# Insight Coding - User Manual

Version 1.0.0

Last Updated: December 13, 2025

# Table of Contents

# 1. Introduction

## 1.1 What is Insight Coding?

**Insight Coding** (Artifact Comparator Platform) is a comprehensive web-based application designed to facilitate systematic evaluation of software artifacts in research environments. The platform addresses a critical need in software engineering research by providing a unified environment for researchers to conduct empirical studies involving the evaluation and comparison of diverse software artifacts.

## 1.2 Why Use Insight Coding?

Traditional artifact evaluation in software engineering research is often:

- **Subjective and inconsistent** - Lacking standardized evaluation methods
- **Time-consuming** - Requiring manual coordination and data collection
- **Fragmented** - Using multiple disconnected tools and platforms

Insight Coding solves these problems by providing:

- **Centralized Study Management** - Create, configure, and monitor research studies from a single platform
- **Standardized Evaluation** - Structured comparison tasks with consistent annotation and rating mechanisms
- **Multi-Role Support** - Dedicated interfaces for researchers, participants, reviewers, and administrators
- **AI-Assisted Tools** - Automated quiz and artifact generation capabilities
- **Data Export & Analytics** - Built-in visualization and data export for research analysis
- **Blinded Evaluation** - Support for unbiased, controlled experimental conditions

## 1.3 Who Should Use This System?

- **Researchers** - Design and conduct artifact evaluation studies, manage participants, analyze results
- **Participants** - Evaluate software artifacts through structured comparison tasks
- **Reviewers** - Review and grade participant submissions
- **Administrators** - Manage platform users, monitor system activity, handle access requests

## 1.4 Key Features

- **User Management**: Secure registration, role-based access control, approval workflows
- **Artifact Management**: Upload, organize, and manage various artifact types (code, diagrams, documents, PDFs)
- **Study Creation**: Customizable study design with questionnaires, quizzes, and evaluation tasks
- **Side-by-Side Comparison**: Interactive artifact comparison with annotation and rating tools

- **Competency Assessment**: Pre-study participant qualification through customizable quizzes
- **AI Integration**: Automated quiz and artifact generation
- **Analytics Dashboard**: Real-time progress monitoring and result visualization
- **Data Export**: Export study results in multiple formats for research analysis
- **Adaptive Task Assignment**: Dynamic task distribution based on participant skill levels

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# 2. System Overview

## 2.1 Architecture

Insight Coding is built using a modern three-tier architecture:

- **Frontend**: React 18.2.0 application with Material-UI components
- **Backend**: Spring Boot 3.2.0 (Java 17) RESTful API
- **Database**: PostgreSQL 15 for persistent data storage

## 2.2 Technology Stack

### Frontend Technologies

- React 18.2.0 - UI framework
- Material-UI (MUI) v7.3.4 - Component library
- React Router v6.20.0 - Navigation
- Axios 1.6.2 - HTTP client
- D3.js - Data visualization
- React-PDF - PDF artifact viewing
- React Syntax Highlighter - Code artifact rendering

### Backend Technologies

- Spring Boot 3.2.0 - Application framework
- Spring Security - Authentication & authorization
- Spring Data JPA - Database access
- PostgreSQL 15 - Database
- Flyway - Database migrations
- JWT - Token-based authentication
- Maven - Build tool

### Deployment

- Docker & Docker Compose - Containerization
- Hot reload support for development

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# 3. System Requirements

## 3.1 Hardware Requirements

### Minimum Requirements

- **CPU**: Dual-core processor (2 GHz or higher)

- **RAM**: 4 GB
- **Storage**: 10 GB free disk space
- **Network**: Broadband internet connection

**Recommended Requirements**

- **CPU**: Quad-core processor (2.5 GHz or higher)
- **RAM**: 8 GB or more
- **Storage**: 20 GB free disk space (SSD preferred)
- **Network**: High-speed internet connection

### 3.2 Software Requirements

**Required Software**

1. **Docker Desktop**
    - Version: 20.10 or higher
    - Download: https://www.docker.com/products/docker-desktop
2. **Docker Compose**
    - Version: 1.29 or higher
    - (Included with Docker Desktop)
3. **Git** (for cloning the repository)
    - Version: 2.30 or higher
    - Download: https://git-scm.com/downloads

### 3.3 Browser Requirements

The application works best with modern web browsers:

- **Google Chrome** (version 90+) - Recommended
- **Mozilla Firefox** (version 88+)
- **Microsoft Edge** (version 90+)
- **Safari** (version 14+)

**Note**: JavaScript must be enabled in your browser.

### 3.4 Operating System Compatibility

- **Windows**: Windows 10/11 (64-bit)
- **macOS**: macOS 10.15 (Catalina) or higher
- **Linux**: Ubuntu 20.04+, Debian 10+, CentOS 8+, or equivalent

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## 4. Installation Guide

### 4.1 Prerequisites Checklist

Before installation, ensure you have:

- Docker Desktop installed and running
- Git installed
- At least 10 GB of free disk space
- Administrative/sudo privileges (if required)

- Internet connection for downloading dependencies

## 4.2 Step-by-Step Installation

**Step 1: Clone the Repository**

Bash

```
# Open a terminal/command prompt and navigate to your desired directory
cd /path/to/your/workspace

# Clone the repository
git clone <repository-url>

# Navigate into the project directory
cd S2-T9
```

**Step 2: Verify Docker Installation**

Bash

```
# Check Docker version
docker --version
# Expected output: Docker version 20.10.x or higher

# Check Docker Compose version
docker-compose --version
# Expected output: docker-compose version 1.29.x or higher

# Verify Docker is running
docker ps
# Should show running containers or empty list (no errors)
```

**Step 3: Review Configuration (Optional)**

The application comes with default configuration. If you need to customize:

Database Configuration (Optional):

Edit docker-compose.yml to change default database credentials:

YAML

```
postgres:
  environment:
    POSTGRES_DB: artifact_comparator
    POSTGRES_USER: admin          # Change if desired
    POSTGRES_PASSWORD: admin123   # Change if desired
```

Port Configuration (Optional):

If ports 3000, 8080, or 5433 are already in use, modify the port mappings in docker-compose.yml:

YAML

```
frontend:
  ports:
    - "3000:3000"  # Change left side to use different host port

backend:
  ports:
    - "8080:8080"  # Change left side to use different host port

postgres:
  ports:
    - "5433:5432"  # Change left side to use different host port
```

**Step 4: Build the Application**

Bash

```
# Build all Docker containers
docker-compose up –build

# This will:
# 1. Download base images (Node, Java, PostgreSQL)
# 2. Install frontend dependencies
# 3. Install backend dependencies
# 4. Create container images
```

**Expected build time**: 5-10 minutes (first time only, depends on internet speed)

**Step 5: Verify Installation**

After building, you should see output similar to:

```
Successfully built <image-id>
Successfully tagged s2-t9_frontend:latest
Successfully built <image-id>
Successfully tagged s2-t9_backend:latest
```

## 4.3 Troubleshooting Installation Issues

**Docker Not Running**

Symptom: Error message "Cannot connect to Docker daemon"

Solution:

1. Start Docker Desktop
2. Wait for Docker to fully initialize (whale icon in system tray)
3. Retry the command

**Port Already in Use**

Symptom: Error message "port is already allocated"

Solution:

1. Stop conflicting services or change port mappings (see Step 3)
2. Run: docker-compose down then retry

**Build Failures**

Symptom: Build errors during docker-compose build

Solution:

1. Ensure stable internet connection
2. Clear Docker cache: docker system prune -a
3. Retry: docker-compose build --no-cache

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# 5. Running the Software

## 5.1 Starting the Application

**Method 1: Using Docker Compose (Recommended)**

**For Windows (PowerShell/CMD):**

Bash

```
# Navigate to project directory
cd C:\Users\PC\OneDrive\Desktop\dev\csproject\S2-T9

# Start all services
docker-compose up
```

**For macOS/Linux:**

Bash

```
# Navigate to project directory
cd /path/to/S2-T9

# Start all services (with startup script)
./start-dev.sh

# Or use docker-compose directly
docker-compose up
```

**Expected Output:**

```
Creating network "s2-t9_app-network" ...
Creating artifact-comparator-db ...
Creating artifact-comparator-backend ...
Creating artifact-comparator-frontend ...

✅ Services started!

Frontend: http://localhost:3000
```

Backend:  http://localhost:8080
Database: localhost:5433

**Method 2: Running in Detached Mode (Background)**

Bash
# Start services in background
docker-compose up -d

# View logs
docker-compose logs -f

# Stop viewing logs (Ctrl+C)

## 5.2 Stopping the Application

Bash
# Stop all running containers (from project directory)
docker-compose down

# Stop and remove volumes (deletes all data - use with caution!)
docker-compose down -v

## 5.3 Accessing the Application

Once the services are running, access the application through your web browser:

1. **Frontend Application**: http://localhost:3000
    - This is the main user interface
2. **Backend API**: http://localhost:8080
    - REST API endpoints (for developers)
3. **Database**: localhost:5433
    - PostgreSQL database (requires database client)

## 5.4 First-Time Setup

**The First Administrator Account**

1. Navigate to http://localhost:3000
2. Username: admin
3. Password: admin123

# 6. User Guide

## 6.1 Getting Started

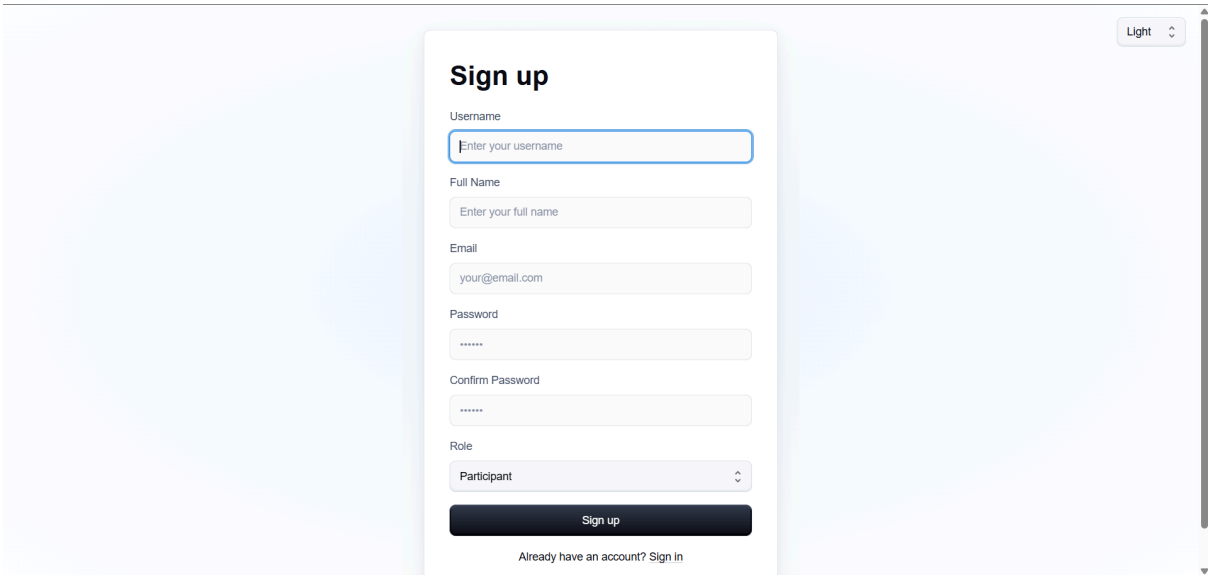
### 6.1.1 Registration and Login

**New User Registration:**

1. Navigate to http://localhost:3000
2. Click **"Sign Up"** (or **"Don't have an account? Sign up"**)
3. Complete the registration form:

