

# BEST PRACTICES

## Best Practice 1:

### Title:

**“Spoken Tutorial of IIT Mumbai: Learning Free and Open-Source Software (FOSS) online”.**

### Objectives:

1. To immerse students in a cutting-edge, market-driven learning environment that complements the regular academic curriculum with advanced software skills.
2. To familiarize students with the latest technologies and innovations.
3. To equip students with the skills and knowledge necessary to excel in global competitions.
4. To provide students with access to top-tier e-learning platforms and resources.
5. To prepare students to earn additional credits beyond the regular curriculum, aligning with the National Education Policy (NEP) 2020 guidelines.

### Context:

In today's fast-paced, technology-driven world, acquiring cutting-edge skills and knowledge is crucial for success. The New Education Policy (NEP) emphasizes the integration of virtual and online courses into traditional learning frameworks. However, many students from rural areas, who comprise the majority of our institution, face significant barriers in accessing internet facilities and developing essential computer-related soft skills.

To bridge this gap, our institution recognizes its responsibility to provide comprehensive soft skill training, ensuring the holistic development of our students. Our online courses and modules cater to diverse learners, regardless of age, location, or background, offering equal opportunities for skill enhancement and knowledge acquisition.

### Practice:

The institute recognizes the significance of Information and Communication Technology (ICT) in education and has introduced a learning facility through the Spoken Tutorial project of IIT Mumbai. This initiative enables students to acquire software knowledge and skills through online tutorials.

The Spoken Tutorial project is part of the "Talk to a Teacher" initiative, launched by the Ministry of Education, Government of India, under the National Mission on Education through Information and Communication Technology. This project offers a wide range of tutorials on Free and Open-Source Software (FOSS) in various Indian languages, making it accessible to a broader audience. Each Spoken Tutorial is a 10-minute audio-video tutorial created using the screencast methodology. This approach focuses on the lesson itself, rather than the instructor, allowing students to concentrate on the subject matter. The tutorials are dubbed into all Indian languages, enabling students to learn in their preferred language. Moreover, the

tutorials can be accessed offline, making them useful for those with limited internet connectivity.

The Spoken Tutorial project distinguishes itself from other online tutorials by offering:

- Multilingual support: Tutorials are available in various Indian languages, catering to a diverse student population.
- Offline access: Students can access tutorials without internet connectivity, making it ideal for rural or resource-constrained areas.
- FOSS focus: The project promotes Free and Open-Source Software, encouraging students to explore open-source technologies.
- Self-paced learning: Students can learn at their own pace, reviewing and repeating tutorials as needed.

By leveraging the Spoken Tutorial project, the institute aims to enhance students' software skills, promote digital literacy, and foster a culture of self-directed learning.

### **Institutional Integration of Spoken Tutorials**

The institute has seamlessly integrated the Spoken Tutorial activity into its academic framework, making it a mandatory component for B.Sc. and M.Sc. second year students since the academic session 2017.

### **Infrastructure and Support**

The college's ICT Center is equipped with state-of-the-art facilities to support online learning. To ensure personalized attention, faculty members are assigned to batches of up to 20 students. This enables prompt resolution of queries and fosters a supportive learning environment.

### **Implementation and Monitoring**

Faculty members select relevant Free and Open-Source Software (FOSS) courses from the Spoken Tutorial portal and encourage students to enroll. Once enrolled, students access the online course materials and attend sessions as per the scheduled time-table slot. The ICT Center provides technical support to overcome any access-related difficulties. Faculty members maintain attendance records and encourage slow learners to access course recordings during their free time.

### **Assessment and Certification**

At the end of each semester, students participate in an online test conducted by IIT Mumbai at the ICT Center. Successful students receive additional certificates, complementing their participation certificates. This process is repeated in the next semester, allowing students to gain exposure to two different courses within an academic session.

**By integrating Spoken Tutorials into its curriculum, the institute aims to:**

1. Enhance digital literacy: Equip students with essential software skills, promoting digital literacy and competitiveness.
2. Foster self-directed learning: Encourage students to take ownership of their learning, developing essential skills for lifelong learning.
3. Improve employability: Provide students with recognized certifications, enhancing their employability prospects and career opportunities.
4. Support faculty development: Encourage faculty members to adopt innovative teaching methods, stay updated with industry trends, and develop essential skills for effective online teaching.

**Evidence of Success:**

**Empowering Students through Spoken Tutorials**

Since its implementation in the academic session 2017-2018, the Spoken Tutorial program has achieved remarkable success, benefiting 2902 students through 123 training sessions. This initiative has not only enhanced students' skills but also provided them with recognized certifications, bolstering their confidence and employability prospects.

