Intellaica AI Tutor Platform

1. Scope Document

1.1. Project Overview

Intellaica is an AI-based educational platform designed to enhance classroom engagement and streamline academic support. By integrating large language models (LLMs) with textbooks, Intellaica generates personalized study guides, in-class activities, and manages various administrative tasks such as attendance tracking and assignment feedback. The platform aims to support both students and professors by automating routine tasks and offering intelligent, interactive learning aids.

1.2. Objectives

- **Enhance Learning:** Provide personalized study guides and interactive in-class activities tailored to the course textbooks.
- **Automate Classroom Management:** Track attendance automatically using timestamps and user IDs; assign engagement points based on participation.
- **Facilitate Communication:** Allow students to ask professors generic questions, access quiz codes, and receive timely reminders about upcoming exams.
- **Support Assessment:** Enable assignment uploads, deliver preliminary grading, and offer feedback on areas for improvement.

1.3. Target Audience

- **Students:** Seeking a more interactive and tailored learning experience.
- **Professors/Instructors:** Wanting to reduce administrative overhead and enhance classroom engagement.
- **Academic Administrators:** Looking for a centralized platform to monitor class performance and engagement metrics.

1.4. Key Features and Functionalities

- **Study Guide Generator:** Uses course textbooks and LLMs to create customized study guides.
- **In-Class Activity Module:** Offers interactive activities based on current lesson material.

- **Attendance Tracker:** Automatically marks attendance by matching timestamps and user IDs.
- **Engagement Points System:** Rewards students with points for participation (questions answered, activities completed).
- **Q&A Chatbot:** Allows students to ask generic questions about missed classes or course content.
- **Exam & Quiz Reminders:** Sends automated reminders about upcoming assessments.
- **Assignment Module:** Lets students upload assignments, receive preliminary grades, and get feedback on improvement areas.

1.5. Functional Requirements

- **User Authentication:** Secure login for students, professors, and administrators.
- **Data Integration:** Ability to integrate with textbook repositories and learning management systems.
- **Real-Time Data Processing:** For attendance and engagement tracking.
- **AI/LLM Integration:** For dynamic study guide generation, grading, and feedback.
- **Notification System:** To send reminders and alerts via email or in-app messages.
- **Analytics Dashboard:** To display attendance, engagement points, and performance metrics for both students and faculty.

1.6. Non-Functional Requirements

- **Scalability:** Handle an increasing number of users and data volume.
- **Security:** Ensure user data privacy, secure authentication, and compliance with educational data protection standards.
- **Usability:** Intuitive UI/UX design to promote ease of use for all user roles.
- **Performance:** Fast response times for real-time interactions and AI processing.

1.7. User Roles & Permissions

- **Students:** Access study materials, participate in activities, submit assignments, and view feedback.

Intellaica®

- **Professors:** Create and manage content, monitor attendance and engagement, review assignments, and respond to student queries.
- **Administrators:** Oversee platform operations, manage user accounts, and access analytical reports.

1.8. Deliverables

- Detailed system architecture and API specifications.
- Front-end interface (responsive web or mobile app).
- Back-end services for AI integration, database management, and notification services.
- User documentation and training materials.
- Testing and QA reports.
- Deployment plan and maintenance guidelines.

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2. User Flow

2.1. Registration and Login Flow

1. **Welcome Screen:** Options for "Student," "Professor," or "Administrator."
2. **User Registration:** Input personal details, validate credentials, and verify via email.
3. **User Login:** Secure authentication leading to personalized dashboards.

2.2. Dashboard Navigation Flow

1. **Main Dashboard:** Overview of notifications, upcoming exams, recent activities, and key metrics (e.g., engagement points, attendance summary).
2. **Navigation Menu:** Accessible tabs for:
    - **Study Guides**
    - **Class Activities**
    - **Attendance/Engagement**
    - **Assignments**
    - **Q&A**

- **Settings/Notifications**

2.3. Study Guide Generation Flow

1. **Select Course/Chapter:** User chooses textbook and chapter.
2. **Input Parameters:** Option to select difficulty level, key topics, or specific learning objectives.
3. **Generate Study Guide:** LLM processes the input and returns a detailed study guide.
4. **View/Download:** Option to view on-screen or download as PDF.