- **Full Name**: Enter your full name
- **Email**: Enter a valid email address
- **Password**: Create a strong password
- **Confirm Password**: Re-enter your password
- **Role**: Select your role (Researcher, Participant, Reviewer, or Admin)
- **Country**: Select your country from dropdown
- **Institution** (Optional): Your affiliated organization
- **Agree to Terms**: Check the checkbox

4. Click **"Sign Up"**

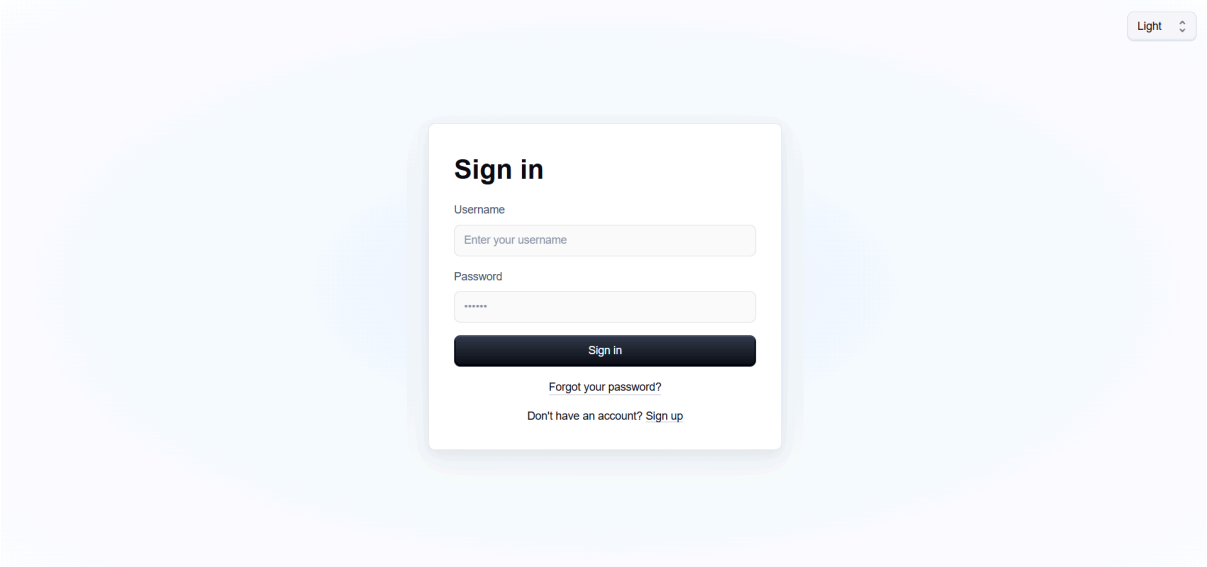



**What happens next:**

- **Researchers & Admins**: Redirected to "Pending Approval" page. Wait for admin approval.
- **Participants**: Automatically approved, can sign in immediately
- **Reviewers**: Automatically approved, can sign in immediately

**Signing In:**

1. Navigate to http://localhost:3000
2. Enter your **Email** and **Password**
3. Click **"Sign In"**
4. You'll be redirected to your role-specific dashboard



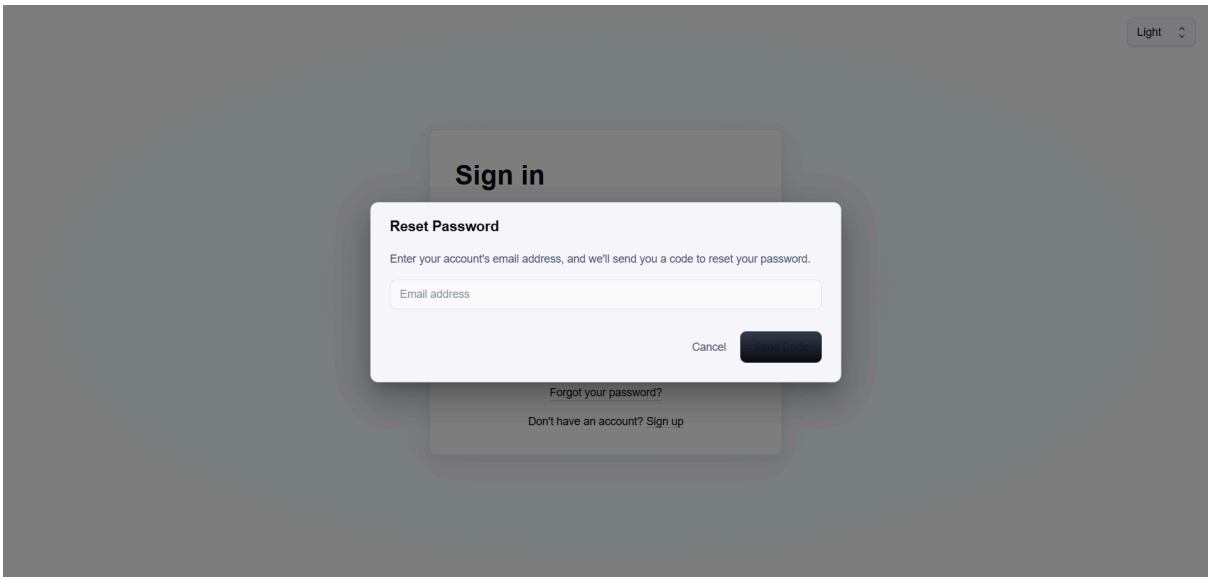

**Account Status:**

- **Pending Approval**: New researchers/admins/reviewers wait for approval
- **Rejected**: Contact administrator for details
- **Active**: Full access to platform features

### 6.1.2 Password Reset

If you forget your password:

1. Click **"Forgot Password?"** on sign-in page
2. Enter your registered email
3. Follow instructions sent to your email
4. Create a new password

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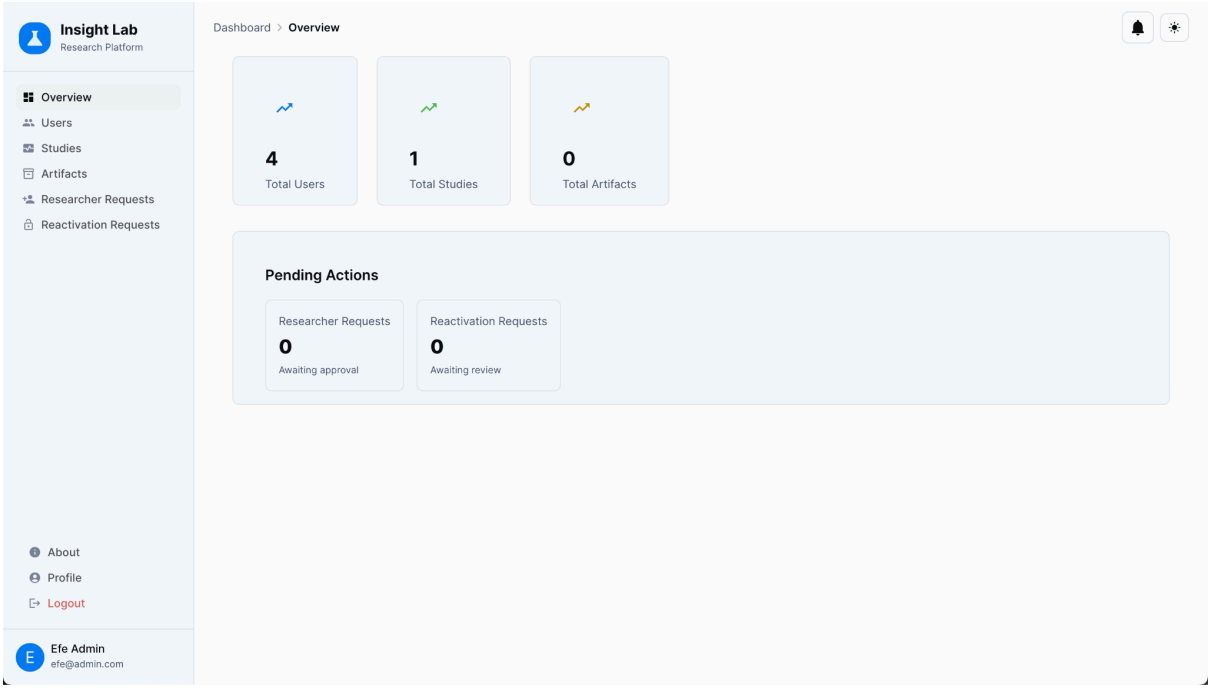
## 6.2 User Roles and Permissions

### 6.2.1 Administrator



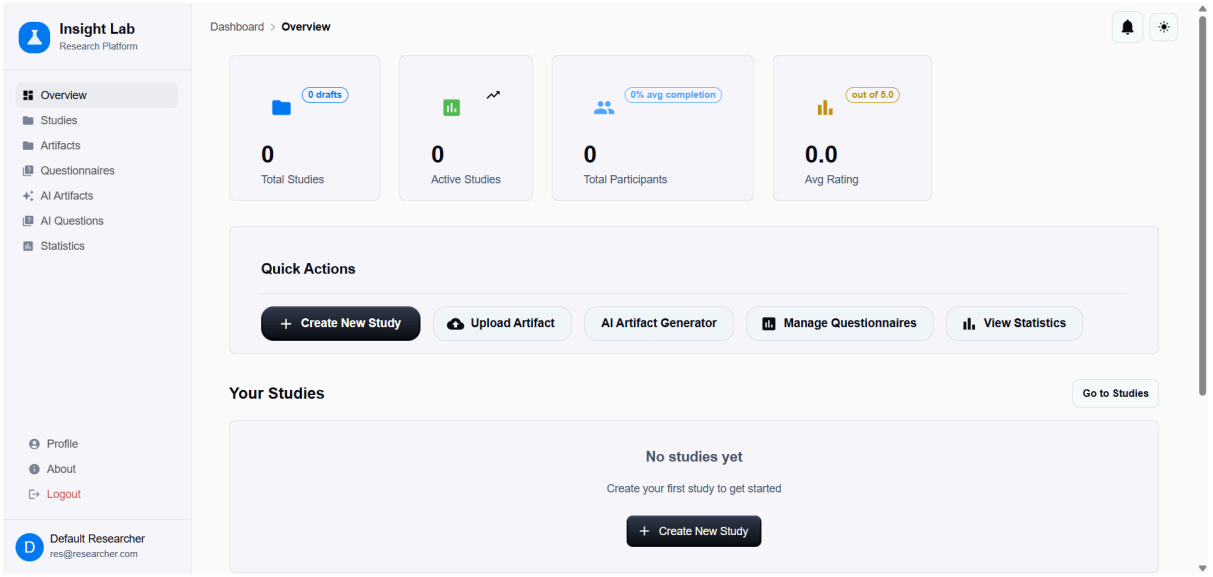

**Responsibilities:**

- Manage platform users and access requests
- Monitor system-wide activity and studies
- Handle user approval/rejection/reactivation
- Configure system settings

