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# Classync - Virtual Classroom Platform

## Sprint 3 Report

### Group - 33

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# 1. Overview / Summary

Objective of sprint-3 was to implement the chat-space independently that is used for each classroom, the “assignments” section, and the “Announcements” section, that is to be displayed in each classroom and also to implement the Announcement section independently for each classroom, enabling instructors to create, broadcast, and manage announcements with real-time notifications, optional file attachments, and audience targeting (class-wide or group-specific).

It also included The Assignment Management module which is a feature that enables instructors to create, manage, and grade assignments while allowing students to submit their work and track their progress.

## Duration

**12 Oct – 25 Oct**

## 2. User Stories Covered

### 2.1 User Stories - Chat Space

#### US-CHAT-01: Chat with peers

##### Front Card

*As a student/faculty, I want to efficiently broadcast a message to all members at a time, so that I can get my point through quickly.*

##### Back Card

###### success

- On hitting send, the user must be able to see his/her message in the message list, and it must be shown on the devices of all other users as well.

###### Failure

- The message doesn't properly get shown on the chat-space.

#### US-CHAT-02: Peer Acknowledgement

##### Front Card

*As a student/faculty, I must be able to see the name of the message sender and the message must have a proper order as per the sequence, so that I can see who had sent the message and whether the chat follows a sensible sequence or not.*

##### Back Card

###### success

- Names must appear on each message and the chat must follow a sequential order similar to the send times of various messages.

###### failure

- The messages don't have proper names of their senders, or the messages be out of order.

### US-CHAT-03: Dynamic Chat window

#### Front Card

*As a student/faculty, the chat must scroll down to the last message so that I don't have to scroll to the bottom of the page each time I enter the chat.*

#### Back Card

##### success

- On entering the chat space, the chat scrolls down to the bottom of the page, to show the last message sent.

##### failure

- The message list doesn't obey the rule of scroll down and the message list loads statically.

### US-CHAT-04: Complete Information

#### Front Card

*As a student/faculty, I must be able to see all the messages that had been sent on the chat, so that I have a complete history of what messages were sent on the stream.*

#### Back Card

##### success

- When a new user logs in, he/she is able to see all the messages sent previously prior to his/her login.

##### failure

- The user sees an empty page with no messages when starting a new session.

## 2.2 User Stories - Assignments

### US-ASS-01: Assignment creation

#### Front Card

*As an instructor, I want to create assignments for my courses with title, description, deadline, and optional file attachments, so that students can receive clear instructions.*

#### Back Card

##### success

- When the instructor fills in all required fields (course, title, description, deadline) and clicks "Create Assignment", the assignment is successfully saved to the database, appears in the assignments list, and a success toast notification is displayed.

##### failure

- If required fields are missing or the file exceeds 10MB, an error message is shown and the assignment is not created.

**US-ASS-02: Assignment submission as a Student****Front Card**

*As a Student , I want to submit the assignment by choosing a file from my local machine , so that I can submit it.*

**Back Card****success**

- Submitted successfully

**failure**

- Error occurred in file uploading.

**US-ASS-03: Assignment Submission****Front Card**

*As an instructor, I want to see all student submissions for a specific assignment, so that I can review their work and track who has submitted.*

**Back Card****success**

- When the instructor clicks "View Submissions" on an assignment, they see a list of all submissions with student names, submission dates, download links, and grading status. If no submissions exist yet, a message "No submissions yet" is displayed.

**failure**

- The submissions list shows an error message or fails to load, preventing the instructor from accessing student work.

**US-ASS-04: Assignment Reminder****Front Card**

*As a Student , I want to get a reminder for the remaining assignments having a deadline in 24 hours, so that I can complete the submission on time.*

**Back Card****success**

- Got the reminder on time.

**failure**

- Get the reminder and my assignment deadline crossed.
- Didn't got the reminder at all.

**US-ASS-05: Assignment grading****Front Card**

*As an instructor, I want to assign grades and provide feedback on student submissions, so that students know their performance and can improve.*

**Back Card****success**

- When the instructor enters a grade, max score, and feedback, then clicks "Save Grade", the submission is updated with the grade information, the student receives a real-time notification, and a success is displayed showing "Grade saved successfully".

**failure**

- If the grade field is empty or contains non-numeric values, an error message is shown and the grade is not saved.

**US-ASS-06: Export Students submissions and grade****Front Card**

*As a Instructor, I want to get the submission report for every assignment , so that I can check for a particular student in all assignment and then can grade accordingly.*

**Back Card****success**

- Easy Export to a csv/ excel (xlsx) file.