2.4. Attendance & Engagement Flow

1. **Automatic Check-In:** At class start, system logs attendance using timestamp and user ID.
2. **In-Class Activity Participation:** Real-time logging of participation via answered questions or completed activities.
3. **Engagement Points Update:** Points are updated on the dashboard immediately after participation.

2.5. Assignment Submission & Feedback Flow

1. **Assignment Upload:** Students upload documents or code files.
2. **Preliminary AI Grading:** System processes submission and provides initial grades.
3. **Feedback Module:** Detailed feedback highlighting strengths and areas for improvement.
4. **Review & Resubmit (Optional):** Students can review feedback and resubmit assignments if needed.

2.6. Q&A and Communication Flow

1. **Access Q&A Chat:** Students open a chat interface to ask generic questions.
2. **Query Processing:** AI or queued to professor if more complex.
3. **Response:** Answers are delivered in real-time or during designated office hours.
4. **Notification:** Students receive a follow-up reminder if the query is answered later.

2.7. Reminders and Notifications Flow

1. **Exam/Quiz Scheduling:** Professors enter exam dates and quiz schedules.

2. **Automated Reminder Generation:** System sends notifications to students a predefined time before the event.
3. **Confirmation:** Students can acknowledge receipt of the reminder.

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3. Wireframes

Below are textual descriptions of key screen layouts. These sketches serve as preliminary concepts for the UI design.

I. Home/Dashboard Wireframe

- **Header:** Logo, user profile, notifications icon.
- **Sidebar/Menu:** Vertical menu with options for Dashboard, Study Guides, Activities, Attendance, Assignments, Q&A.
- **Main Content Area:**
  - **Overview Cards:** Display engagement points, attendance summary, upcoming exam reminders.
  - **Quick Access:** Buttons for “Generate Study Guide” and “Upload Assignment.”
  - **Activity Feed:** Recent class activities and professor announcements.

1. Dashboard Screen

pgsql Copy

```
+-------------------------------------------------------------+
| Intellaica                    [User: John Doe] [🔔 (3)]     |
+-------------------------------------------------------------+
|  Dashboard  |  Study Guides  |  Activities  |  Assignments  |
|  Attendance |  Q&A           |  Settings    |               |
+-------------------------------------------------------------+
|  Engagement Points: 85          Attendance: 90%             |
|  Upcoming Exam: Math 101 - Oct 25                           |
+-------------------------------------------------------------+
| Quick Actions:                                              |
|  [Generate Study Guide]   [Upload Assignment]               |
+-------------------------------------------------------------+
| Recent Activity Feed:                                       |
|  • Study guide for Chapter 2 generated                      |
|  • Assignment feedback available                            |
|  • Professor posted a reminder for upcoming quiz            |
+-------------------------------------------------------------+
```

II. Study Guide Page Wireframe

- **Header:** Course title and textbook reference.
- **Navigation Bar:** Options for chapters or sections.
- **Content Area:**
    - **Study Guide Panel:** Generated content with key summaries, bullet points, and highlighted sections.
    - **Download Button:** Option to export the study guide.
    - **Interactive Sidebar:** Links to additional resources or further reading.

2. Study Guide Generation Screen

yaml Copy

```
+-------------------------------------------------------------+
| Intellaica               Study Guide Generator              |
+-------------------------------------------------------------+
| Course: [Dropdown: Math 101]      Chapter: [Dropdown: 2]    |
| Difficulty Level: [Easy | Medium | Hard]                    |
| Key Topics:  [_______________]  [Select multiple topics]    |
+-------------------------------------------------------------+
|                  [ Generate Study Guide ]                   |
+-------------------------------------------------------------+
| Generated Study Guide:                                      |
|  - Topic 1: Key Concepts...                                 |
|  - Topic 2: Detailed Summaries...                           |
|  - Topic 3: Example Problems...                             |
|  [Download PDF]                                             |
+-------------------------------------------------------------+
```

