers
- Academic performance records pre- and post-usage

Data Analysis Techniques:

- Descriptive statistics
- Thematic analysis for qualitative data
- Paired t-test for evaluating academic performance changes

5. Data Analysis and Interpretation

5.1 Student Engagement and Learning Motivation

- 82% of students found G-Shala content engaging and easy to understand.
- 71% reported increased interest in subjects like Science and Mathematics due to animated and interactive videos.

5.2 Academic Performance

- Average academic performance improved by **15–20%** in post-implementation tests.
- Students using the app for more than 3 hours/week showed the most significant gains.

5.3 Teacher Feedback

- Teachers reported improved student participation in class.
- 60% of teachers faced initial difficulties in integrating the app due to **low digital literacy and technical issues**.

5.4 Infrastructure and Accessibility

- Internet connectivity and availability of smartphones remain challenges in tribal and interior regions.
- Gender gap in access was observed—boys had more device access compared to girls.

6. Findings

1. **Positive Impact:** G-Shala has a measurable positive effect on learning motivation, comprehension, and academic performance.
2. **Indian-Centric Approach:** The use of Gujarati language, curriculum alignment, and culturally relevant examples promote **contextual learning**.
3. **Digital Divide:** Socio-economic barriers limit uniform access and must be addressed to ensure equitable learning.
4. **Teacher Role:** The success of G-Shala depends significantly on teacher orientation and blended classroom integration.
5. **Sustainable Model:** When integrated with NEP 2020 pedagogy and supported by policy, G-Shala aligns with **sustainable development in education**.

7. Discussion

The G-Shala App exemplifies **digital pedagogy tailored to Indian classrooms**. Its adaptability to diverse learning styles, local language support, and curriculum alignment make it a valuable asset in achieving the **NEP 2020 vision** and **SDG 4**. However, to unlock its full potential, systemic support—teacher training, infrastructure development, and continuous app improvement—is essential.

The Indian-centric approach not only reinforces **vernacular and cultural relevance** but also empowers learners through **self-paced and personalized learning**. This aligns with constructivist learning theories and supports lifelong learning pathways.

8. Recommendations

- **Capacity Building:** Conduct regular teacher training on digital pedagogy.

- **Infrastructure Development:** Improve internet and device access, especially in rural and tribal regions.
- **Policy Support:** Mandate blended learning strategies using G-Shala at the district level.
- **Monitoring & Evaluation:** Establish data-driven systems to assess the app's impact on learning outcomes.

9. Conclusion

The G-Shala App marks a significant stride in **transforming secondary education in Gujarat** through digital means. Its alignment with **Indian-centric educational principles** and contribution to **sustainable development** positions it as a model for other states. While challenges remain, the positive trajectory demonstrates that with the right support, **digital pedagogy can indeed unlock a sustainable and inclusive future for India's learners.**

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