**Key Capabilities:**

- Approve/reject researcher and admin registration requests
- Activate/deactivate user accounts
- View all studies and their statistics
- Monitor platform analytics
- Access detailed user information

### 6.2.2 Researcher



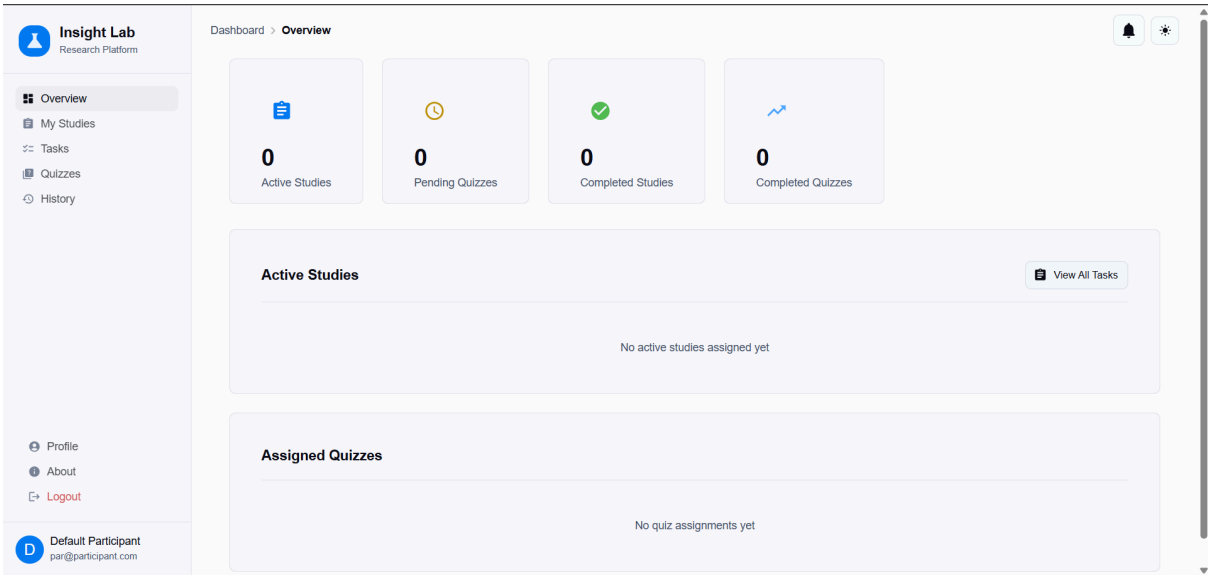

**Responsibilities:**

- Design and create research studies
- Upload and manage artifacts
- Create evaluation tasks and questionnaires
- Recruit and manage participants
- Monitor study progress
- Analyze and export results

**Key Capabilities:**

- Create customized studies
- Upload multiple artifact types
- Generate AI-assisted quizzes
- Assign tasks to participants
- Review participant submissions
- Export study data for analysis

### 6.2.3 Participant



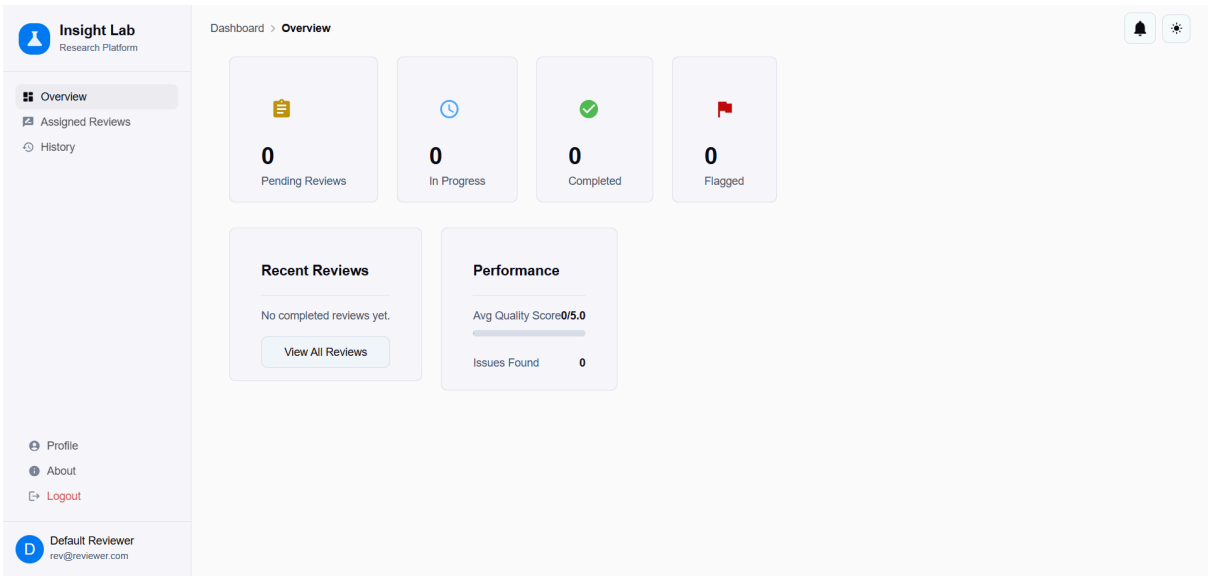

**Responsibilities:**

- Complete assigned evaluation tasks
- Take competency quizzes
- Compare and annotate artifacts
- Submit evaluations on time

**Key Capabilities:**

- Enroll in studies
- Complete background questionnaires
- Take competency assessments
- Perform side-by-side artifact comparisons
- Annotate and rate artifacts
- Track personal progress

### 6.2.4 Reviewer




**Responsibilities:**

- Review participant submissions
- Grade evaluations
- Provide feedback on evaluations

**Key Capabilities:**

- Access assigned submissions
- Review participant annotations and ratings
- Assign grades
- Provide detailed feedback

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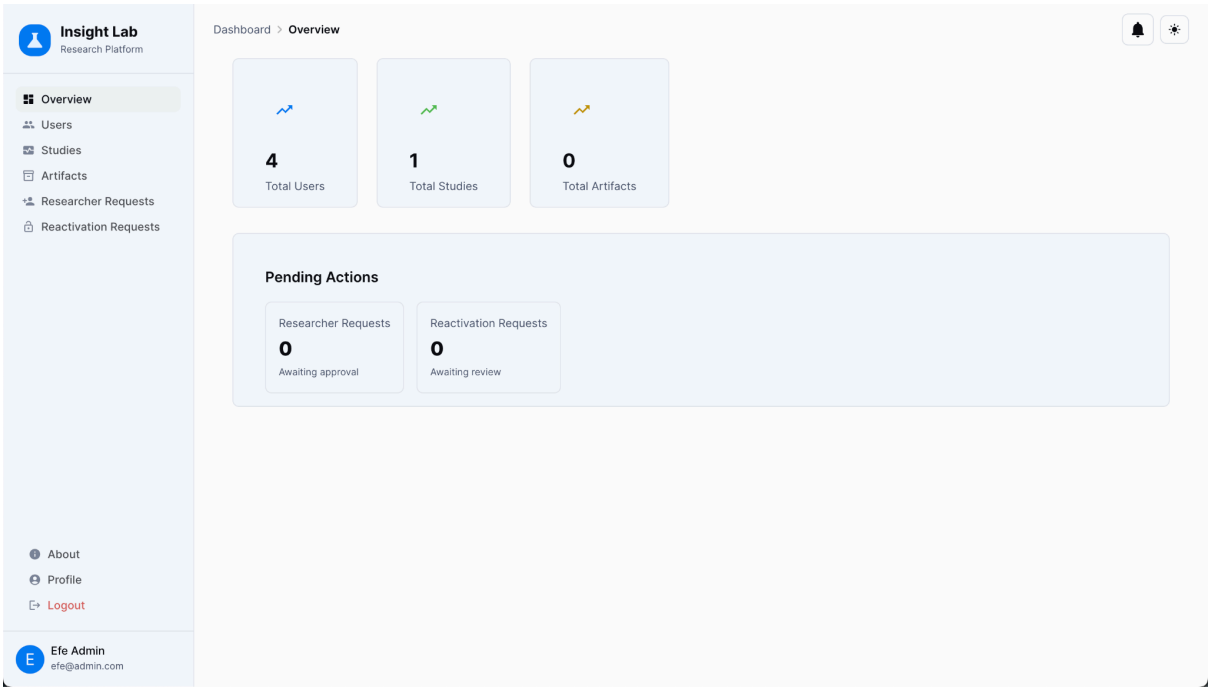
## 6.3 Administrator Guide

### 6.3.1 Admin Dashboard

After signing in as admin, you'll see the **Admin Overview Dashboard**:




**Dashboard Sections:**

- **User Statistics**: Total users by role, active users, pending approvals
- **Study Monitoring**: Active studies, total artifacts, task completion rates
- **Quick Actions**: Access to management functions

**Navigation Menu:**

- **Overview**: Dashboard home
- **Users**: Manage all platform users
- **Studies**: View all studies and their details
- **Artifacts, Researcher Requests, Reactivation Requests**

### 6.3.2 Managing User Requests

**Approving Researcher Requests:**

1. Click **"Users"** in sidebar
2. Click **"Researcher Requests"** in sidebar
3. View list of pending researcher applications
4. For each request, review:
    - Full name
    - Email
5. Decision:
    - Click **"Approve"** to grant access
    - Click **"Reject"** to deny

**Managing Reactivation Requests:**

1. Navigate to **"Reactivation Requests"**
2. View users requesting account reactivation
3. Review:
    - User information
    - Previous account status
    - Reason for reactivation
4. Click **"Approve"** to reactivate or **"Reject"** to deny

### 6.3.3 Managing Users

**View All Users:**

1. Click **"Users"** in admin sidebar
2. See complete list of platform users
3. Filter by:
    - Role (Admin, Researcher, Participant, Reviewer)
    - Status (Active, Inactive, Pending)
    - Search by name or email

**User Actions:**

- **View Profile**: See detailed user information
- **Deactivate**: Suspend user access (reversible)
- **Activate**: Restore inactive user
- **Edit Role**: Change user permissions (use carefully)
- **Delete**: Permanently remove user (use extreme caution)

**User Details Include:**

- Personal information (name, email, country)
- Role and permissions
- Registration date
- Studies participated in (for participants)
- Studies created (for researchers)