1. Digital Text Extraction & Content Analysis

- **Digitize and Parse Textbooks:**
  Convert textbooks into digital text if not already available. Use OCR for printed materials, or directly parse eBook/PDF formats.
- **Content Extraction:**
  Utilize natural language processing (NLP) techniques to extract chapter titles, subheadings, key topics, summaries, definitions, and example problems. This data forms the backbone of the study guide.
- **Automated Summarization:**
  Integrate large language models (LLMs) to generate summaries and key takeaways from each chapter. Tailor the summarization process to align with the course's learning objectives.

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2. Customization & Integration

- **Course-Specific Adaptation:**
  Allow professors to input or adjust parameters such as learning outcomes,

important topics, or areas needing deeper focus. This ensures the automated study guide complements the specific course structure.

- **Dynamic Linking:**
  Embed links or references within the study guide that point directly to relevant textbook sections. For example, a summary bullet can include "See Chapter 3, Section 2 for a detailed explanation."
- **Annotation & Feedback Loop:**
  Implement a feature where instructors can annotate generated study guides with additional insights or corrections. This human oversight improves quality and relevance over time.

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3. Technical Integration Strategies

- **API Integrations with Publishers:**
  If available, integrate directly with textbook publishers' APIs to access updated content, tables of contents, and metadata. This can automate updates to the study guides as textbooks are revised.
- **Syllabus Sync:**
  Align study guide generation with the course syllabus. The system can schedule and prioritize content extraction based on upcoming topics and lectures, ensuring that study guides are both timely and contextually relevant.
- **Interactive Elements:**
  Allow students to interact with the study guide—for example, clicking on a summarized topic to view more detailed content from the textbook. This creates a seamless learning experience that bridges automated summaries with in-depth textbook material.

Example Workflow

1. **Textbook Integration:**
   - Instructors upload digital textbooks or provide links/API access.
   - The system parses the content, extracts key sections, and identifies core topics.
2. **Study Guide Generation:**

- Using LLMs, the platform generates a preliminary study guide with chapter summaries, key points, and practice questions.
- Instructors review and modify the generated content as needed.

3. **Final Integration & Distribution:**
   - The approved study guide is integrated into the course portal, dynamically linking each summary to the corresponding textbook section.
   - Students can access the study guide, with options to drill down into textbook content for deeper understanding.

1. Study Guides Overview Screen

pgsql Copy

```
+-------------------------------------------------------------------------------+
| Intellaica - Study Guides                                                     |
+-------------------------------------------------------------------------------+
| [Home]  [Courses]  [My Study Guides]  [Settings]                              |
+-------------------------------------------------------------------------------+
| Course: Biology 101                              [Search Study Guides]        |
+-------------------------------------------------------------------------------+
| Chapters List                    |  Study Guide Preview                       |
|----------------------------------/-------------------------------------------|
| • Chapter 1: Cell Structure      |  "Cell Structure" Summary                  |
| • Chapter 2: Genetics            |  - Overview of cell components             |
| • Chapter 3: Evolution           |  - Key terms and definitions               |
| • Chapter 4: Ecology             |  - Interactive quizzes & flashcards        |
|                                  |  [View Full Guide]                         |
+-------------------------------------------------------------------------------+
```

Description:

This screen offers an overview of available study guides for a course. The left panel lists chapters from the adopted textbook, while the right panel previews the study guide summary for the selected chapter. A search bar helps students quickly find specific guides.

2. Detailed Study Guide Screen

```sql
+-------------------------------------------------------------------------------
| Intellaica - Study Guide: Cell Structure
+-------------------------------------------------------------------------------
| [Back]   [Download PDF]   [Annotate]
+-------------------------------------------------------------------------------
| Study Guide Content:
|   - Overview: Cells are the fundamental units of life...
|   - Key Concepts: Membrane structure, nucleus, organelles...
|   - Visuals: [Diagram of a cell]
|   - Interactive Questions: [Q1] [Q2] [Q3]
+-------------------------------------------------------------------------------
| Integrated Textbook Reference:
|   "For detailed explanations, see Biology 101, Chapter 1, Page 45."
|   [View Textbook Section]
+-------------------------------------------------------------------------------
```

Description:

Once a chapter is selected, this detailed screen presents the generated study guide content. It includes a summary, key concepts, visuals, and interactive questions. A dedicated section links directly to the corresponding textbook section, ensuring seamless integration of course materials.