**failure**

- Error in exporting

**US-ASS-07: Assignment submission based on priority****Front Card**

*As a student, I want to see all assignments for my enrolled courses organized by status, so that I know what work I need to complete and can prioritize my tasks.*

**Back Card****success**

- When the student navigates to the assignments page, they see their assignments organized into three tabs (Pending, Submitted, Overdue) with course names, titles, deadlines, and status badges clearly displayed. Only assignments for courses they're enrolled in and groups they belong to are visible.

**failure**

- The student sees an empty page or error message even when assignments exist for their enrolled courses, or they see assignments from courses they're not enrolled in.

**US-ASS-08: Submission before deadline****Front Card**

*As a student, I want to upload a file as my assignment submission before the deadline, so that my instructor can review and grade my work.*

**Back Card****success**

- When the student selects a valid file (under 10MB) and clicks "Submit", the file is uploaded successfully, a timestamp is recorded, the assignment moves to the "Submitted" tab, and a success toast notification appears saying "Assignment submitted successfully".

**failure**

- If the file is larger than 10MB, an error message "File too large. Please upload a file smaller than 10MB" is displayed. If the deadline has passed, the submit button is disabled and shows "Cannot submit - deadline has passed".

**US-ASS-09: Student Grade Display****Front Card**

*As a student, I want to see if my submission has been graded and view my score with feedback, so that I can track my academic progress and understand areas for improvement.*

**Back Card****success**

- When the instructor grades the submission, the student receives a real-time notification via toast, and the assignment card immediately updates to show the grade (e.g., "Grade: 85/100"), feedback text, submission date, and a "Graded" badge without requiring a page refresh.

**failure**

- The student does not receive any notification when graded, or the grade/feedback does not appear in the UI even after the instructor has saved it.

**US-ASS-10: Assignment Status****Front Card**

*As a Student , I want to see the status of the assignment so that I can submit the remaining ones.*

**Back Card****success**

- All assignments of the enrolled courses are segregated in submitted ad over-due.

**failure**

- Incomplete or wrong segregation.

**US-ASS-11: Edit Deadline****Front Card**

*As an Instructor, I want to change the assignment deadline on requirements , so that I can satisfy the student needs .*

**Back Card****success**

- Deadline edited and saved as per requirements.

**failure**

- Error in resetting .

### US-ASS-12: Assignments creation for all courses

#### Front Card

*As an Instructor, I want to create the assignments from the admin page for all courses from the same page , so that I don't have to go the all pages distinctly.*

#### Back Card

##### success

- All courses assignment creation available at the admin page.

##### failure

- Some courses do not appear in assignment creation.
- Assignment creation fails for some selected course.

### US-ASS-13: Assignment or course deletion

#### Front Card

*As an Instructor, I want to delete the assignment/course on the requirement basis , so that I can avoid any confusion in students.*

#### Back Card

##### success

- Assignment or course selected for deletion is deleted successfully .

##### failure

- Deletion failure.

## 2.3 User Stories - Announcement Section

### US-US-01: Create Post

#### Front Card

*As a Instructor, I want to Create a post , so that I can provide materials and poll based questions .*

#### Back Card

##### success

- Post Created successfully and shown in classroom stream at top.

##### failure

- Post not created and shown in stream.

**US-US-02: Edit Classroom Post****Front Card**

*As an instructor, I want to edit existing announcements, so I can correct mistakes or update information without losing engagement.*

**Back Card****success**

- Editing an announcement (title, content, link, poll, flags) updates it immediately for all users; updated-at timestamp reflects the change. Edit and delete buttons are only visible to the author or admin.

**failure**

- Edits are not reflected in the UI, or other users do not see the changes, or non-authors can edit posts.

**US-US-03: Delete announcements****Front Card**

*As an instructor, I want to delete announcements, so I can remove outdated or irrelevant posts from the classroom.*

**Back Card****success**

- Announcement is deleted and removed from the feed for all users. Associated poll data and attached materials are cleaned up. Deletion is only available to the author or admin.

**failure**

- Post remains visible after deletion, or is deleted when unauthorized, or materials are orphaned.

**US-US-04: Upload files in announcement****Front Card**

*As an instructor, I want to attach files (PDF, DOC, DOCX, TXT) to announcements, so students can quickly access important documents.*

**Back Card****success**

- Multiple files can be attached during creation; they are uploaded to Google Drive. Students can view and download materials with one click. File name and size are displayed.

**failure**

- File upload fails, attachment does not appear in the announcement, or download link is broken.

**US-US-05: mark announcements according to priority****Front Card**

*As an instructor, I want to mark announcements as Important or Urgent, so critical information stands out.*

**Back Card****success**

- Announcements marked as Important or Urgent display visual badges; these flags can be set during creation or editing. Flagged announcements attract user attention.

**failure**

- Badges are not visible, or flags are not saved, or they cannot be toggled during editing.