- Activity history

#### 6.3.4 Monitoring Studies

**Access Study Monitoring:**

1. Click **"Studies"** in sidebar
2. View all studies across all researchers

**Study Information:**

- Study title and description
- Researcher name
- Creation date
- Status (Draft, Active, Completed, Archived)
- Number of participants enrolled
- Number of artifacts
- Number of evaluation tasks
- Completion statistics

**Study Actions:**

- **View Details**: See complete study configuration
- **Export Data**: Download study results
- **Archive**: Hide inactive studies

**Study Statistics Include:**

- Participant enrollment over time
- Task completion rates
- Submission statistics
- Quiz performance
- Artifact evaluation metrics

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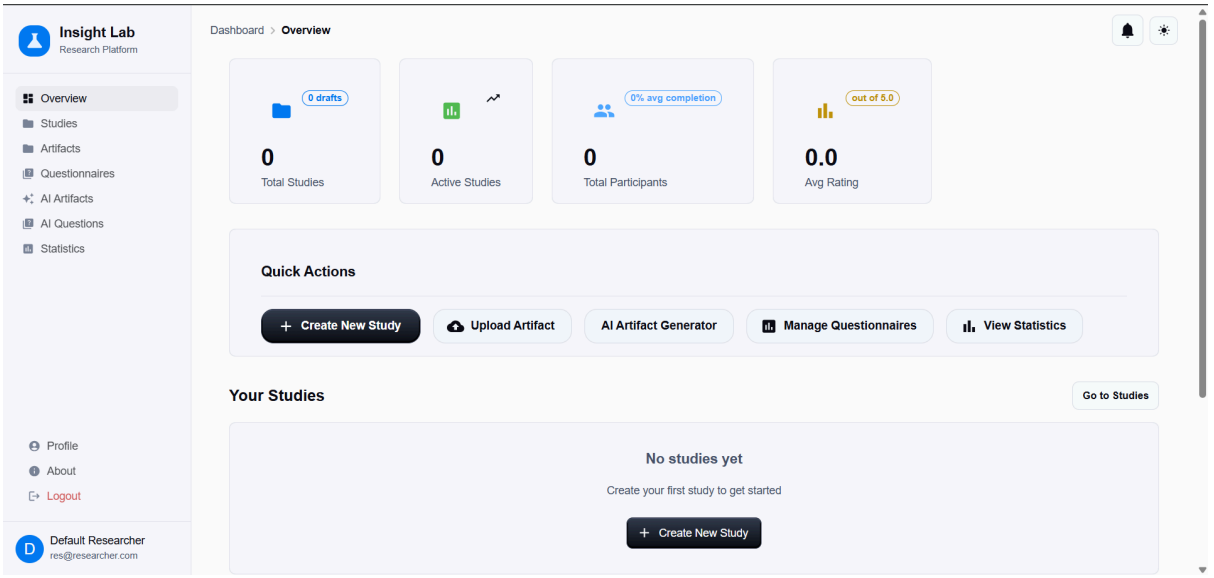
## 6.4 Researcher Guide

#### 6.4.1 Researcher Dashboard

The researcher dashboard provides:

**Overview Section:**

- My Studies summary
- Active studies count
- Total participants
- Pending evaluations
- Recent activity




**Quick Actions:**

- Create New Study
- Upload Artifacts
- View My Studies
- Manage Questionnaries

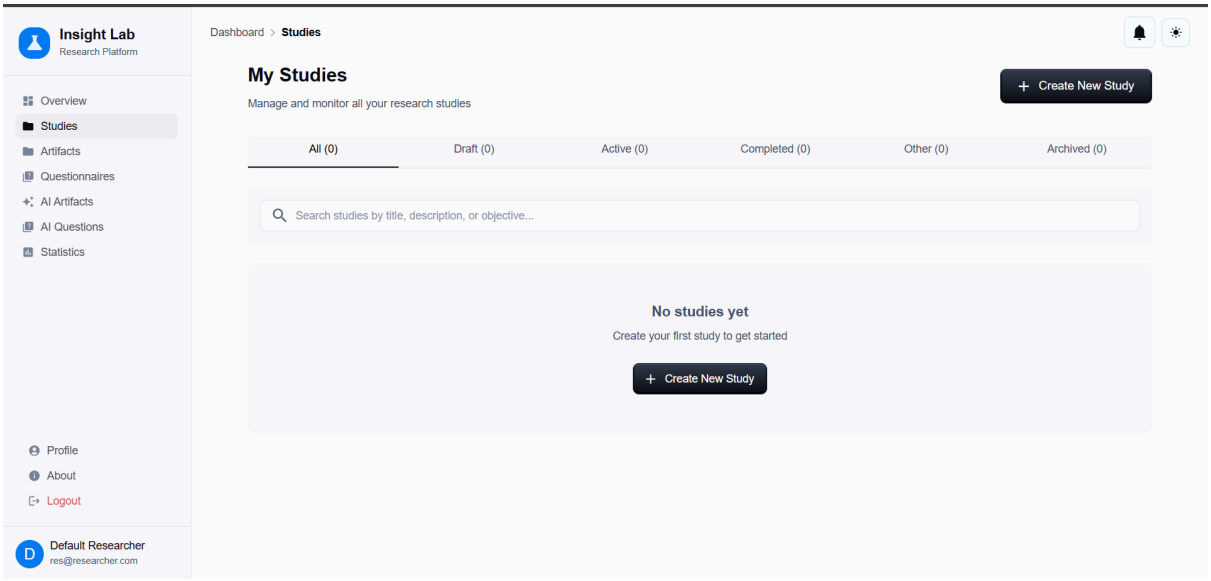
**Navigation:**

- **Overview**: Dashboard home
- **Studies**: All your studies
- **Artifacts**: Artifact library
- **Questionnaires**: Quiz generation, update
- **AI Artifacts**: AI-assisted artifact generation
- **AI Questions**: AI-assisted quiz question generation
- **Settings**: Profile

### 6.4.2 Creating a Study

**Step 1: Start New Study**

1. Click **"Create Study"** button on dashboard
2. Or navigate to **My Studies** → **"Create New Study"**




**Step 2: Basic Information**

Fill in the study details form:

- **Study Title**: Descriptive title (e.g., "Java Code Quality Evaluation")
- **Description**: Detailed study purpose and goals
- **Objective**: Objective of the study
- **Duration**: Study timeline
    - Start Date
    - End Date

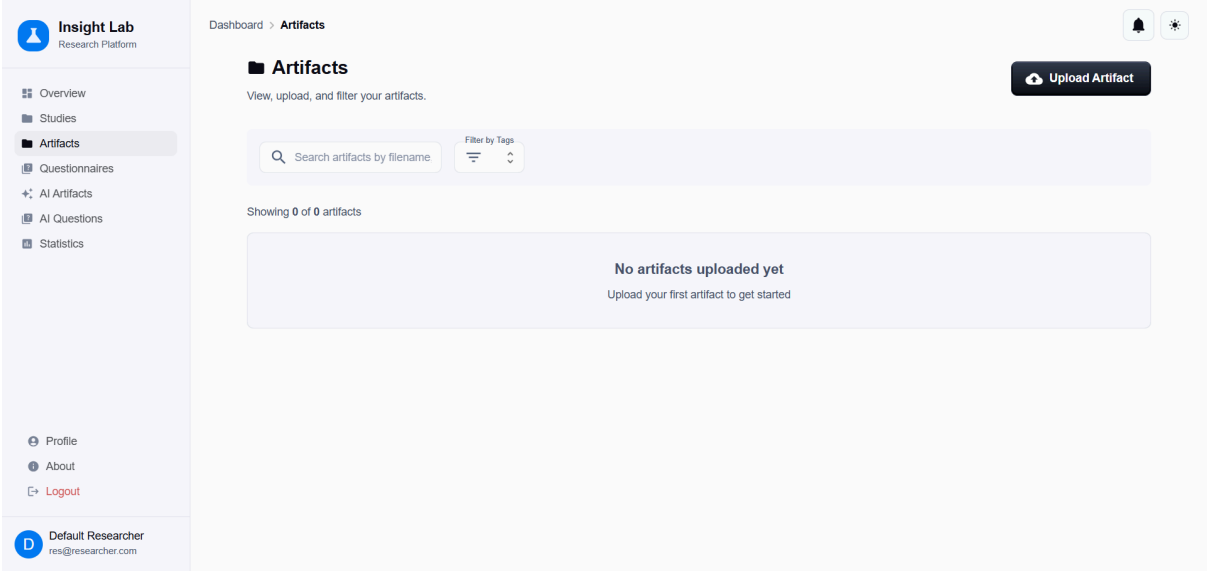
### 6.4.3 Managing Artifacts

**Uploading Artifacts:**

1. Navigate to **My Studies** → Select Study → **Artifacts**
2. Click **"Upload Artifacts"** button
3. Select artifact type:
    - Source Code (.java, .py, .js, .cpp, etc.)
    - UML Diagrams (.png, .jpg, .svg)
    - Documents (.txt, .md)
    - PDF Documents (.pdf)
    - Test Cases
    - Requirements Documents
4. Upload methods:
    - **Drag & Drop**: Drag files into upload area
    - **Browse**: Click to select files from file explorer
    - **Bulk Upload**: Upload multiple files at once
5. Click **"Upload"**

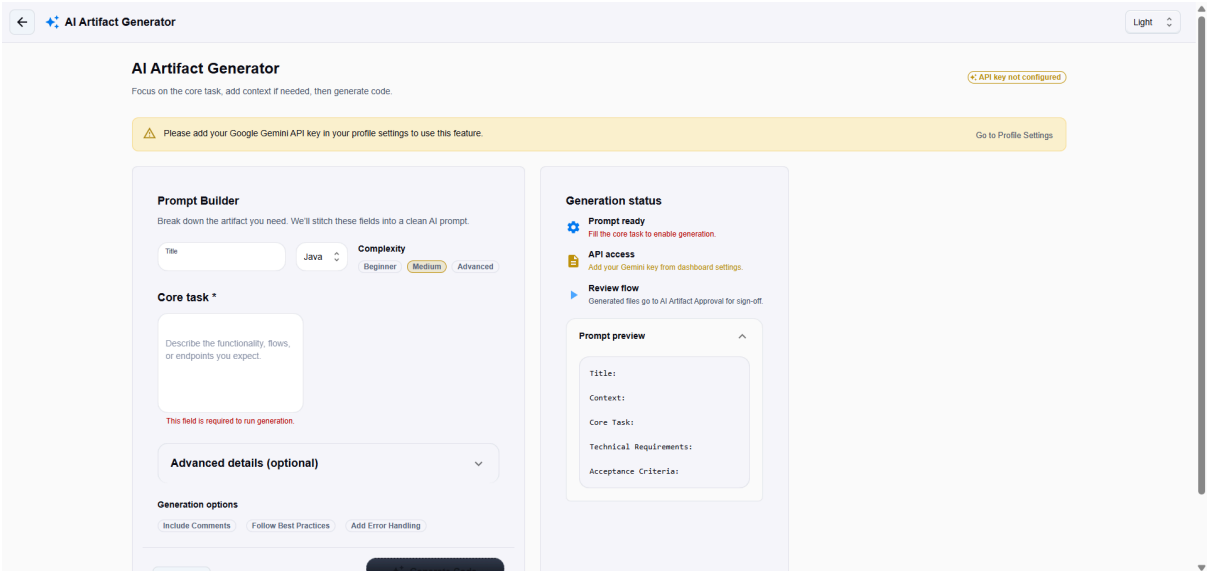
**Organizing Artifacts:**

- **Create Folders**: Group related artifacts
- **Add Tags**: For easy filtering and search
- **Edit Details**: Update artifact information
- **Preview**: View artifact before assigning
- **Delete**: Remove artifacts (if not assigned to tasks)