3. Interactive Study Guide Screen

```vbnet
+-------------------------------------------------------------------------------
| Intellaica - Interactive Study Guide: Genetics - Gene Expression
+-------------------------------------------------------------------------------
| [Back]   [Start Flashcards]   [Take Quiz]
+-------------------------------------------------------------------------------
| Summary:
|   - Gene expression is the process by which information from a gene is used
|     synthesize functional gene products like proteins...
|
| Interactive Elements:
|   • Flashcards to review key terms
|   • Practice Quiz to test comprehension
+-------------------------------------------------------------------------------
| More from Your Textbook:
|   "Refer to Genetics, Chapter 3, Section 2 for an in-depth discussion."
|   [Go to Textbook Section]
+-------------------------------------------------------------------------------
```

Description:

This screen emphasizes interactivity with study guides. It offers flashcards and quizzes that reinforce the material on gene expression. A direct link to the corresponding textbook section provides additional context, supporting deeper learning.

III. Attendance & Engagement Screen Wireframe

- **Header:** Class title and session date/time.
- **Attendance Section:** Real-time status list showing student names, check-in times, and engagement points.
- **Graphical Summary:** Visual chart/graph representing class participation levels.
- **Action Panel:** Option for professors to adjust points manually or view detailed logs.

3. Attendance & Engagement Screen

yaml Copy

```
+-------------------------------------------------------------+
| Intellaica                Attendance & Engagement           |
+-------------------------------------------------------------+
| Session: Math 101 | Date: Oct 20, 2025  | Time: 09:00 AM    |
+-------------------------------------------------------------+
| Attendance List:                                            |
|  [✓] John Doe          [✓] Jane Smith                       |
|  [✓] Alex Brown        [✗] Emily White                      |
+-------------------------------------------------------------+
| Engagement Points:                                          |
|  • John Doe: 15 pts    • Jane Smith: 12 pts                 |
|  • Alex Brown: 10 pts   • Emily White: 0 pts                |
+-------------------------------------------------------------+
| [View Detailed Participation Graph]                         |
+-------------------------------------------------------------+
```

1. Tracking Engagement in Class

- **Real-Time Participation Metrics:**
  Develop a dashboard that logs every student's activity, including login times, the frequency and speed of responses to in-class polls or quizzes, and participation in Q&A sessions. Each interaction can be awarded engagement points.
- **Automated Attendance & Interaction Logs:**
  Use time-stamped check-ins along with activity logs. For instance, when a student answers a question or participates in a discussion, the system records the response along with the timestamp and user ID. This data can be aggregated to generate an overall engagement score.
- **Adaptive Analytics:**
  Incorporate machine learning models to analyze student sentiment and response quality. This can include natural language processing (NLP) to assess the depth of student questions or comments, ensuring the system values both quantity and quality of engagement.
- **Gamification Elements:**
  Implement leaderboards, badges, or achievement notifications that reward

continuous engagement. Visual feedback and rewards can motivate students to participate actively during class.

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2. In-Class Activity Simulations for Specific Classes

- **Customizable Simulation Modules:**
  Create subject-specific simulation modules. For example:
  - **Math/Science:** Interactive problem-solving challenges or virtual lab experiments where students input answers and see real-time feedback.
  - **History/Literature:** Role-playing scenarios or debate simulations where students assume historical roles or analyze texts through guided prompts.
  - **Language Learning:** Conversation simulations with AI that adapt to the student's proficiency level, prompting real-life scenarios or cultural immersion exercises.
- **Scenario-Based Learning:**
  Design interactive simulations that mimic real-world situations relevant to the course. For example, a business class could simulate a market crash or a negotiation scenario, allowing students to apply theoretical knowledge in a practical setting.
- **Dynamic Content Generation:**
  Leverage LLMs to generate on-the-fly questions or scenarios based on the course textbook and lesson plan. This ensures that the activities remain current and can be tailored to the specific topics covered in class.
- **Integrated Feedback Loop:**
  After each simulation, provide immediate feedback—both automated and instructor-reviewed—highlighting areas of strength and opportunities for improvement. This loop not only reinforces learning but also helps in fine-tuning the simulation for future sessions.