**US-US-06: Pin post at top of stream****Front Card**

*As an instructor, I want to pin announcements to the top of the feed, so critical messages are always visible.*

**Back Card****success**

- Pinned announcements appear above all non-pinned posts in the feed; a visual "PINNED" badge is displayed. Pin status can be toggled during editing.

**failure**

- Pinned posts do not stay at the top, or the badge is missing.

**US-US-07: Post Poll in stream****Front Card**

*As an instructor, I want to include polls in announcements, so I can collect feedback or opinions from students.*

**Back Card****success**

- Poll (question + 2–6 options) can be added during announcement creation or edited afterward. Students can submit votes (single or multiple selection based on configuration). Vote counts and percentages are displayed. Polls can be removed or updated without losing existing votes.

**failure**

- Poll fails to save, votes are not recorded, or poll options do not display correctly.

**US-US-08: Search in Stream****Front Card**

*As a user , I want to search a post , so that I can easily find particular post .*

**Back Card****success**

- Found the post as searched in the search bar.

**failure**

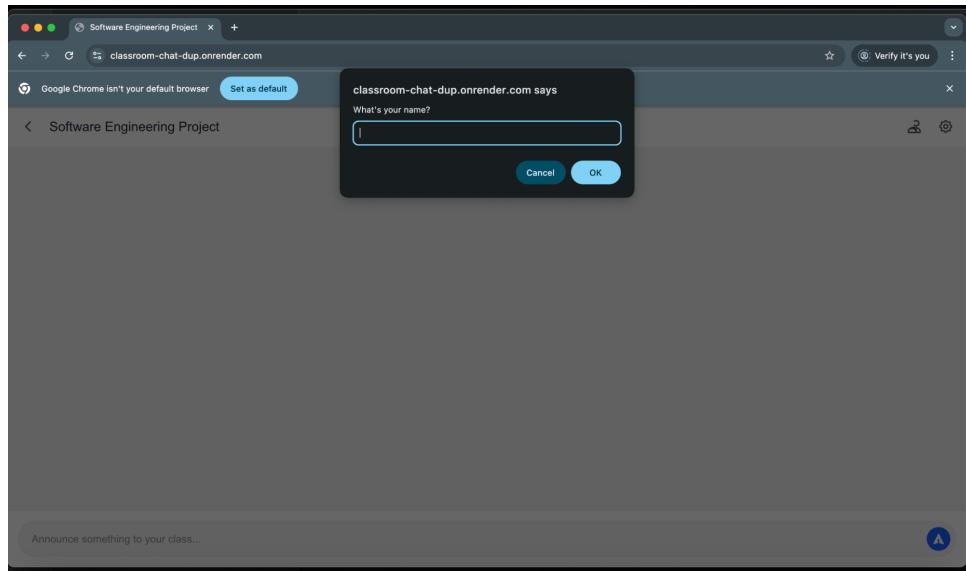
- Searched post is not found even when the post was present with matching fields.

# 3. Proof of Concept (POC)

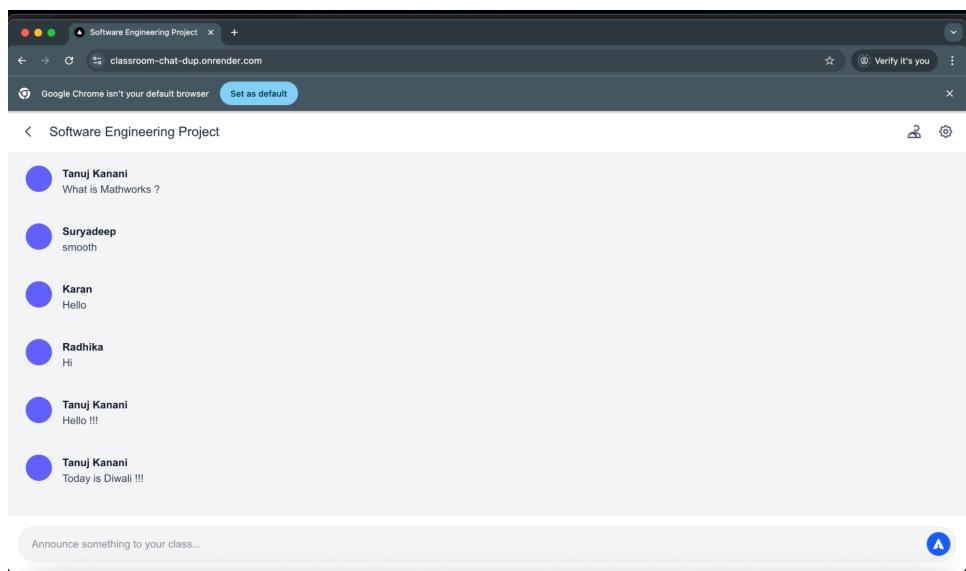
## 3.1 Chat Flow

This section provides a visual overview of How Chat window works and looks like.

