Final Project (PC + OT)

Boosting VJTI's NIRF Ranking through Teaching, Learning & Resources (TLR) Parameter

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1. Introduction: What is NIRF and Why It Matters

The National Institutional Ranking Framework (NIRF) was launched on 29th September 2015 by the Ministry of Human Resource Development (MHRD) to rank higher-education institutions across India using a transparent, data-based methodology.

NIRF evaluates institutions across five key parameters:

- Teaching, Learning & Resources (TLR)

- Research & Professional Practice (RP)

- Graduation Outcomes (GO)

- Outreach & Inclusivity (OI)

- Perception (PR)

For Engineering institutions, TLR carries the highest weightage of 30% of the total score. A higher NIRF ranking improves institutional reputation, student intake, funding opportunities, and overall academic growth.

2. Where VJTI Stands

Veermata Jijabai Technological Institute (VJTI) currently lies in the 101–150 band under the Engineering category in NIRF 2023, 2024, and 2025.

Past ranks show: 71 (2020), 82 (2021), 119 (2022). This trend shows a gradual decline, indicating the need for strategic improvement in high-impact parameters like TLR.

3. Focus Parameter: Teaching, Learning & Resources (TLR)

Definition

TLR measures the quality of teaching environment, faculty, infrastructure, and learning resources.

Components of TLR

Code	Component	Full Form	Weight	Meaning
SS	Student Strength	Student Strength including Ph.D. students	20	Ratio of enrolment to intake and doctoral participation
FSR	Faculty-Student Ratio	Faculty-Student Ratio emphasizing permanent faculty	30	Full-time faculty per student
FQE	Faculty Qualification & Experience	Combined metric of Ph.D. holders and experience mix	20	Academic depth & teaching expertise
FRU	Financial Resources & Utilisation	Expenditure per student and utilisation efficiency	30	Quality of funding & utilisation
OE	Online Education	Digital learning adoption, Swayam usage	10	Online education & blended learning
MIR	Multiple Entry/Exit, IKS, Regional Languages	Curriculum flexibility and inclusion	5	Pedagogical innovation & inclusion

TLR carries a weightage of 30% in NIRF Engineering rankings and directly impacts academic quality and perception.

4. Seven-Phase Improvement Plan

Phase 1: Baseline Data and Diagnostics (0–3 Months)

Collect VJTI's historical data (SS, FSR, FQE, FRU, OE, MIR) and compare with top-ranked institutes. Build a performance dashboard to visualize key gaps.

Phase 2: Deep Analysis and Root-Cause Study (3–6 Months)

Identify underlying reasons for performance gaps across metrics (faculty shortages, underutilized funds, limited Ph.D. enrolments, etc.). Conduct stakeholder feedback sessions.

Phase 3: Machine Learning and Predictive Modelling (6–9 Months)

Develop a regression and classification model using multi-year NIRF data (VJTI + peers). Features: SS, FSR, FQE, FRU, OE, MIR. Targets: TLR score/band. Use feature importance to find high-impact factors and simulate improvement scenarios.

Phase 4: Quick-Impact Reforms (9–15 Months)

Implement changes with immediate visibility: enhance online education (OE), initiate multiple entry/exit (MIR), regularize faculty, and improve budget reporting for FRU.

Phase 5: Medium-Term Academic & Resource Growth (15–24 Months)

Hire permanent faculty to achieve 1:15 ratio, increase Ph.D. enrolments, upgrade infrastructure, and start teaching excellence workshops.

Phase 6: Continuous Monitoring & Data Automation (2–3 Years)

Automate TLR data collection, track semester-wise dashboards, and run ML models quarterly to forecast improvement. Maintain transparency across departments.

Phase 7: Policy & Strategic Reforms (Beyond 3 Years)

Institutionalize excellence through a TLR Improvement Council, link faculty evaluation to NIRF metrics, promote regional-language teaching, and create annual internal NIRF reviews.

5. Consolidated Recommendations

- Prioritize improving Faculty-Student Ratio (FSR) and Faculty Qualification (FQE).

- Strengthen research-integrated teaching and online learning systems.

- Optimize financial utilization to raise FRU.

- Implement predictive tracking using ML models.

- Focus on inclusivity via regional language and IKS-based courses.

6. Key Takeaways

- TLR (Teaching, Learning & Resources) carries the highest weight (30%) and directly affects rank.

- VJTI can climb from the 101–150 band to Top 75 through focused data-driven execution.

- The seven-phase roadmap ensures measurable progress from baseline analysis to institutional reforms.

- Machine learning enables proactive, evidence-based decision-making for sustained improvement.