Implementation Example

1. **During Class:**
   - The teacher launches a simulation module on the platform.

- Students receive a prompt on their devices, and as they interact (e.g., answering quiz questions or engaging in a simulated debate), the system tracks each interaction and awards points in real-time.

2. **After Class:**
    - The platform compiles engagement data and simulation results, presenting them in an analytics dashboard.
    - Professors review the aggregated data, identify trends (e.g., common areas of difficulty), and adjust the lesson plan or simulation parameters for subsequent sessions.

This multi-pronged approach ensures that you can both monitor engagement effectively and deliver interactive, immersive learning experiences tailored to the unique needs of each class. Let me know if you'd like to explore any specific component further!

Engagement & Simulation Screen Sample

pgsql Copy

```
+-------------------------------------------------------------------------------+
| Intellaica                          Engagement & Simulation                   |
+-------------------------------------------------------------------------------+
| Class: Math 101              Session: Oct 20, 2025, 09:00 AM                  |
| Instructor: Dr. Smith                                                  [⚙]|
+-------------------------------------------------------------------------------+
| [Simulation Module: Interactive Quiz]     [Start Simulation]                  |
+-------------------------------------------------------------------------------+
| Simulation Activity Area:                                                     |
| ----------------------------------------------------------------------------- /
| Q1: "What is 7 x 8?"                                                          |
| [          Your Answer Here          ]  [Submit Answer]                      |
| ----------------------------------------------------------------------------- /
| Feedback: "Correct! Well done."                                               |
+-------------------------------------------------------------------------------+
| Real-Time Engagement Metrics:                                                 |
|  • John Doe: 15 pts    • Jane Smith: 12 pts    • Alex Brown: 10 pts           |
|  • Emily White: 8 pts    • Michael Green: 14 pts                              |
+-------------------------------------------------------------------------------+
| Graphical Engagement Overview:                                                |
| [Line Chart: Engagement Trend over Last 10 Minutes]                           |
+-------------------------------------------------------------------------------+
| Notifications & Announcements:                                                |
|  • New question available: "Solve: 12 x 9"                                    |
|  • Assignment deadline in 2 days                                              |
+-------------------------------------------------------------------------------+
```

Explanation of Key Elements

- **Header:**
  Displays the platform name, screen title ("Engagement & Simulation"), class details, and a settings icon.
- **Simulation Module Controls:**
  Includes a module selection (e.g., "Interactive Quiz") and a button to start the simulation session.
- **Simulation Activity Area:**
  A dedicated area where the current simulation question is displayed along with an

input box for student answers and a submit button. Immediate feedback (e.g., "Correct! Well done.") is shown below.

- **Real-Time Engagement Metrics:**
  Lists student names alongside their current engagement points. These are updated live as students participate.
- **Graphical Engagement Overview:**
  A placeholder for a line chart that visualizes engagement trends over the session, helping instructors spot patterns or dips in activity.
- **Notifications & Announcements:**
  A section that highlights relevant alerts such as new questions being available or upcoming assignment deadlines.

IV. Assignment Submission Page Wireframe

- **Header:** Assignment title and due date.
- **Submission Form:**
  - **File Upload Area:** Drag-and-drop or select file button.
  - **Submission Notes:** Text box for additional comments.
  - **Submit Button:** To upload and trigger AI grading.
- **Feedback Section:** Post-submission, this area displays preliminary grades and detailed feedback points.

