

David v 0.1 - Scope of Work

Advanced Analytics & Forecasting

1. Predictive Financial Modeling

Monte Carlo Simulation for Revenue Forecasting

- **Problem Solved:** Uncertainty in fee collection planning
- **Solution:**
 - Simulate 1,000+ scenarios for fee collection based on historical patterns
 - Model student dropout rates, fee defaults etc
 - Generate confidence intervals (80%, 95%, 99%) for budget planning
 - Identify optimal fee schedules to maximize revenue with minimal risk
- **Business Impact:**
 - "With 95% confidence, expect ₹45-52L in fee revenue next quarter"
 - Better cash flow planning and budget allocation
 - Risk-aware decision making

2. Advanced Forecasting Engine

ARIMA/Prophet-based David Forecasting

- **Problem Solved:** "How do we predict future financial needs?"
- **Solution:**
 - Forecast next 6-12 months of fees, expenses, and enrollment
 - Account for seasonality (admission peaks, holiday closures)
 - Detect trends in teacher hiring, infrastructure spend
 - Alert on predicted shortfalls before they happen

- **Business Impact:**
 - Proactive budget planning
 - Early warning system for cash crunches
 - Data-driven hiring decisions
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Visual Intelligence Dashboard

3. Interactive Analytics Portal

Executive Dashboard & Web Interface

- **Real-Time Metrics:**
 - Key Performance Indicators (KPIs):
 - Current enrollment vs. capacity
 - Fee collection rate (%) by class
 - Monthly revenue vs. budget
 - Expense burn rate
 - Teacher-to-student ratio
 - Hostel occupancy %
- **Interactive Charts:**
 - Time series: Fee trends over 12 months
 - Pie charts: Revenue by class/stream
 - Bar charts: Expense categories
 - Heat maps: Attendance patterns
 - Funnel charts: Admission → Enrollment pipeline
- **Drill-Down Capabilities:**
 - Click on "X SCI class" → See all students, fees, attendance
 - Click on "Expenses" → Break down by category, vendor, date range

- Click on month → See daily transaction detail
 - **Export Features:**
 - PDF reports for Board presentations
 - Excel exports for finance team
 - Scheduled email reports to stakeholders
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Intelligent Business Suggestions

4. AI-Powered Recommendations Engine

David becomes your Strategic Business Advisor

A. Financial Optimization

- **Fee Structure Analysis:**
 - "Class XII SCI charges ₹8K/month but X COM charges ₹7.5K with same costs.
Recommendation: Align pricing or justify premium."
 - Compare fee collection rates: "Class VI has only 60% collection vs 92% in Class XII.
Investigate causes: payment plans? scholarships? financial hardship?"
- **Expense Optimization:**
 - "Vendor benchmarking: You're paying ₹50/kg for rice vs market rate ₹35/kg.
Potential savings: ₹15K/month"
 - "Staff costs growing 25% YoY vs 5% enrollment growth. Review headcount."
 - "Utilities spiking in May-June. Consider solar panels: 3-year ROI."

B. Enrollment & Admission Intelligence

- **Admission Funnel Analysis:**

- "You received 150 enquiries but only 45 admissions (30% conversion). Benchmark: 55%. Recommend: Call-back campaign for leads."
- **Retention Risk Scoring:**
 - "Student ID 456 hasn't paid fees for 2 months, missed 12 classes this month.
High dropout risk. Action: Reach out proactively."
- **Class-Level Recommendations:**
 - "Class VIII has declining enrollment (was 45, now 35 YoY).
Predict capacity to drop to 25 next year. Plan accordingly."

C. Operational Efficiency

- **Attendance Insights:**
 - "Teacher ABC has 15% absenteeism vs school avg 5%. Investigate."
 - "Hostel occupancy at 78%. Can accommodate 20 more students.
Marketing opportunity: +₹2.5L annual revenue."
 - "Transport route optimization: Consolidate 3 routes into 2. Save ₹8K/month."
- **Resource Allocation:**
 - "Class XII needs lab equipment: Historical data shows 2 failed practicals/month.
Investment: ₹2L. Benefit: +5% exam pass rate."
 - "Nursery has 60 students, only 1 instructor. Industry std: 1:15 ratio.
Hire 3 more. Cost: ₹4.5L/year, Benefit: Quality improvement + ₹3L revenue growth."