- 1. Register User to begin chatting



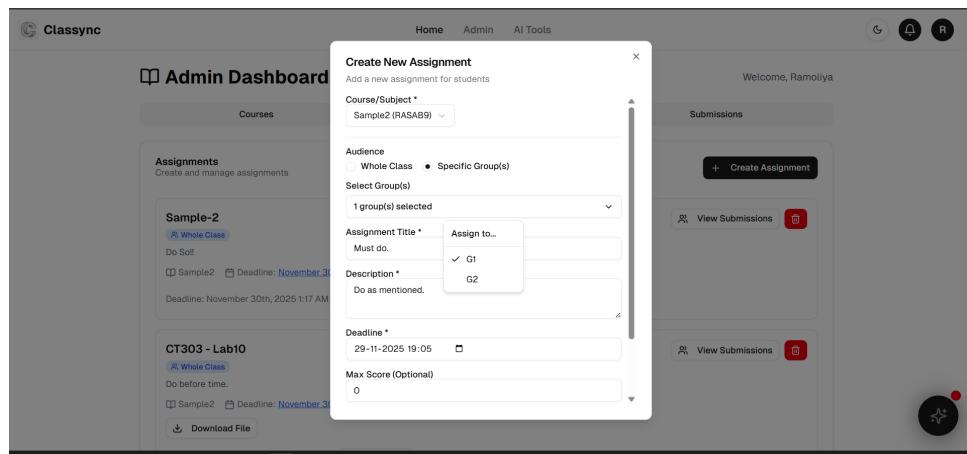
- 2. Chat window



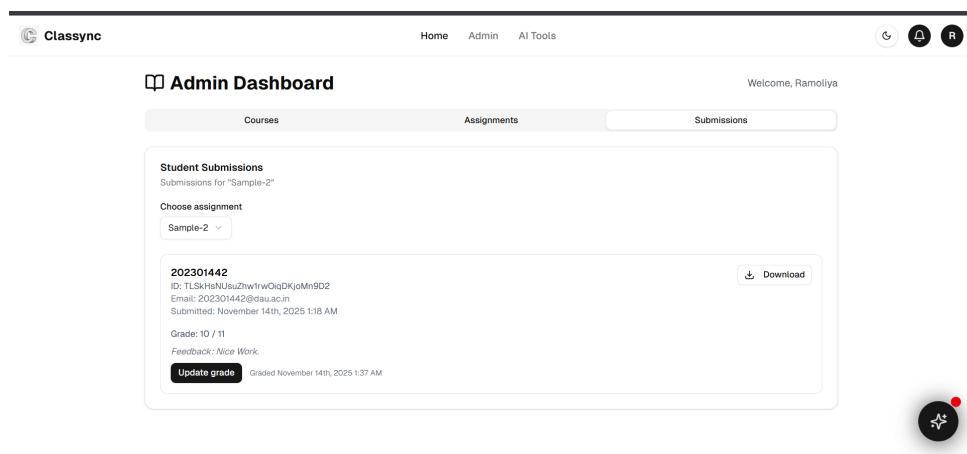
## 3.2 Assignment Section

This section provides a visual overview of Classroom page.

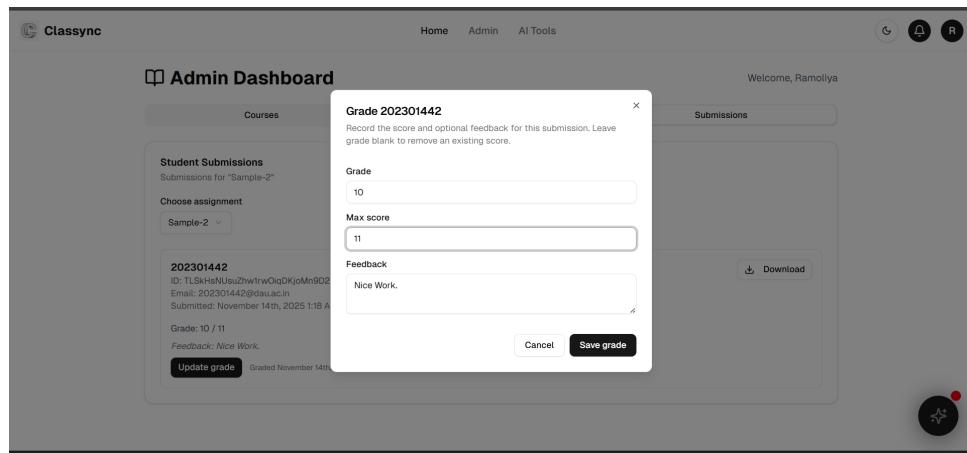
- 1. Create Assignment:** This part is visible only to instructor.



