

Analytics Dashboard Implementation Complete

Issue Resolved

Fixed the “Failed to load analytics” error by implementing a comprehensive analytics API endpoint and ensuring full compatibility with the existing frontend dashboard.

What Was Implemented

1. Analytics API Endpoint

- **Location:** /app/api/admin/analytics/overview/route.ts
- **Method:** GET with query parameter `period` (7, 30, 90, 365 days)
- **Authentication:** Admin-only access with proper session validation
- **Performance:** Parallel database queries for optimal response time

2. Comprehensive Metrics Calculated

User Overview Stats

- Total Users
- Active Users (last 7 days)
- New Users (within selected period)
- Trial Users (FREE tier with active trial)
- Premium Users
- Pro Users
- Onboarding Completed count
- Locked Accounts count

Engagement Metrics

- Total Sessions
- Total Page Views
- Total Video Watches
- Total Drill Completions
- Total Matches Played
- Average Session Duration
- Total AI Conversations
- Total Mental Training Sessions

Revenue Analytics

- Total Revenue (converted from cents to dollars)
- Monthly Recurring Revenue (MRR) estimate
- Total Payments count
- Revenue breakdown by subscription tier

Conversion & Retention

- Trial Conversion Rate (%)
- Number of trial conversions
- Churn Rate (%)
- Number of churned users

Growth Trends

- Daily user growth trend
- Daily Active Users (DAU) trend
- Date-based aggregation for charts

Popular Content Analytics

- Top 10 most viewed pages
- Top 10 most completed videos
- Top 10 most completed drills
- Top 5 most earned achievements

3. Data Visualization Ready

- **Charts Supported:** Line charts, bar charts, pie charts with Recharts
- **Responsive Design:** Mobile-friendly layout
- **Date Filters:** 7, 30, 90, 365 days
- **Interactive Elements:** Hover states, tooltips, trend indicators

4. Error Handling & Resilience

- Proper TypeScript typing for all Prisma queries
- Fallback values for all metrics (0 when no data)
- Graceful handling of missing data
- Comprehensive error logging
- Database connection cleanup

🎯 Frontend Features Available

Analytics Dashboard Sections

1. **Overview Cards:** 8 key metrics with gradient backgrounds and icons
2. **Revenue Overview:** Total revenue, MRR, revenue by tier chart
3. **Engagement Metrics:** Page views, sessions, videos, drills with icons
4. **Conversion Metrics:** Trial conversion, churn rates, payments, matches
5. **Growth Charts:** User growth trend and DAU trend line charts
6. **Popular Content:** Most viewed pages, popular videos, top drills
7. **Achievement Stats:** Most earned achievements with trophy icons

Visual Enhancements

- **Color Coded Cards:** Different gradients for each metric type
- **Icons:** Lucide React icons for visual context
- **Charts:** Responsive Recharts components
- **Badges:** Color-coded badges for counts and statuses
- **Period Selector:** Dropdown to change time range

Mobile Responsive

- Grid layouts adapt to screen size
- Cards stack properly on mobile
- Charts remain readable on small screens
- Touch-friendly controls

Database Tables Used

- `User` - User accounts and subscription data
- `UserSession` - Session tracking and duration
- `PageView` - Page navigation analytics
- `VideoInteraction` - Video engagement data
- `DrillCompletion` - Training drill analytics
- `Match` - Game match statistics
- `Payment` - Revenue and subscription payments
- `Achievement` & `UserAchievement` - Gamification data
- `AIConversation` - AI coach interactions
- `MentalSession` - Mental training engagement

Performance Optimizations

- **Parallel Queries:** All analytics calculated simultaneously
- **Indexed Queries:** Database queries use proper indexes
- **Date Filtering:** Efficient date range queries
- **Data Aggregation:** Server-side calculations minimize data transfer
- **Connection Management:** Proper Prisma client cleanup

Security Features

- **Admin Authentication:** Requires ADMIN role for access
- **Session Validation:** Server-side session verification
- **Input Validation:** Period parameter validation
- **Error Sanitization:** Safe error messages without internal details

User Experience

- **Loading States:** Spinner during data fetch
- **Error States:** Clear error messages
- **Empty States:** Graceful handling of no data
- **Interactive Charts:** Hover tooltips and legends
- **Date Range Filters:** Easy period selection

Testing Status

- **Build:**  Successfully compiled
- **TypeScript:**  All type errors resolved

- **API Structure:**  Matches frontend expectations
- **Database Queries:**  Optimized and indexed
- **Error Handling:**  Comprehensive coverage



Ready for Use

The analytics dashboard is now fully functional and ready to provide comprehensive insights into:

- User growth and engagement patterns
- Revenue trends and subscription metrics
- Feature usage and content popularity
- Conversion rates and retention analytics
- Training and coaching effectiveness

The admin can now access detailed analytics through the Admin Dashboard → Analytics tab with rich visualizations and actionable insights.