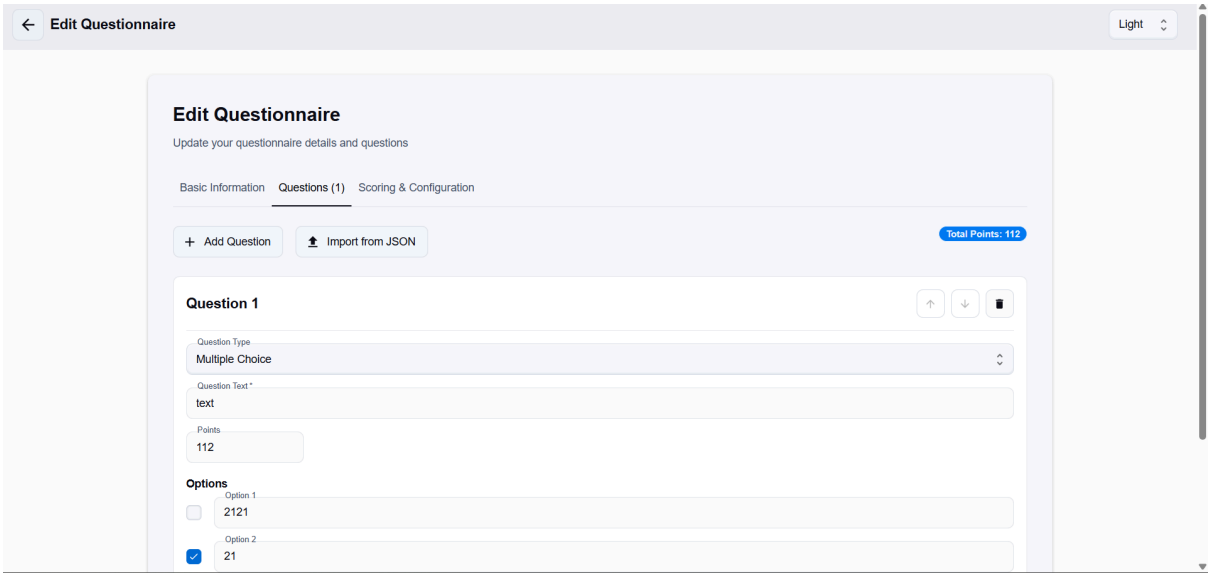

## AI-Generated Artifacts:

1. Click **"AI Artifacts"**
2. Provide:
    - Problem description
    - Programming language
    - Desired artifact type
    - Constraints or requirements
3. Review generated artifact
4. Click **"Approve"** to add to library or **"Regenerate"** for alternatives



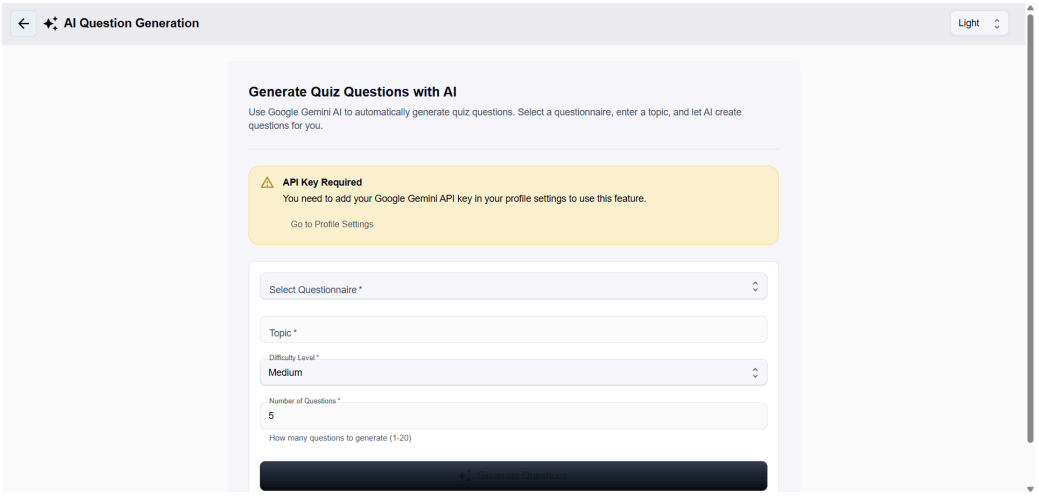
### 6.4.4 Creating Quizzes

**Manual Quiz Creation:**



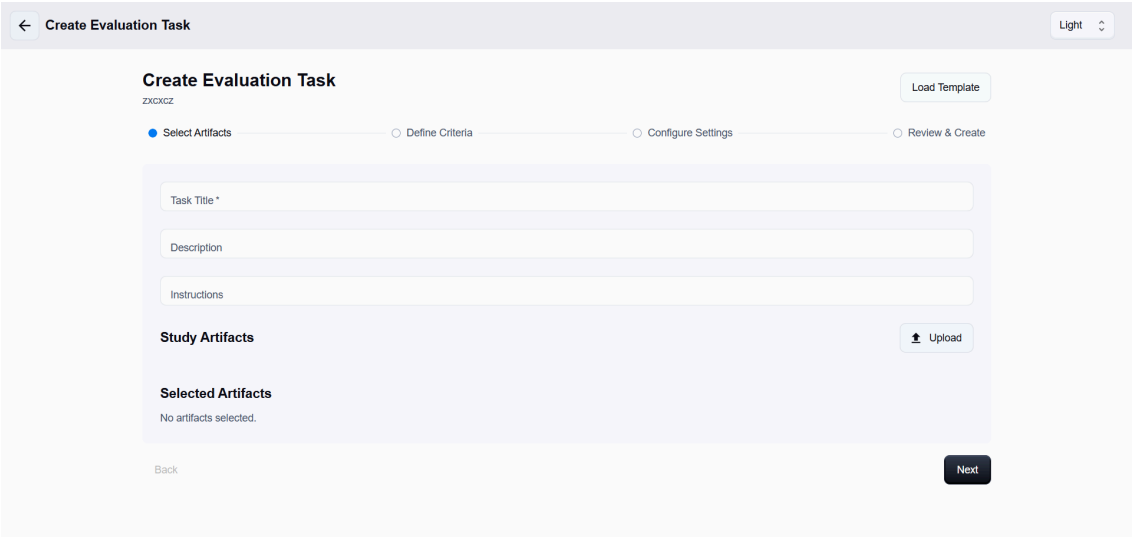

1. Navigate to **Study → Quizzes → "Create Quiz"**
2. Set quiz parameters:
    - **Title**: Quiz name
    - **Passing Score**: Minimum score to qualify (e.g., 70%)
    - **Time Limit**: Duration (optional)
3. Add questions:
    - **Multiple Choice**: One correct answer
    - **Multiple Select**: Multiple correct answers
    - **True/False**: Binary choice
    - **Code Analysis**: Provide code snippet and ask question
4. For each question:
    - Question text
    - Code snippet (if applicable)
    - Answer options
    - Correct answer(s)
    - Points value
    - Explanation (shown after submission)
5. Set question order:
    - Fixed: Same order for all participants
    - Randomized: Different order per participant
6. Preview quiz
7. Click **"Create Quiz"**

**AI-Assisted Quiz Generation:**




1. Click **"AI Questions"**
2. Provide:
    - Study topic/domain
    - Difficulty level (Beginner, Intermediate, Advanced)
    - Number of questions
    - Question types
3. AI generates questions based on study artifacts
4. Review each question:
    - Edit question text
    - Modify options
    - Adjust correct answers
    - Add explanations
5. Click **"Approve Questions"** to add to quiz
6. **"Reject"** or **"Regenerate"** individual questions

### 6.4.5 Creating Evaluation Tasks




**Standard Comparison Task:**

1. Navigate to **Study** → **Evaluation Tasks** → **"Create New Task"**
2. Configure task:
    - **Task Name**: Descriptive title
    - **Description**: Task instructions
    - **Type**: Side-by-Side Comparison
    - **Artifacts to Compare**: Select 2 or more artifacts
    - **Evaluation Criteria**: Define rating dimensions
3. Define evaluation criteria:
    - **Rating**
    - **Text**
    - **Single Choice**
    - **Multi Choice**
    - **Yes/No**
4. Settings:
    - Enable/disable inline annotations
    - Annotation types (Highlight, Tag, Annotation)
    - Blinded Mode
    - Assigned Participants
    - Due date
5. View summary
6. Click **"Create Task"**

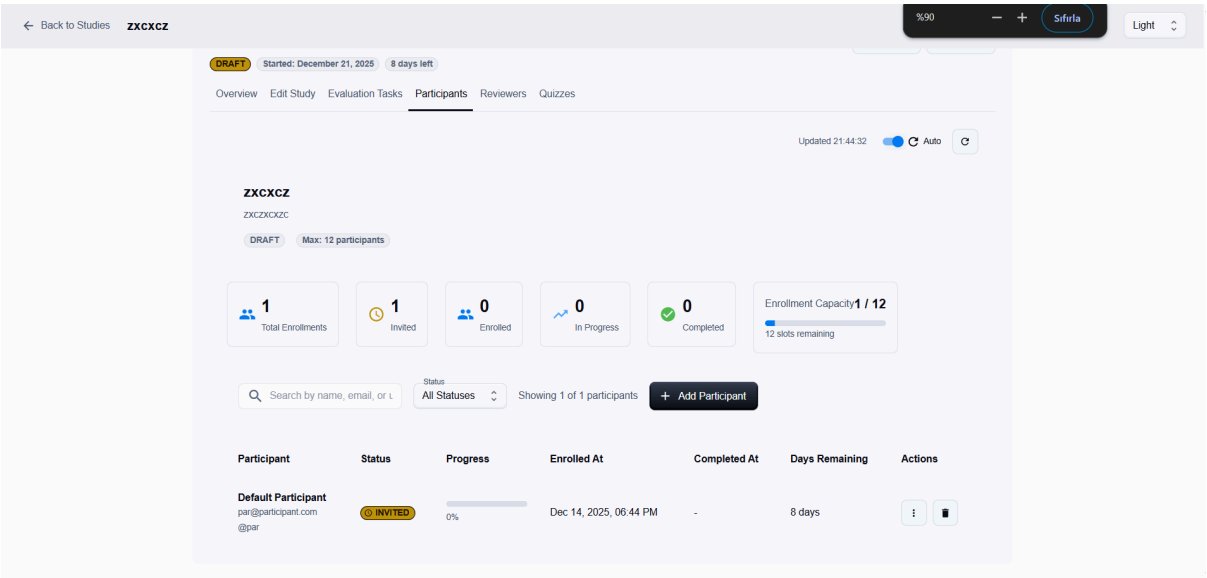
**Assigning Tasks to Participants:**

1. Navigate to **Evaluation Tasks** → Select Task → **"View Participants"**
2. Choose participants to add
3. Set due date: When task must be completed
4. Click **"Add participants"**