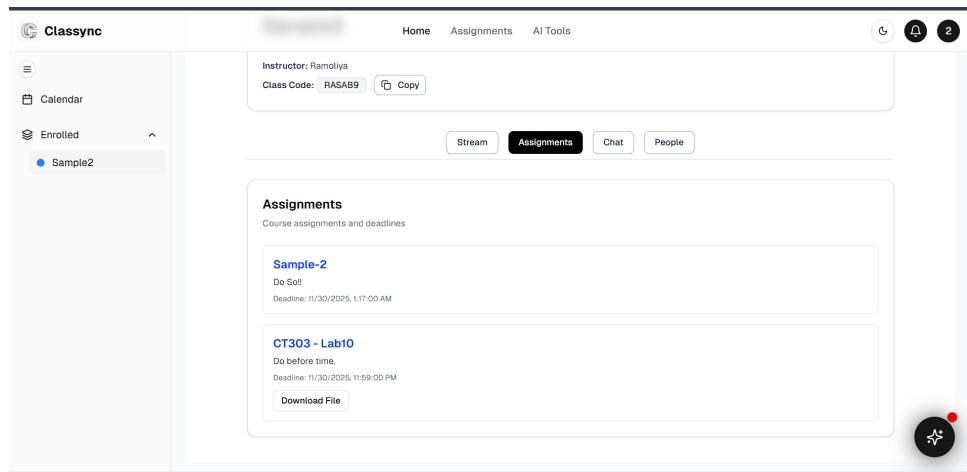
- 2. View Assignment submissions:** For Instructor to view submission of particular assignments with all details in clear visible format.



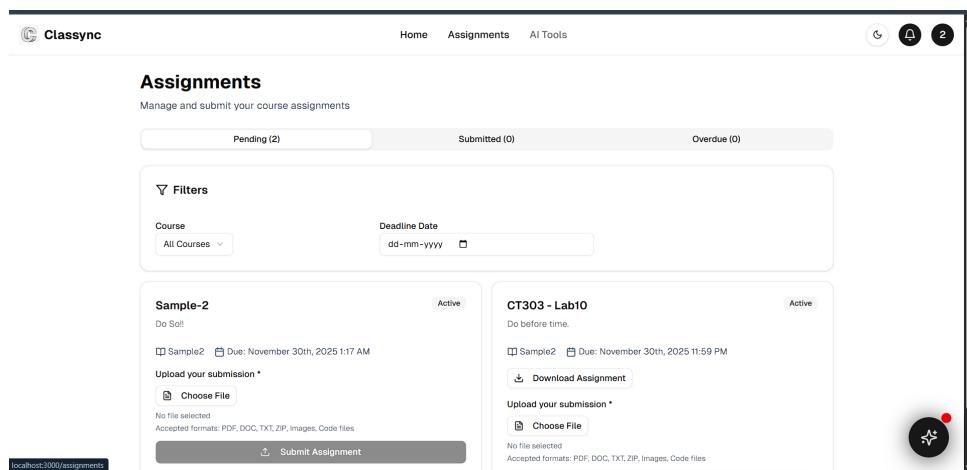
- 3. Grade Assignment submission:** Grade Assignment Submission from the above given submission Tab for any particular submissions.



- **4. View assigned assignments:** For user who are logged in as students can view their Assigned Assignments with deadline and direct link to assignments tab where submission can be made by student.



- **5. Submit Assignments :** By clicking the above given tab or Assignments tab on the homepage opens the assignment tab where detailed information on assignments such as pending , submitted and overdue is given from which pending Assignments can be submitted



- 6. View Submission Status Grades :** From Submitted section User can view grades and other info.

The screenshot shows the 'Assignments' section of the Classsync platform. At the top, there are tabs for 'Pending (0)', 'Submitted (2)', and 'Overdue (0)'. Below these, two assignments are listed:

- Sample-2**: Active, Due: November 30th, 2025 1:17 AM. Status: Submitted. Grade: 10 / 11. Feedback: Nice Work. Graded on November 14th, 2025 1:37 AM. Buttons: View Your Submission, Download Assignment.
- CT303 - Lab10**: Active, Due before time. Status: Submitted. Grade: 100 / 100. Feedback: Fail. Graded on November 14th, 2025 1:16 AM. Buttons: Download Assignment, View Your Submission.