**Key Achievements:**

1. Participation Certificates: All students who completed the training received participation certificates from IIT Mumbai, acknowledging their efforts and dedication.
2. Completion Certificates: Students who successfully cleared the online test received additional completion certificates, demonstrating their mastery of the subject matter.
3. Simulation-Based Learning: The training enabled students to grasp complex concepts through practical simulations, fostering a deeper understanding of the subject.
4. Skill Enhancement: Students acquired skills to implement theoretical concepts, designing innovative modules based on sensors and processing units.
5. Certification Verification: All certificates are available on the Spoken Tutorial portal, providing a verifiable record of students' achievements.

**Impact and Outcomes:**

The Spoken Tutorial program has had a profound impact on students, enhancing their:

1. Practical skills: Students developed hands-on experience with cutting-edge technologies.
2. Confidence: Recognized certifications boosted students' confidence, preparing them for the job market.
3. Employability prospects: The program's focus on industry-relevant skills improved students' employability prospects.

4. Innovative thinking: Students developed innovative solutions, applying theoretical concepts to real-world problems.

By integrating the Spoken Tutorial program into its curriculum, the institute has demonstrated its commitment to providing students with industry-relevant skills, recognized certifications, and a competitive edge in the job market.

## **Problems Encountered:**

### **Bridging the Digital Divide and Embracing Online Learning**

The institute faced significant challenges in implementing the Spoken Tutorial program, primarily due to the rural location of most students. Key obstacles included:

#### **Infrastructure Limitations**

1. Frequent Power Cuts: Regular power outages hindered students' ability to access online courses, disrupting their learning experience.
2. Limited Internet Connectivity: Insufficient internet infrastructure and expensive data packs restricted students' access to online resources, making it difficult for them to enroll in additional courses or study at home.

#### **Cultural and Psychological Barriers**

1. Resistance to Change: Students accustomed to traditional classroom instruction struggled to adapt to the online learning environment, which required self-motivation and discipline.
2. Technical Anxiety: Some students felt apprehensive about using computer-based learning tools, which slowed their adjustment to the new learning paradigm.
3. Cultural Mindset: Traditional-minded students needed to adopt a more open-minded and flexible approach to learning, embracing the benefits of online education.

Despite these challenges, the institute remained committed to providing students with equal access to quality education. By addressing these obstacles, the institute helped students develop essential skills for success in the digital age.

## **Resources Required:**

### **Resources and Infrastructure for Effective Online Learning**

To facilitate seamless online learning experiences for our students, the college has established a dedicated ICT Centre. This centre serves as a hub for online learning, equipped with:

#### **Current Infrastructure**

1. 45 desktop computers: Providing students with access to reliable computing resources.
2. 100 MBPS internet connectivity: Ensuring fast and stable internet access for online learning.
3. Audio-Visual (A/V) aids: Enhancing the learning experience with interactive multimedia tools.

### **Future Expansion Plans**

Given the growing demand for online learning, there is a need to further augment the existing infrastructure. This includes:

1. Increasing the number of desktop computers: To accommodate more students and provide easier access to computing resources.
2. Upgrading internet connectivity: To ensure even faster and more reliable internet access.
3. Introducing additional A/V aids: To further enhance the interactive learning experience.

### **Student Support Services**

To ensure students are well-prepared for online classes and can maximize the benefits of these courses, the college plans to:

1. Conduct counselling sessions: To raise awareness about the advantages of online courses and address any concerns or queries students may have.
2. Provide guidance on online learning best practices: To help students develop effective online learning habits and strategies.
3. Offer technical support: To assist students with any technical issues they may encounter while accessing online courses.

# BEST PRACTICES

## Best Practice 2:

### Title:

**“A Quality Development Program for Zilla Parishad Schools of Wardha District”.**

### Objectives:

1. **Improve Educational Quality:** Enhance the overall quality of education in Zilla Parishad Schools of Wardha District.
2. **Teacher Training and Development:** Provide teachers with training, resources, and support to improve their teaching skills and subject matter expertise.
3. **Student Learning Outcomes:** Improve student learning outcomes, including academic achievement, critical thinking, and problem-solving skills.
4. **Digital Literacy:** Promote digital literacy among students, teachers, and the community, leveraging technology to enhance education and skills development.

### Context:

Education is the foundation upon which individuals, societies, and nations build their future. It unlocks human potential, fosters equitable and just societies, and drives national development. Universal access to quality education is crucial for economic growth, social justice, scientific progress, national integration, and cultural preservation. To achieve sustainable development, education must be holistic, multidisciplinary, and responsive to 21st-century needs. The National Education Policy 2020 (NEP 2020) seeks to provide quality education to all students, regardless of their location or background. NEP 2020 prioritizes disadvantaged and under-skilled groups, addressing India's growing developmental imperatives.