**Participants receive:**

- Dashboard notification
- Task appears in their task list

### 6.4.6 Managing Participants




**Viewing Enrolled Participants:**

1. Navigate to **Study** → **Participants**
2. View participant list with:
    - Name and email
    - Enrollment date
    - Tasks assigned
    - Tasks completed
    - Overall progress percentage

**Participant Management Actions:**

- **Remove from Study**: Unenroll participant
- **Export Data**: Download participant's contributions

**Monitoring Participant Progress:**

- **Overall Completion**: Percentage of all tasks completed
- **Individual Progress**: Tasks per participant
- **Average Time**: Time spent per task

### 6.4.7 Reviewing Submissions

**Accessing Submissions:**

1. Navigate to **Study** → **Evaluation Tasks** → Select Task → **"Submissions"**
2. View list of submitted evaluations:
    - Submission date and time
    - Status (Submitted, In Review, Graded)

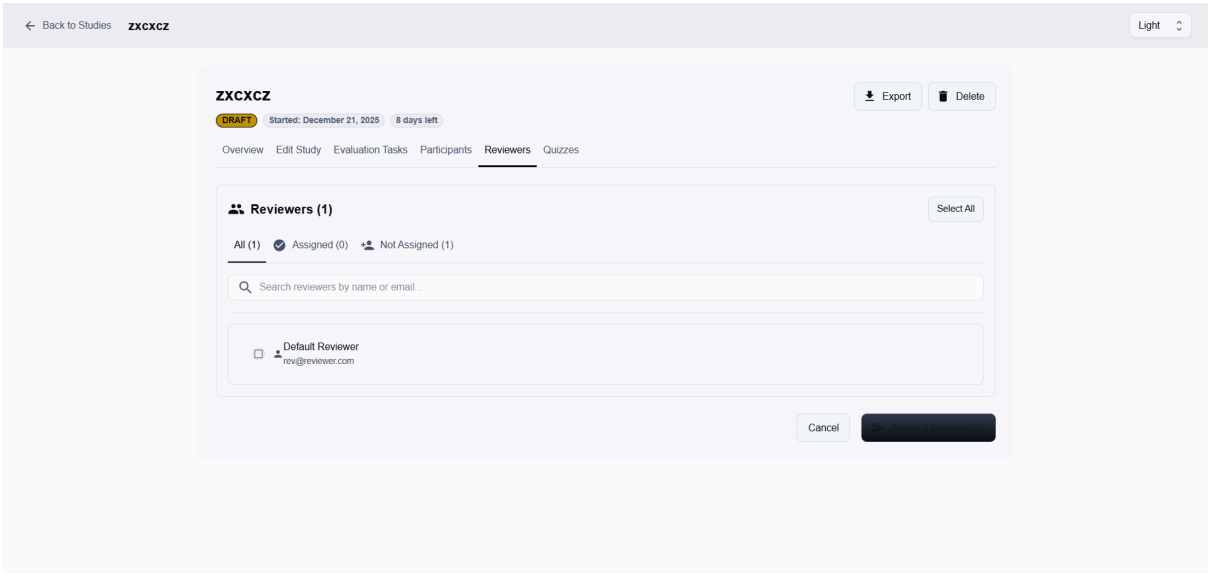
**Reviewing a Submission:**

1. Click **"View Submission"** for specific participant
2. See complete evaluation:

- Artifact comparisons made
- Ratings given per criterion
- Annotations and comments
- Time spent on task

3. Review annotations:
    - Inline code comments
    - Highlighted sections
    - Issue reports
    - Suggestions
4. Review ratings:
    - Numerical scores per criterion
    - Overall artifact preference
    - Confidence level
    - Notes
5. Reviewer Evaluation
    - Status
    - Quality Score
    - Reviewer details (name, date)

**Assigning to Reviewers:**




1. Navigate to **Studies** → **"Reviewers"** on specific study
2. Choose reviewer from list
3. Click **"Assign Reviewers"**
4. Reviewer receives notification

### 6.4.8 AI Tools

**AI Artifact Generator:**

1. Navigate to **AI Artifacts** → **"Generate Artifact"**
2. Input parameters:
    - **Task Description**: What should the artifact do?

    - **Language**: Programming language
    - **Artifact Type**: Code, test case, documentation
    - **Complexity**: Simple, moderate, complex
    - **Constraints**: Specific requirements
3. Click **"Generate"**
4. Review generated artifact:
    - Syntax highlighting
    - Code structure
    - Comments and documentation
5. Actions:
    - **Approve**: Add to artifact library
    - **Reject**: Discard

**AI Question Generator:**

1. Navigate to **AI Questions** → **"Generate Questions"**
2. Configure generation:
    - **Select Questionnaire**: Select which questionnaire you want to put
    - **Topic**: Study subject area
    - **Difficulty Level**: Easy, medium, hard
    - **Question Count**: Number to generate
3. Click **"Generate Questions"**
4. Review and approve questions individually

**AI Approval Queue:**

1. Navigate to **AI Artifacts** → **"AI Approvals"**
2. View all AI-generated artifacts awaiting approval:

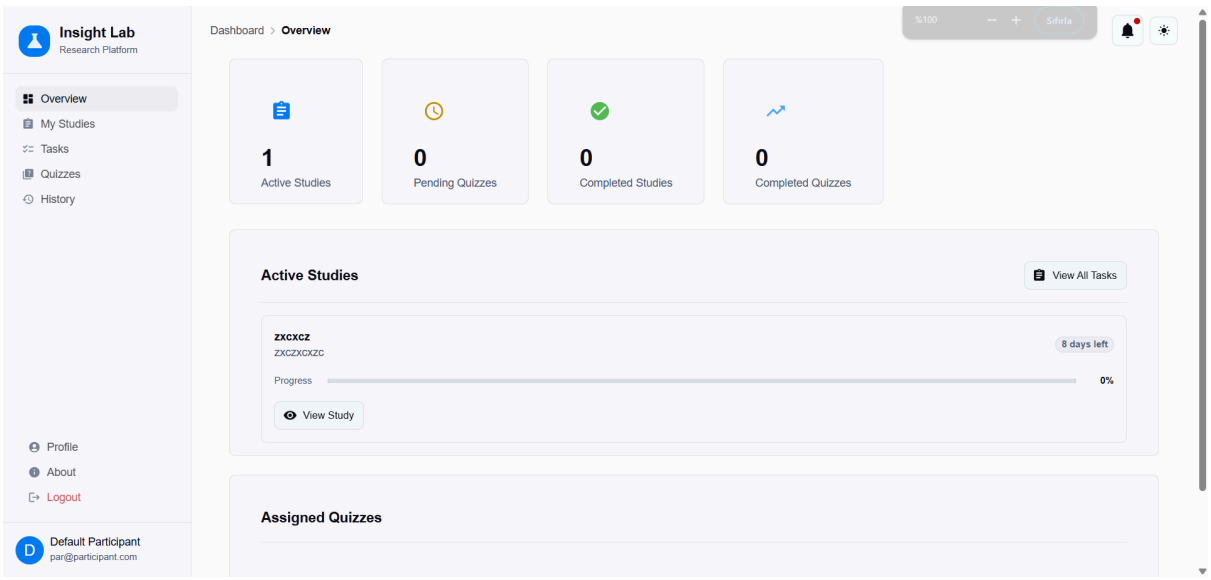
3. Navigate to **AI Questions** → **"AI Approvals"**
4. View all AI-generated questions awaiting approval:

---

## 6.5 Participant Guide

### 6.5.1 Participant Dashboard

After signing in as participant, you'll see:




**Dashboard Overview:**

- **Active Studies**: Studies you can enroll in
- **Pending Tasks**: Evaluation tasks awaiting completion
- **Assigned Quizzes**: Your submission history
- **Progress Tracking**: Overall completion percentage

### 6.5.2 Background Questionnaire

**Completing Questionnaire:**

1. After enrolling, you'll be prompted to complete questionnaire
2. Answer all questions:
    - Provide accurate information
    - Required questions marked with *
    - Some allow multiple selections
3. Review your answers
4. Click **"Submit"**

**You cannot change answers after submission**

### 6.5.3 Competency Quiz

**Taking the Quiz:**

1. Navigate to **Quizzes**
2. Click **"Start Quiz"**
3. Answer each question:
    - Read carefully
    - Select answer(s)
    - Review code snippets thoroughly
    - Use full time available
4. Navigate questions:
    - **Next**: Move to next question

- **Previous**: Go back

5. Review all answers before submitting
6. Click **"Submit Quiz"**

**Quiz Results:**

- Immediate feedback on score
- Pass/fail status

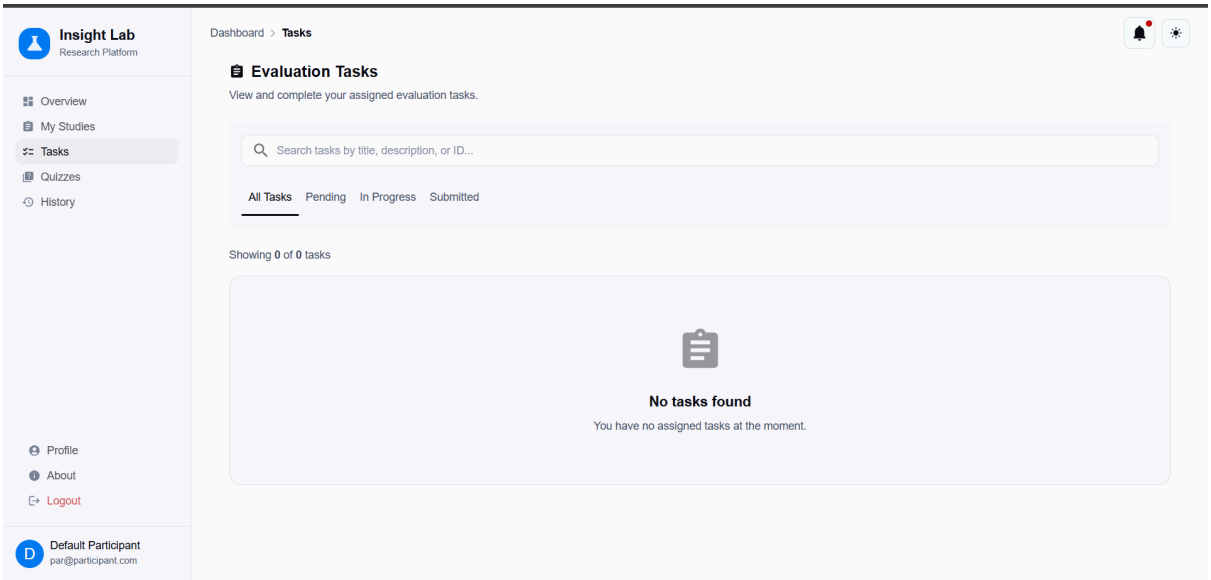
**If you pass:**

- Gain access to evaluation tasks
- Wait for researcher granting access

**If you fail:**

- Review study materials
- Asks for another quiz

### 6.5.4 Completing Evaluation Tasks




**Accessing Tasks:**

1. Navigate to **"Tasks"** from dashboard
2. View assigned evaluation tasks:
    - Task name
    - Number of artifacts to compare
    - Deadline
    - Status (Not Started, In Progress, Completed)
3. Click **"Start Task"** on a pending task