### 3.3 Announcement Flow

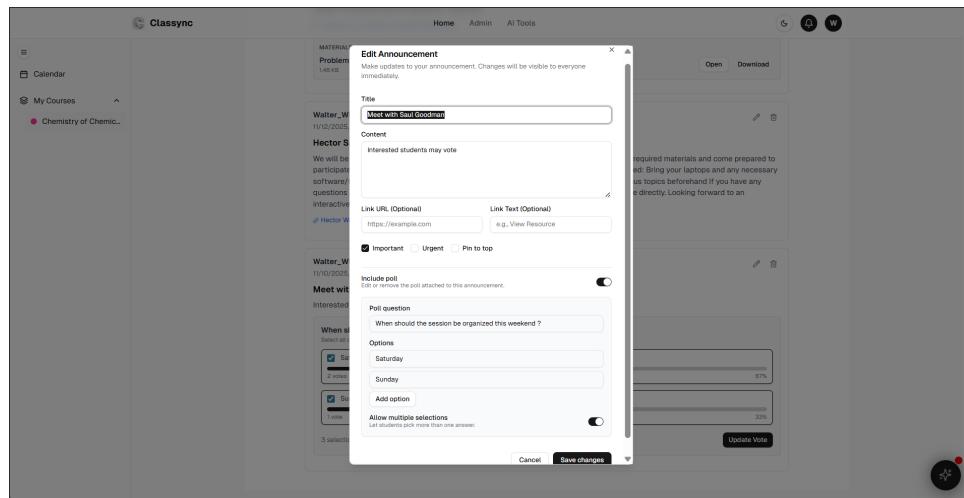
This section provides a visual overview of How Create Post works and Announcements are made in Classroom Stream(By Instructor).

- 1. Create Post form:** This part is visible only to instructor and this form pops up when instructor clicks on create post button.

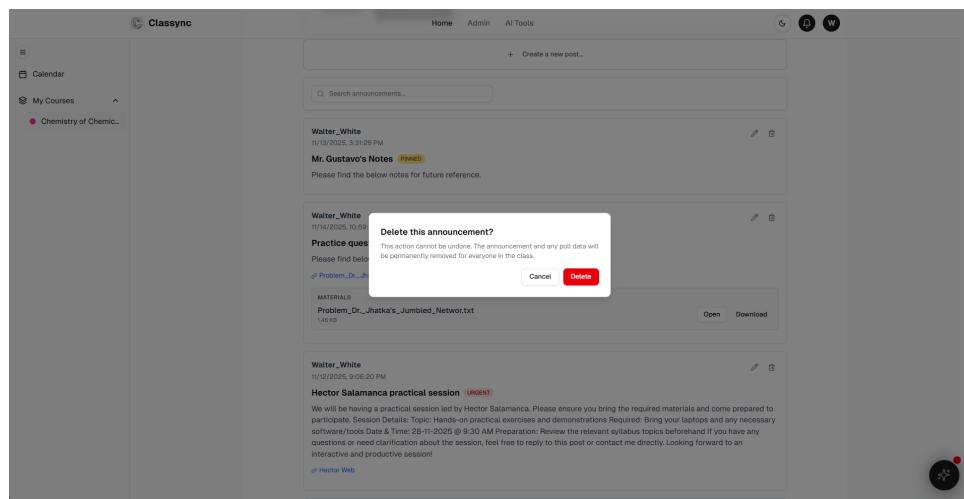
The screenshot shows the 'Create Post' dialog box. The main title is 'Create Post' with the subtitle 'Main an announcement or post to your class.' The dialog includes the following fields and options:

- Title:** e.g., Welcome to Class!
- Content:** What's on your mind?
- Link URL (Optional):** https://example.com
- Link Text (Optional):** e.g., View Resource
- Attach materials (PDF, DOC, DOCX, TXT):** Choose Files (Optional: You can attach multiple files; they will be stored securely in the course Drive.)
- Audience:** Whole Class (radio button selected), Specific Group, Important, Urgent, Pin to top.
- Include poll:** Collect responses alongside your announcement.
- Buttons:** Cancel, Post, Open, Download.

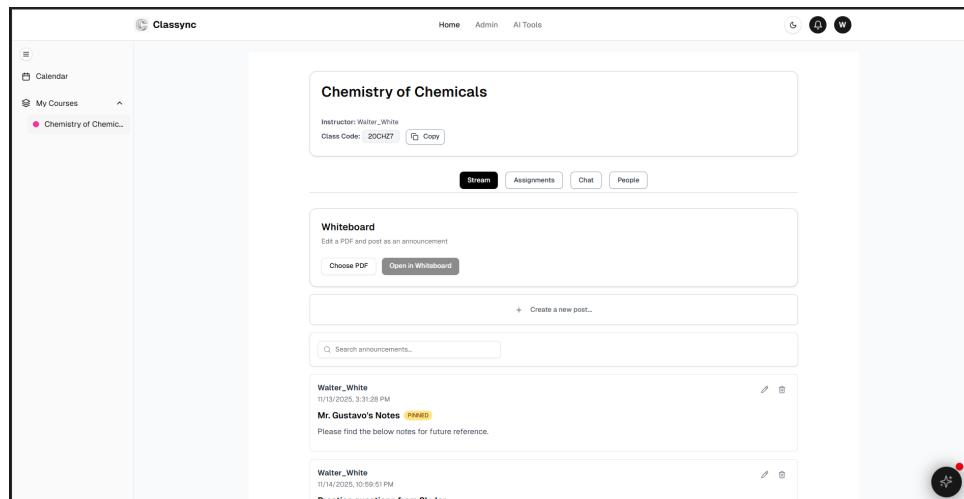
- 2. Edit Announcement:** Shows the same form pre-populated with existing announcement data and can be called by clicking on edit button for any particular announcement made.