In alignment with NEP 2020, Bajaj College of Science, Wardha, and Jamnalal Bajaj Seva Trust (JBST) have launched a voluntary initiative to enhance education quality, particularly in rural areas. This initiative aims to:

1. Improve teaching methodologies
2. Experiential learning through scientific demonstration
3. Enhance teacher skills
4. Facilitate student academic success

By doing so, this initiative will enrich students with self-confidence and a positive outlook, ultimately enhancing the quality of education.

## **Practice:**

Zilla Parishad schools play a vital role in India's public education system, particularly in rural areas where they lay the foundation for the country's future. Recognizing their importance, Jamnalal Bajaj Seva Trust (JBST) has taken the initiative to support these schools, providing them with the necessary direction and platform to thrive. In 2020-21, JBST launched a quality improvement program in 9 Zilla Parishad schools, aiming to make them ideal and quality-oriented institutions in Wardha district. The organization is committed to ensuring these schools have modern facilities and provide quality education to local students.

To support this initiative, the faculties of Bajaj College of Science, Wardha, have voluntarily taken up the task of imparting quality education to students of Zilla Parishad and Municipal schools. Through the Bajaj Education Initiative "Model School Project" under JBST, these teachers are working tirelessly to bring rural students into the mainstream of education.

The Zilla Parishad schools, also known as ZP High Schools, are state-run secondary schools that provide education to students from grades 6-10. Established, supervised, and funded by District Councils, these schools play a crucial role in rural areas, catering to the educational needs of local communities.

By supporting Zilla Parishad schools, JBST and Bajaj College of Science, Wardha, are contributing to the development of quality education in rural areas, ultimately shaping the future of India. Educators from Bajaj College of Science, Wardha, have been entrusted with mentoring local schools, focusing on quality development and enrichment. As part of this initiative, designated teachers conduct regular visits to their assigned schools, providing experiential science education through:

- Hands-on activities based on scientific principles
- Simple science experiments
- Model-making

This comprehensive approach spans various subjects, including science, mathematics, and language. The key objective of this project is to instill social responsibility and commitment among students. The project is spearheaded by Dr. Vasudha Vanmali, former Vice Principal, Bajaj College of Science, Wardha with guidance from esteemed leaders:

- Shri. Sanjay Bhargava, Chairman, Shiksha Mandal, Wardha
- Prof. P.V. Tekade, Principal, Bajaj College of Science, Wardha

Under their visionary leadership, this initiative continues to yield positive outcomes.

## **Evidence of Success:**

The Quality Development Program for Zilla Parishad Schools of Wardha District has yielded remarkable outcomes, transforming the educational landscape of the region. Key achievements include:

1. Improved Academic Performance: Significant enhancement in students' academic performance, with a notable increase in passing percentages.
2. Enhanced Teacher Effectiveness: Teachers demonstrated improved teaching methodologies, leveraging experiential learning and innovative pedagogies.
3. Increased Student Engagement: Students exhibited heightened enthusiasm and participation in classroom activities, fostering a love for learning.
4. Better Infrastructure and Resources: Schools witnessed improvements in infrastructure, including upgraded classrooms, libraries, and technology facilities.
5. Holistic Development: Students demonstrated growth in essential life skills, including critical thinking, problem-solving, and social responsibility.

These outcomes underscore the program's success in enhancing the quality of education in Zilla Parishad Schools of Wardha District, paving the way for a brighter future for students and the community.

### **Problems Encountered:**

#### **Challenges Encountered in Zilla Parishad Schools from Low Socio-Economic Backgrounds**

While working with Zilla Parishad schools from low socio-economic backgrounds, the following challenges were encountered:

1. Limited Infrastructure: Inadequate classrooms, insufficient furniture, and lack of basic amenities hindered the learning environment.
2. Resource Constraints: Insufficient teaching aids, outdated textbooks, and limited access to technology impeded the teaching-learning process.
3. Teacher Shortages: Acute shortages of qualified teachers, particularly in subjects like science and mathematics, affected the quality of education.
4. Student Motivation: Low student motivation, lack of interest in studies, and high dropout rates posed significant challenges.
5. Parental Involvement: Limited parental involvement and support, due to various socio-economic factors, hindered student progress.

These challenges underscore the need for targeted interventions, resource mobilization, and community engagement to improve the quality of education in Zilla Parishad schools of Wardha district.

### **Resources Required:**

1. Teaching aids: Educational resources, such as charts, diagrams, and models.
2. Textbooks and educational materials: Updated textbooks, workbooks, and other learning materials.
3. Technology infrastructure: Computers, laptops, tablets, and internet connectivity.
4. Teacher training programs: Workshops, seminars, and training sessions for teachers.



5. Counselling services: Trained counsellors to address students' personal and academic concerns.
6. Motivational programs: Guest lectures, workshops, and events to inspire and motivate students.
7. Parental education programs: Workshops and training sessions for parents to enhance their involvement in their children's education.
8. Community engagement: Initiatives to engage local communities in school activities and decision-making.