Workflow Overview

1. **Assignment Creation:**
   The professor creates an assignment and enters basic details (title, instructions, due date).
2. **Rubric Setup:**
   A dedicated "Set Rubric" button takes the professor to a rubric builder where they can add and customize criteria.
3. **Criteria Definition:**
   Professors define specific criteria (e.g., Clarity, Analysis, Organization) with weight percentages and score ranges or qualitative descriptors (e.g., Excellent, Good, Fair, Poor).

4. **Review & Save:**
   The rubric is previewed in a summary table format. Once satisfied, the professor saves the rubric to be attached to the assignment. Students will see the rubric when submitting their work and receiving feedback.

1. Assignment Details Screen

```sql
+-------------------------------------------------------------+
| Intellaica - New Assignment                                 |
+-------------------------------------------------------------+
| Assignment Title: [Essay on Quantum Physics]                |
| Due Date:         [Oct 30, 2025]                            |
| Instructions:     [Provide a detailed analysis of the ...] |
+-------------------------------------------------------------+
| [Set Rubric]                                          [Save]|
+-------------------------------------------------------------+
```

Description:

This screen allows the professor to enter the assignment's key details. The "Set Rubric" button opens the rubric configuration screen.

2. Rubric Setup Screen

yaml Copy

```
+-------------------------------------------------------------+
| Intellaica - Rubric Builder for "Essay on Quantum Physics"   |
+-------------------------------------------------------------+
| [Back]                    [Save Rubric]                     |
+-------------------------------------------------------------+
| Add New Criterion: [____________________]  [Add Criterion]     |
+-------------------------------------------------------------+
| Current Rubric Criteria:                                    |
| ----------------------------------------------------------  |
| Criterion                | Weight (%) | Score Levels         |
| ----------------------------------------------------------  |
| Clarity of Expression    |   30%    | Excellent: 90-100    |
|                          |          | Good: 80-89          |
|                          |          | Fair: 70-79          |
|                          |          | Poor: <70            |
| ----------------------------------------------------------  |
| Depth of Analysis        |   30%    | Excellent: 90-100    |
|                          |          | Good: 80-89          |
|                          |          | Fair: 70-79          |
|                          |          | Poor: <70            |
| ----------------------------------------------------------  |
| Organization & Structure |   20%    | Excellent: 90-100    |
|                          |          | Good: 80-89          |
|                          |          | Fair: 70-79          |
|                          |          | Poor: <70            |
| ----------------------------------------------------------  |
| Research & References    |   20%    | Excellent: 90-100    |
|                          |          | Good: 80-89          |
|                          |          | Fair: 70-79          |
|                          |          | Poor: <70            |
| ----------------------------------------------------------  |
```

Description:

This screen provides a dynamic interface where professors can add new criteria using an input field and “Add Criterion” button. Existing criteria are listed in a table where weight percentages and score ranges (or descriptive levels) are defined for each criterion.

3. Rubric Review & Edit Screen

yaml Copy

```
+-------------------------------------------------------------+
| Intellaica - Review Rubric for "Essay on Quantum Physics"    |
+-------------------------------------------------------------+
| [Edit Criteria]                  [Confirm & Save Rubric]    |
+-------------------------------------------------------------+
| Rubric Summary:                                              |
|  • Clarity of Expression: 30%                               |
|       - Excellent: 90-100, Good: 80-89, Fair: 70-79, Poor: <70  |
|  • Depth of Analysis: 30%                                   |
|       - Excellent: 90-100, Good: 80-89, Fair: 70-79, Poor: <70  |
|  • Organization & Structure: 20%                            |
|       - Excellent: 90-100, Good: 80-89, Fair: 70-79, Poor: <70  |
|  • Research & References: 20%                               |
|       - Excellent: 90-100, Good: 80-89, Fair: 70-79, Poor: <70  |
+-------------------------------------------------------------+
```

Description:

After setting up the rubric, this review screen provides a concise summary of all criteria and their respective weights and scoring details. Professors can choose to “Edit Criteria” to make changes or confirm the rubric by clicking “Confirm & Save Rubric.”