**Artifact Comparison Interface:**

**Layout:**

- **Left Panel**: First artifact (Artifact A)
- **Right Panel**: Second artifact (Artifact B)
- **Bottom Panel**: Evaluation criteria and rating controls

**Viewing Artifacts:**

- **Code Artifacts**:
    - Syntax highlighting
    - Line numbers
- **PDF Artifacts**:
    - Page navigation
    - Zoom controls
- **Diagram Artifacts**:
    - High-resolution viewing

**Making Annotations:**

1. **Select Text/Code**:
    - Click and drag to highlight
2. **Add Annotation**:
    - Click **"Add Comment"** button
    - Choose annotation type:
        - Comment: General observation
        - Issue: Problem or bug
        - Suggestion: Improvement idea
        - Question: Unclear aspect
3. **Write Annotation**:
    - Describe your observation clearly
    - Be specific and constructive
    - Reference specific code if applicable
4. **Save Annotation**
    - Annotation appears inline
    - Can edit or delete before submission

**Rating Artifacts:**

1. Review all evaluation criteria provided
2. For each criterion (e.g., Code Quality, Readability):
    - **Artifact A Rating**: Select score (1-5 scale)
    - **Artifact B Rating**: Select score (1-5 scale)
    - **Justification**: Explain your ratings (optional but recommended)
3. **Overall Preference** (if required):
    - Which artifact is better overall?
    - Confidence level (Low, Medium, High)
    - Brief explanation

**Saving Progress:**

- Click **"Save Draft"** to save and continue later

- Your annotations and ratings are preserved
- Resume from where you left off

**Submitting Evaluation:**

1. Review all your ratings and annotations
2. Ensure you've met requirements:
    - All required criteria rated
    - Minimum annotations added
    - Justifications provided
3. Click **"Review Submission"**
4. Final check of all your input
5. Click **"Submit Evaluation"**

**Post-Submission:**

- Cannot modify after submission
- Task marked as completed
- May receive grade/feedback later

#### 6.5.5 Tracking Progress

**View Your Progress:**

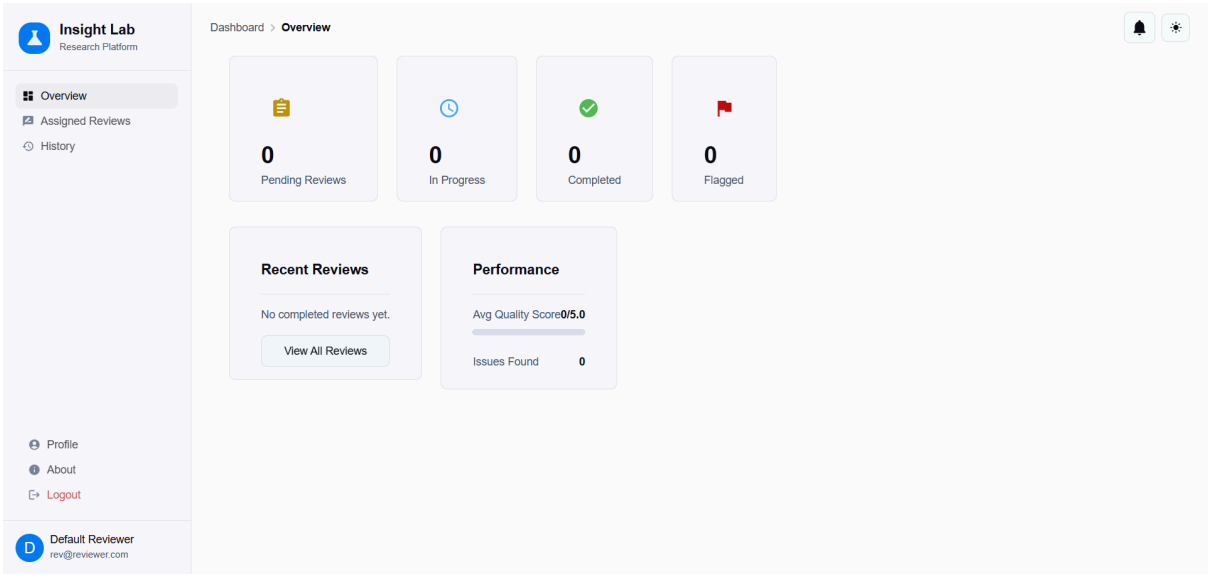
1. Navigate to **"History"**
2. See completion statistics:
    - Tasks completed vs. assigned
    - Studies enrolled in
    - Total time spent
    - Average task completion time
    - Grades received (if applicable)

---

## 6.6 Reviewer Guide

### 6.6.1 Reviewer Dashboard

After signing in as a reviewer, you are redirected to the **Reviewer Dashboard**, which provides an overview of your review workload and performance.




**Page:** Reviewer Dashboard

**Dashboard Overview**

The dashboard displays the following counters:

- **Pending Reviews** (count)
- **In Progress** (count)
- **Completed** (count)
- **Flagged** (count)

**Recent Activity**

- **Recent Reviews:** Latest completed review items

**Performance Metrics**

- **Average Quality Score:** 0–5
- **Total Issues Found:** Cumulative count

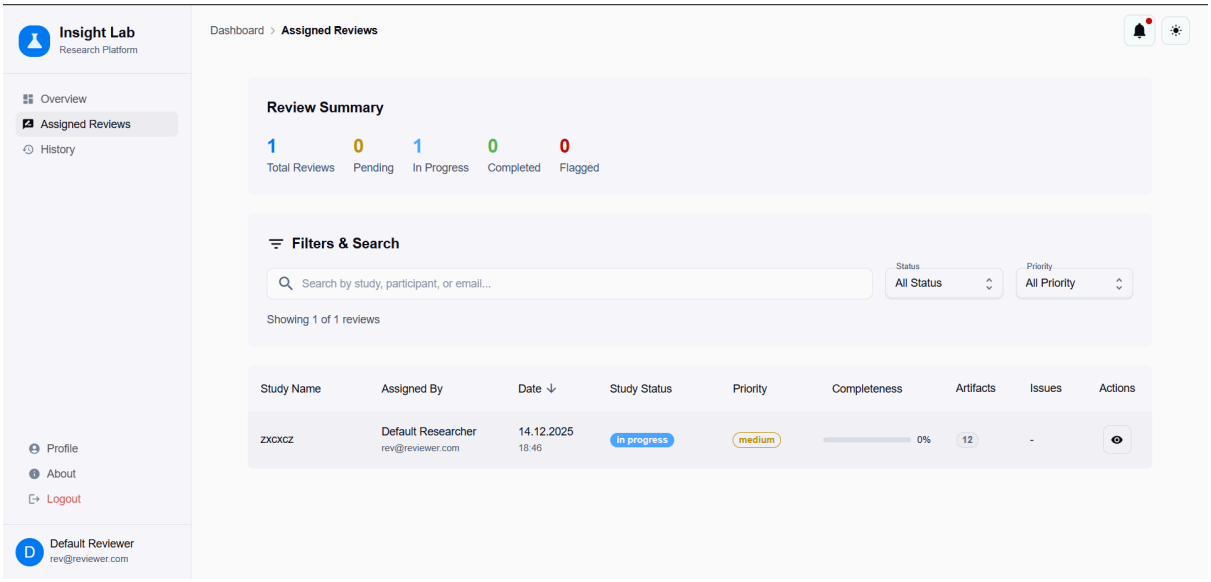
**Navigation**

- **View All Reviews** → Assigned Reviews
- **Tabs Available:**
  - Overview
  - Assigned Reviews
  - History

### 6.6.2 Reviewing Submissions

This section explains how reviewers access, evaluate, and complete assigned review tasks.

### Accessing Assigned Work




To view assigned reviews:

- Navigate to **Assigned Reviews**

### Assigned Reviews Table Columns:

- Study Name
- Assigned By
- Date
- Status
- Priority
- Completeness
- Artifacts (count)
- Issues (count)

#### Available Actions

- **If status is Pending:**
  - Accept
  - Decline
- **If already accepted or in progress:**
  - Click **View** (eye icon)
    → Reviewer Workspace

## Reviewer Evaluation View

This is the main interface used to inspect submissions and provide feedback.

**Header Information**

- Task title
- Participant label (alias if blinded)
- Assignment status chip
- **Blinded Mode** banner (if enabled)

**What You Can View**

The reviewer has read-only access to:

- Compared artifacts
- All participant annotations
- Participant criteria responses
  (dynamic criteria or recorded scores)
- Participant notes and metadata, including:
  - Submission time
  - Time spent
  - Other recorded fields

**Providing a Review**

The following inputs are supported by the current system.

**Reviewer Status** (select one):

- Valid
- Suspicious
- Incomplete

**Evaluation Quality Score**

- Slider: **1–5**

**Reviewer Notes**

- Single free-text field
- Optional

**Action**

- **Save Review**

---

# 7. How to Report a Bug

## 7.1 Before Reporting

Before submitting a bug report, please make sure the issue is valid and not already known.

**Check if it's a known issue:**

- Review the **Known Issues** section (if available)
- Check the project's issue tracker (if available)
- Search existing bug reports

**Verify the issue:**

- The issue is reproducible consistently
- It still occurs after clearing cache/cookies
- It occurs in a different browser
- The application and browser are up to date

## 7.2 Information to Include

When reporting a bug, include the following information to ensure faster and more accurate resolution.

**Required Information**

**Bug Title**
A short and descriptive summary of the issue

- ✅ Good: *"Artifact upload fails for PDF files larger than 50MB"*
- ❌ Bad: *"Upload doesn't work"*

**Description**

- What happened?
- What did you expect to happen?
- Impact / severity of the issue

**Steps to Reproduce**

- Use numbered steps
- Include exact clicks, pages, and inputs
- Include exact error text (if any)

**Expected Behavior**

- Describe what should have happened

**Actual Behavior**

- Describe what actually happened

**Evidence**

- Screenshots (if applicable)
- Error messages
- Console errors (F12 → Console)
- Network errors (F12 → Network)

**Environment**

- Operating System (Windows / macOS / Linux)
- Browser and version
- Screen resolution (optional)
- Application version (Settings → About, if available)
- User role (Admin / Researcher / Participant / Reviewer)
- Timestamp (when the issue occurred)

### 7.3 How to Submit

Choose one of the following submission methods.