- **3. Delete Announcement:** Shows the Alert Dialog box confirming deletion action.



- **4. Announcement with Badges:** Shows a posted announcement displaying multiple badges (PINNED, IMPORTANT, URGENT) to demonstrate visual indicators



- **5.Announcement with Materials :** Shows Materials section with file names, sizes, and Open/Download buttons

The screenshot shows the Classync application interface. On the left, there's a sidebar with 'Calendar' and 'My Courses' sections, where 'Chemistry of Chemistry' is selected. The main area displays three announcements:

- Walter\_White** (11/13/2025, 3:31:28 PM) - Mr. Gustavo's Notes (Pinned): Includes a note asking to find below notes for future reference.
- Walter\_White** (11/14/2025, 10:59:51 PM) - Practice questions from Skylar: Includes a note asking to find below practice questions - Important and a file link to 'Problem\_Dr.\_Jhatka's\_Jumbled\_Network.txt' (146 KB). Buttons for 'Open' and 'Download' are shown.
- Walter\_White** (11/12/2025, 9:04:20 PM) - Hector Salamanca practical session (URGENT): Includes a note about the practical session led by Hector Salamanca, required materials, and preparation details. It also includes a file link to 'Problem\_Dr.\_Jhatka's\_Jumbled\_Network.txt' (146 KB) and buttons for 'Open' and 'Download'.

- **5.Announcement with Poll:** Shows the poll section displaying question, options, vote counts, percentages, and Submit Vote button and also shows poll options with checkbox/radio selected and updated results after voting

The screenshot shows the Classync application interface. On the left, there's a sidebar with 'Calendar' and 'My Courses' sections, where 'Chemistry of Chemistry' is selected. The main area displays an announcement:

- Walter\_White** (11/12/2025, 9:04:20 PM) - Hector Salamanca practical session (URGENT): Includes a note about the practical session led by Hector Salamanca, required materials, and preparation details.
- Walter\_White** (11/10/2025, 7:09:27 PM) - Meet with Saul Goodman (IMPORTANT): Includes a note asking interested students may vote. Below is a poll titled "When should the session be organized this weekend?". It has two options: "Saturday" (2 votes, 67%) and "Sunday" (1 vote, 33%). A button for "Update Vote" is at the bottom right.

- **5.Announcement with External Links:** Shows clickable link item displayed in announcement

The screenshot shows the Stream page of the Classsync Virtual Classroom System. The course title is "Chemistry of Chemicals". The sidebar on the left shows "My Courses" with one item: "Chemistry of Chemicals". The main content area displays a post from "Walter\_White" dated 11/15/2025, 2:46:12 PM. The post is titled "Mr. Gustavo's Notes" and is marked as PINNED and IMPORTANT. It contains a note: "Please find the below notes for future reference." and a PDF file link: "Breaking-Bad-a-Cultural-and-Narrative-Analysis-of-a-Landmark-Television-Series-SSRJAHSS.pdf". Below the post, there is a "Whiteboard" section with a "Choose PDF" button and an "Open in Whiteboard" button. A search bar at the bottom of the stream says "Search announcements...". On the right side, there is a circular icon with a red dot.

- **6. Search Results:** Shows filtered announcement feed with search term applied and match count displayed

The screenshot shows the Stream page of the Classsync Virtual Classroom System with a search filter applied. The search bar at the top of the stream contains the term "guest". The results show one match. The rest of the interface is identical to the first screenshot, displaying the "Chemistry of Chemicals" course, a post from "Walter\_White", and the "Whiteboard" section.

## 4. Sprint Review

### 4.1 What We Achieved

#### 4.1.1 In Chat Window

- Implemented a real-time chat feature, allowing users in a specific course to communicate instantly.
- Added functionality for users to specify their display name for the chat session.
- Successfully scoped chats to a specific course, ensuring conversations are private and relevant to that classroom.

#### 4.1.2 In Assignment Management

- Deployed a role-based assignment view.
- **For Students:** Created a UI to view all assignments from the homepage or classroom, complete with details like deadlines and priority.
- **For Instructors:** Built a full management dashboard to create new assignments, edit existing ones, view all student submissions, and assign grades.
- Established the complex database models required to link assignments, students, and submissions.