4. Assignment Submission Screen

```
pgsql                                                          Copy

+-------------------------------------------------------------+
| Intellaica                  Assignment Submission            |
+-------------------------------------------------------------+
| Assignment: Essay on Quantum Physics                         |
| Due Date: Oct 30, 2025                                        |
+-------------------------------------------------------------+
| [Drag and drop file here]   or   [Select File]               |
|                                                              |
| Additional Comments: [_____________________________]         |
+-------------------------------------------------------------+
|                   [Submit Assignment]                        |
+-------------------------------------------------------------+
| Post-Submission:                                             |
|  • Preliminary Grade: 85%                                    |
|  • Feedback: "Good explanation of core concepts;             |
|               improve clarity in sections 3 and 4."          |
+-------------------------------------------------------------+
```

V. GROUP BREAK-OUT ROOMS

In-Class Group Breakout Rooms

Overview

Intellaica's breakout rooms allow instructors to form groups during class for collaborative exercises, discussions, or problem-solving sessions. Instructors can either pre-assign groups or let the system randomly group students. Each group gets a dedicated virtual room with a shared workspace, real-time chat, and interactive exercises. Group performance and engagement are tracked, and scores are updated live, giving professors insight into each group's progress and participation.

Key Features

- **Dynamic Group Formation:**
  Instructors can pre-assign or automatically generate groups based on class size and performance data.

- **Dedicated Virtual Rooms:**
  Each group is provided with its own breakout room featuring a group chat, shared workspace, and collaborative tools.
- **Interactive Group Exercises:**
  Exercises can be designed specifically for group participation, such as problem-solving challenges, case studies, or debates.
- **Real-Time Score Tracking:**
  Engagement and performance metrics are tracked in real-time, with each group's score reflecting participation, timely responses, and quality of collaboration.
- **Instructor Monitoring:**
  A central dashboard allows the professor to monitor group activities, adjust scores if needed, and provide feedback during or after the session.

1. Breakout Room Setup Screen

```pgsql
+-------------------------------------------------------------------------------+
| Intellaica - In-Class Group Breakout Rooms                                    |
+-------------------------------------------------------------------------------+
| [Home]  [Courses]  [Breakout Rooms]  [Settings]                               |
+-------------------------------------------------------------------------------+
| Class: Math 101                                                               |
| Instructor: Dr. Smith                                [Create New Breakout Session]  |
+-------------------------------------------------------------------------------+
| Group Formation Options:                                                      |
|  [Pre-assigned Groups]   [Random Grouping]                                    |
+-------------------------------------------------------------------------------+
| Current Groups:                                                               |
|  Group 1: John, Jane, Alex                                                   |
|  Group 2: Emily, Michael, Sarah                                              |
|  Group 3: David, Maria, Peter                                                |
+-------------------------------------------------------------------------------+
| [Start Breakout Session]                                                      |
+-------------------------------------------------------------------------------+
```

Description:

This screen enables the professor to set up a new breakout session. It shows group formation options, lists current groups, and includes a button to start t↓ession.

2. Breakout Room Activity Screen

```pgsql
+-------------------------------------------------------------------------------+
| Intellaica - Breakout Room: Group 1 (Math 101 Exercise)                       |
+-------------------------------------------------------------------------------+
| [Back to Session Overview]    [Group Chat]    [Shared Workspace]              |
+-------------------------------------------------------------------------------+
| Group Exercise: Solve the following problem:                                  |
| "Prove that the sum of angles in a triangle is 180°."                         |
+-------------------------------------------------------------------------------+
| Group Score: 85 pts (Updated in real-time based on activity and responses)    |
+-------------------------------------------------------------------------------+
| Activity Feed:                                                                |
|  - John: "Let's break this down."                                             |
|  - Jane: "I think we should start with drawing a diagram."                    |
+-------------------------------------------------------------------------------+
| [Submit Group Response]                                                       |
+-------------------------------------------------------------------------------+
```

Description:

This screen represents a single group's breakout room. It features the exercise prompt, a live group score, an activity feed for real-time chat, and options to navigate back to the session overview or submit the group's response.