**Option 1: GitHub Issues**

- Open the repository
- Go to **Issues** → **New Issue**
- Fill in the bug report template
- Add relevant labels (e.g., `bug`, `priority`)
- Submit

**Option 2: Email**

- Subject: **"BUG REPORT: [Brief Description]"**
- Include all information from section 7.2
- Attach screenshots and logs if available
- Email: insightlabservice@gmail.com

---

# 8. Known Issues and Limitations

## 8.1 Known Bugs

### Issue #1: Large File Upload Timeout

- **Status:** Known
- **Description:** Uploading artifacts larger than 100MB may timeout or fail
- **Affected:** All roles (Researchers, Participants, Admins)
- **Workaround:**
    - Compress files before upload
    - Ensure artifacts are under the 100MB limit
    - For Docker deployments, increase timeout in nginx configuration if using a reverse proxy
- **Planned Fix:** Version 1.1.0 - Implement chunked upload for large files

### Issue #2: PDF Rendering Compatibility

- **Status:** Known
- **Description:** PDF artifacts using react-pdf library may have rendering inconsistencies across different browsers
- **Affected:** Participants and Reviewers evaluating PDF artifacts
- **Workaround:**
    - Use Chrome 90+ or Firefox 88+ for best PDF rendering experience
    - Ensure PDF files are not corrupted before upload
- **Technical Note:** Currently using react-pdf v7.7.0 which has known browser compatibility variations
- **Planned Fix:** Version 1.0.1 - Evaluate alternative PDF rendering libraries or fallback viewer

### Issue #3: Concurrent Study Editing

- **Status:** Known
- **Description:** Multiple researchers editing the same study, quiz, or evaluation task simultaneously may result in conflicts or lost changes
- **Affected:** Researchers collaborating on the same study
- **Workaround:**
    - Coordinate edits through team communication
    - Avoid simultaneous editing of the same resources
    - Assign different study components to different researchers
- **Planned Fix:** Version 1.2.0 - Implement optimistic locking mechanism with conflict detection

### Issue #4: Annotation Data Loss on Browser Crash

- **Status:** Known
- **Description:** Participant annotations and draft evaluations may be lost if browser crashes or tab is accidentally closed before saving
- **Affected:** Participants during artifact evaluation
- **Workaround:**
    - Use "Save Draft" button frequently
    - Complete evaluations in one session when possible

- **Planned Fix:** Version 1.1.0 - Implement auto-save with local storage backup

# 8.2 Current Limitations

## Artifact Types and File Formats

**Supported Artifact Types:**

- **Evaluation Types:** Bug Reports, Code Clones, SOLID Violations, Snapshots
- **File Formats:**
    - Source Code: .java, .py, .js, .cpp, .c, .cs, .go, .ts, .tsx, .jsx
    - Documents: PDF (.pdf), Plain Text (.txt), Markdown (.md)
    - Data: JSON (.json), CSV (.csv)
    - Images: JPEG, PNG, WebP
    - Archives: ZIP
    - Other: Generic files (application/octet-stream)

**Not Yet Supported:**

- Video files (.mp4, .avi, .mov)
- Interactive demonstrations or executable binaries
- Real-time collaborative editing of artifacts
- Audio files
- 3D models or CAD files

## File Size Constraints

- **Maximum file size:** 100MB per artifact
- **Maximum request size:** 100MB total per upload
- **Storage:** Configured via Docker volumes (default: unlimited, bound by host system)

**Recommendation:** For artifacts exceeding size limits, use compression or split into logical components

## Export Formats

**Available:**

- CSV (Comma-Separated Values)
- XLSX (Microsoft Excel)
- PDF (Portable Document Format)

**Not Available:**

- SPSS data files
- R data frames (.rds, .RData)
- LaTeX tables
- MATLAB files

- Statistical software-specific formats

### Browser Compatibility

**Full Support:**

- Chrome 90+
- Firefox 88+
- Microsoft Edge 90+

**Limited Support:**

- Safari 14+ (PDF rendering may have issues)
- Mobile browsers (UI not fully optimized for small screens)

**Not Supported:**

- Internet Explorer (deprecated and unsupported)
- Browsers with JavaScript disabled
- Text-only browsers

**Recommendation:** Use Chrome or Firefox for the best experience, especially when working with PDF artifacts or complex evaluations.

## 8.3 Performance Considerations

### Database

- **Technology:** PostgreSQL 15
- **Configuration:** Default PostgreSQL settings via Docker
- **Maintenance:**
  - Regular maintenance recommended for production deployments
  - Weekly automatic cleanup of soft-deleted artifacts (when implemented)
  - Manual VACUUM recommended for studies with heavy delete operations

**Recommendations:**

- Configure PostgreSQL connection pooling for high-load scenarios
- Monitor database size for studies with thousands of evaluations
- Index optimization may be needed for large-scale deployments

### Storage

- **Default Configuration:** Docker volume `artifact_storage`
- **Limit:** Bounded only by host system disk space
- **Compression:** Files stored as-is; no automatic compression
- **Path:** `/app/storage/artifacts` in container

**Recommendations:**

- Monitor disk usage regularly
- Implement artifact cleanup policies for old studies
- Consider external object storage (S3, Azure Blob) for production at scale
- Allowed MIME types configured in `application.properties`

### Memory Usage

- **Backend:** Java Spring Boot application (default heap: 512MB-2GB)
- **Frontend:** React SPA (browser-dependent)
- **Database:** PostgreSQL (configurable, default 128MB shared_buffers)

**Production Recommendations:**

- Allocate at least 2GB heap for backend in production
- Monitor JVM garbage collection
- Configure PostgreSQL shared_buffers based on available RAM (25% of system memory recommended)

## 8.4 Security Limitations

### Authentication

- **Current:** JWT-based authentication with role-based access control (RBAC)
- **Limitations:**
    - No multi-factor authentication (MFA)
    - No OAuth2/SAML integration
    - Session timeout fixed at 24 hours

### Data Privacy

- **Limitations:**
    - No data encryption at rest (relies on host system security)
    - Basic CORS protection
    - No audit logging for data access

**Recommendation:**

- Use HTTPS in production (configure reverse proxy)
- Implement database encryption for sensitive deployments
- Add audit trails for compliance requirements

# 9. Troubleshooting

## 9.1 Common Issues and Solutions

**Issue: Cannot Access Application (localhost:3000 not loading)**

**Symptoms:**

- Browser shows "Connection refused" or "Can't reach this page"
- Frontend not accessible

**Possible Causes & Solutions:**

**Docker containers not running**

Bash

```
# Check container status
docker-compose ps

# If containers are not running, start them
docker-compose up
```

1.

**Frontend container crashed**

Bash

```
# Check frontend logs
docker-compose logs frontend

# Restart frontend
docker-compose restart frontend
```

2.

**Port 3000 already in use**

Bash

```
# Windows: Find process using port 3000
netstat -ano | findstr :3000

# Stop the process or change port in docker-compose.yml
```

3.

4. **Browser cache issues**
    - Clear browser cache (Ctrl+Shift+Delete)
    - Try incognito/private mode
    - Try different browser

**Issue: Login Failed / Authentication Errors**

**Symptoms:**

- "Invalid credentials" despite correct password
- Redirected back to login page
- Session expires immediately

**Solutions:**

1. **Verify account status**
    - Check email for approval notification (researchers/admins)
    - Confirm account is active (not rejected/deactivated)
2. **Password issues**
    - Ensure caps lock is off
    - Check for extra spaces
    - Use "Forgot Password" to reset
3. **Browser cookies disabled**
    - Enable cookies in browser settings
    - Add localhost:3000 to allowed sites

**Clear application data**
JavaScript
// In browser console (F12):
localStorage.clear();
sessionStorage.clear();
location.reload();
4.

**Backend authentication service down**
Bash
# Check backend logs
docker-compose logs backend

# Restart backend
docker-compose restart backend
5.

**Issue: Artifact Upload Fails**
**Symptoms:**

- Upload progress bar freezes
- Error message: "Upload failed"
- File disappears from upload queue

**Solutions:**

1. **File too large**
    - Check file size (current limit: 100MB)
    - Compress or split large files

Increase limit in application.properties:
Properties
spring.servlet.multipart.max-file-size=200MB
spring.servlet.multipart.max-request-size=200MB
    -
2. **Unsupported file type**

    - Verify file extension is supported
    - Rename file if extension is correct but not recognized

**Storage volume full**
Bash
# Check Docker volume usage
docker system df -v

# Clean up unused data
docker system prune -v

3.
4. **Network timeout**
    - Check internet connection
    - Try smaller files first
    - Upload during off-peak hours

**Issue: Study/Task Not Appearing**
**Symptoms:**

- Created study doesn't show in list
- Assigned task not visible to participant
- Data seems to be lost

**Solutions:**

1. **Study still in draft mode**
    - Navigate to study settings
    - Change status from "Draft" to "Active"
    - Publish the study
2. **Participant hasn't passed competency quiz**
    - Check quiz requirements
    - Verify participant completed quiz
    - Review passing score threshold
3. **Task assignment failed**
    - Go to task → Participants
    - Manually reassign task
    - Check for error messages in researcher logs

**Database synchronization issue**
Bash
# Restart backend to sync
docker-compose restart backend

# Check database connection
docker-compose logs postgres

4.
5. **Browser cache showing old data**
    - Hard refresh: Ctrl+F5 (Windows) / Cmd+Shift+R (Mac)
    - Clear site data

    - Logout and login again

**Issue: PDF Artifacts Not Displaying**

**Symptoms:**

- PDF shows blank page
- "Failed to load PDF" error
- Infinite loading spinner

**Solutions:**

1. **PDF file corrupted**
    - Open PDF in external viewer to verify
    - Re-upload the PDF
    - Try different PDF if problem persists
2. **Browser compatibility**
    - Switch to Chrome or Firefox
    - Update browser to latest version
    - Disable browser PDF viewer extensions
3. **PDF.js worker issue**
    - Check browser console for errors
    - Clear cache and reload
    - Restart browser

**File path issue**

Bash

```
# Check backend logs for file access errors
docker-compose logs backend | grep -i pdf

# Verify file exists in storage volume
docker exec artifact-comparator-backend ls /app/storage/artifacts
```

4.

**Issue: Database Connection Errors**

**Symptoms:**

- Backend logs show "Connection refused"
- "Database unavailable" error
- Application fails to start

**Solutions:**

**Database container not running**

Bash

```
# Check postgres container
docker-compose ps postgres

# Start postgres
docker-compose up -d postgres
```

```
# Wait 10 seconds, then start backend
docker-compose up -d backend
```

1. 
2. **Incorrect database credentials**
    - Verify credentials in docker-compose.yml match application.properties

Reset to defaults:
User: admin
Password: admin123
Database: artifact_comparator

- 

**Database corrupted**

Bash

```
# CAUTION: This deletes all data!
docker-compose down -v
docker-compose up --build
```

3. 

**Port conflict (5433)**

Bash

```
# Check if port 5433 is in use
netstat -ano | findstr :5433

# Change port in docker-compose.yml if needed
```