#### 4.1.3 In Announcements Features

- **Advanced Post Creation:** Enhanced the instructor's "create post" form to support attachments like files, links, and polls.
- **Priority Posts:** Added a feature for instructors to mark specific announcements as "priority" in the stream.
- **Stream Interaction:** Successfully implemented an "Edit Post" feature for instructors.
- **Search:** A "Search" bar was added for all users to filter and find old posts within the stream.

## 4.2 Challenges

### 4.2.1 In Chat Window

**Challenge 1: Real-time Messaging Issue:** A normal web page only loads data once.

For a chat, messages from other users needed to appear instantly without the user having to refresh the page.

**Solution:** Implemented a real-time listener (simulating a WebSocket or a database listener like ‘onSnapshot’). This kept a live connection to the database, and any new message added to the ‘chats’ collection for that course was instantly “pushed” to all connected users.

**Learning:** Understood the difference between a standard request-response model and an event-driven, real-time architecture, which is essential for chat applications.

**Challenge 2: User Identification & Chat Scoping Issue:** The chat needed to show a user’s chosen name and ensure the chat was private to a specific course (e.g., “Calculus” chat is separate from “History” chat).

**Solution:** The user’s name was captured and stored in a local variable. All chat messages in the database were stored with a ‘course-id’. When the user opened the chat, the application queried and listened for messages only where the ‘course-id’ matched the current classroom.

**Learning:** Learned the importance of filtering and scoping data in the database (using ‘course-id’) to create private, context-specific user experiences.

### 4.2.2 In Assignment Management

**Challenge 1: Dual UI for Student vs. Instructor Issue:** The assignment page needed two completely different modes: a ”list view” for students (showing deadlines, priority) and a ”dashboard” for instructors (showing submissions, grading, edit/create buttons).

**Solution:** Created a main ”Assignments” component that first checks the user’s role. If the role was ”student,” it rendered the ‘StudentAssignmentList’ component. If the role was ”instructor,” it rendered the ‘InstructorDashboard’ component, which included the forms for creating, editing, and grading.

**Learning:** Advanced conditional rendering beyond just hiding a single button. Learned to design and render entirely different component trees based on user role while still using the same page.

**Challenge 2: Complex Data Model for Submissions** **Issue:** An assignment isn't just a simple post. The system needed to track which student submitted what, store the grade, handle deadlines, and sort by priority.

**Solution:** Designed a more complex database schema. A 'submissions' table was created to link 'assignment-id' and 'student-id', and it included fields for 'grade' and 'submission-timestamp'. The "priority" was a field on the 'assignments' table itself, and logic was used to sort the list for students.

**Learning:** Learned how to model many-to-many relationships in a database (via a "join table" like 'submissions'). This was a much deeper dive into data modeling than the simple post/comment system.

#### 4.2.3 In Announcements & Stream Features

**Challenge 1: Advanced Instructor Post Form** **Issue:** Instructors needed to create announcements that were more than just text. They needed to add files, links, or polls, and mark posts as "priority."

**Solution:** The 'posts' table in the database was modified. A 'post-type' column was added (e.g., 'text', 'poll', 'file'). A 'metadata' column was used to store extra data (like poll options or a file URL). The frontend form for instructors had extra inputs, and the stream rendered each post differently based on its 'post-type'.

**Learning:** Learned how to build a flexible data model to handle different types of content ("polymorphic data"). This makes the application much more scalable and feature-rich.

**Challenge 2: Implementing Stream Interaction (Edit/Search)** **Issue:** The stream needed to be more interactive. Instructors needed to "edit" posts, and all users needed to "search" for old posts.

**Solution:** For "Edit," an 'isEditing' state was used to toggle the UI between a text display and a text area, triggering a database 'UPDATE'. For "Search," a search bar was added that filtered the list of posts on the frontend (client-side) for an instant, responsive feel.

**Learning:** Learned to manage local component state (isEditing) to change the UI, and how to use 'UPDATE' database operations. Also learned to implement client-side filtering for a fast search experience.

## 5. Conclusion

This sprint marked a significant expansion of the application's interactive capabilities, transforming the core user experience. The successful implementation of a real-time, course-specific chat window provides a vital channel for peer-to-peer communication.

Furthermore, the assignment management system was built out with a complex, role-based UI, enabling full instructor control over creating, editing, and grading, while giving students a clear view of deadlines and priorities.

Finally, the classroom stream was upgraded from a simple feed to an advanced announcements hub, empowering instructors with rich post types (files, polls, links), priority marking, and edit functionality, while the new search feature improves usability for all users. Collectively, these features have successfully evolved the platform into a dynamic and functional educational tool.