VI. Q&A Chat Interface Wireframe

- **Chat Window:** Central conversation pane showing ongoing dialogue.
- **Input Area:** Text box at the bottom with a “Send” button.
- **Sidebar:** List of frequently asked questions and past queries.
- **Notification Badge:** Indicates new responses or professor follow-up.

5. Q&A Chat Interface Screen

```pgsql
+-------------------------------------------------------------+
| Intellaica                          Q&A Chat                |
+-------------------------------------------------------------+
| Chat with Professor/AI Tutor                                |
+-------------------------------------------------------------+
| [John Doe]: "Can I get clarification on slide 5?"           |
| [AI Response]: "Certainly, here's a summary of slide 5..."  |
|-------------------------------------------------------------/
| [Jane Smith]: "What was discussed in the last class?"       |
| [Professor]: "A summary has been posted in the resources."  |
+-------------------------------------------------------------+
| Type your question here: [_____________________________]  [Send]|
+-------------------------------------------------------------+
```

VII. Attendance & Grades Export

Overview

Intellaica provides a comprehensive dashboard for tracking attendance and academic performance, with the capability to export detailed reports for further analysis or record keeping. This functionality allows educators to:

- **Monitor Attendance:** View real-time and historical attendance records for each class session.
- **Track Grades:** Review overall performance including exam scores, assignment grades, and participation points.
- **Export Reports:** Export the data as CSV or PDF files for record-keeping, reporting, or sharing with stakeholders.

Key Features

- **Dashboard Overview:**
  A unified screen displaying summarized attendance and grades for each student, updated in real time.
- **Detailed Reports:**
  A filterable table where instructors can view detailed student performance over a selected period.

- **Export Options:**
  Options to export data in different formats (CSV, PDF) to support diverse needs such as departmental reporting or archival purposes.

1. Attendance & Grades Dashboard

```less
+-------------------------------------------------------------------------------+
| Intellaica - Attendance & Grades                                              |
+-------------------------------------------------------------------------------+
| [Home]  [Courses]  [Attendance & Grades]  [Settings]                          |
+-------------------------------------------------------------------------------+
| Class: Math 101                                                               |
| Instructor: Dr. Smith                                                         |
+-------------------------------------------------------------------------------+
| Attendance Summary:          |  Grades Summary:                               |
|  - John Doe: 95%             |  - John Doe: A (93%)                           |
|  - Jane Smith: 88%           |  - Jane Smith: B+ (87%)                        |
|  - Alex Brown: 100%          |  - Alex Brown: A- (90%)                        |
|  ...                         |  ...                                           |
+-------------------------------------------------------------------------------+
| [View Detailed Reports]      [Export Data]                                    |
+-------------------------------------------------------------------------------+
```

Description:

This dashboard screen provides an at-a-glance view of both attendance and academic performance for the class. Two summary panels display key metrics, and action buttons let instructors dive into detailed reports or export the data.

2. Detailed Attendance & Grades Report

```less
+-------------------------------------------------------------------------------+
| Intellaica - Detailed Attendance & Grades Report                              |
+-------------------------------------------------------------------------------+
| Filter Options: [Date Range]  [Student Name/ID]  [Class Section]              |
+-------------------------------------------------------------------------------+
| Detailed Table:                                                               |
| ----------------------------------------------------------------------------- |
| Student Name | Attendance % | Exam Grade | Assignment Grade | Total Score |
| ----------------------------------------------------------------------------- |
| John Doe     | 95%          | A (93%)    | A- (90%)         | A (91%)     |
| Jane Smith   | 88%          | B+ (87%)   | B (85%)          | B+ (86%)    |
| Alex Brown   | 100%         | A- (90%)   | A (94%)          | A (92%)     |
| ...          | ...          | ...        | ...              | ...         |
| ----------------------------------------------------------------------------- |
+-------------------------------------------------------------------------------+
| [Export as CSV]   [Export as PDF]                                             |
+-------------------------------------------------------------------------------+
```

Description:

The detailed report screen allows instructors to filter the data by date, student, or class section. The table lists individual performance metrics, and export buttons provide options to download the data in CSV or PDF formats.