D. Strategic Planning

- **Capacity Planning:**
 - "Current capacity: 1,200 students. Projected enrollment: 1,350 in 2 years.
Recommend: Expand classrooms (+₹25L capex) OR increase stream fees (+₹8L revenue)"

- **Stream-Level Profitability:**

- "Commerce stream: 180 students, ₹32L fees, ₹15L expenses = ₹17L profit (53% margin)

Science stream: 120 students, ₹24L fees, ₹22L expenses = ₹2L profit (8% margin)

Action: Improve science infrastructure or increase science fees."

Complete ERP Integration

5. Unified Knowledge Base from Full ERP Data

David will have **360° visibility** into your entire school operation:

Student Lifecycle Management

- Full student profiles with:
 - Enrollment history (join date, class progression)
 - Fee payment history (outstanding balances, payment patterns)
 - Attendance tracking (daily, class-wise, subject-wise)
 - Academic performance (if integrated)
 - Discipline records
 - Medical/allergy information
 - Parent contact details
- **Smart Queries:**
 - "Which students owe fees >₹50K?"
 - "Show Class X students with <70% attendance"
 - "List Class XII dropouts from last 3 years"

Financial Completeness

- **Fees Module:**
 - Per-student fee tracking (paid, pending, defaulted)

- Installment management
- Scholarship/concession tracking
- Fee waivers with reasons
- Late payment penalties
- **Expenses Module:**
 - Vendor master with payment history
 - Budget vs. actual vDavidnce
 - Recurring vs. one-time expenses
 - Approval workflows
- **Accounting Integration:**
 - Journal entries
 - Account reconciliation
 - Tax compliance tracking

Human Resources

- **Teacher Data:**
 - Qualifications & certifications
 - Class assignments & load
 - Subject expertise
 - Performance reviews
 - Salary history
 - Leave records
- **Smart HR Insights:**
 - "Which teachers have highest student satisfaction?"
 - "Teacher turnover risk: ABC considering outside opportunities"
 - "Salary benchmarking vs market rates"

Operational Intelligence

- **Attendance System:**
 - Daily attendance % (students & staff)
 - Trend analysis (Mondays higher absenteeism?)
 - Correlation with academic performance
 - Seasonal patterns
- **Hostel Management:**
 - Occupancy rates
 - Room assignments
 - Mess expenses per student
 - Hostel revenue tracking
- **Transport Operations:**
 - Route assignments
 - Bus occupancy & utilization
 - Fuel costs per route
 - Driver & vehicle maintenance
- **Inventory (Stock):**
 - Lab equipment availability
 - Library book inventory
 - Supplies stock levels
 - Waste/obsolescence tracking
 - Procurement recommendations

Admission Pipeline

- Full funnel tracking:
 - Enquiries → Follow-ups → Applications → Admissions → Enrolled

- Cancellation reasons & trends
 - Lead source attribution
 - Conversion metrics by source
 - Student feedback from enquiry stage
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Advanced AI Capabilities

6. Predictive & Prescriptive Intelligence

Predictive Models

- **Student Success Prediction:**
 - Identify at-risk students early (based on attendance, fees, engagement)
 - Predict class performance (who will score <50%?)
 - Dropout risk scoring with intervention recommendations
- **Financial Forecasting:**
 - Predict fee defaults (which students likely won't pay?)
 - Cash flow forecasting (when will we face liquidity crunch?)
 - Expense anomaly detection (unusual spending patterns)
- **Operational Forecasting:**
 - Predict peak admission seasons
 - Forecast staff turnover
 - Anticipate maintenance needs

Prescriptive Recommendations

- Not just "what happened" → "what should we do"
- Examples:
 - "Increase Class XI fees by 8% (aligned with inflation + value add).
Expected impact: +₹12L revenue, retention risk: <2%"

- "Launch evening coaching center for Class XII.
Investment: ₹8L, Projected revenue: ₹15L/year, Breakeven: 8 months"
- "Implement online fee payment.
Expected benefit: Reduce collection delays by 40 days = ₹25L working capital relief"