Revisions

| Version | Primary Author(s) | Description of Version | Date Completed |
| --- | --- | --- | --- |
| 1.0 | Hesham | Initial file created. Draft techniques | 22/4/2025 |
| 1.1 | Nickleirsch | Explained each technique. Added example questions | 22/4/2025 |
| 1.2 | Hesham | Added proper elicitation description format for Interviews | 23/4/2025 |
| 1.3 | Hesham | Added Plan | 05/05/2025 |
| 1.4 | Hesham | Potential Requirements | 06/05/2025 |
| 1.5 | Hesham | Brainstorming format achieved | 06/05/2025 |
| 1.6 | Nickleirsch | Reformatting brainstorming plan, Added preparation | 06/05/2024 |
| 1.7 | Nickleirsch | Added brainstorming goals and example questions | 06/05/2025 |
| 1.8 | Hesham | Added Channels for observation and interview specifications | 08/05/2025 |
| 1.9 | Nickleirsch | Added slides and potential participants | 08/05/2025 |
| 2.0 | Nickleirsch | Added and elaborated brainstorming rules | 08/05/2025 |
| 2.1 | Nickleirsch | Formatting and sectioning | 08/05/2025 |
| 2.2 | Lim Xin Yee | Added brainstorming topics and questions | 08/05/2025 |
| 2.3 | Danesh Veran | Added brainstorming ideas | 09/05/2025 |
| 2.4 | Hesham | Added interview questions | 09/05/2025 |
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| 2.6 | Nickleirsch | Added Questionnaire Plan and Major Formatting | 10/05/2025 |

# **Technique: Brainstorming**

## **Brainstorming Preparation**

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| --- | --- |
| Technique | Brainstorming |
| Subject | The specific requirements engineering context |
| Stakeholder(s) | Students |
| Mode | Virtual (Online) |
| Moderator | Hesham Nader |
| Minute-taker | Nickleirsch |
| Participants  (Minimum 5) | 1. Danesh Veran 2. Lim Xin Yee 3. Meeraa Dharshini 4. Habiba 5. Peerrmetha |

Goals:

1. Understand student pain points with current systems.
2. Discover preferred communication methods.
3. Identify useful features they expect.
4. Learn how they currently manage academic info, alerts, and deadlines.
5. Validate assumptions made prior to the session

Brainstorming Rules:

1. Quantity over quality: There should be a focus on generating as many ideas as possible without worrying about how good they are. A large pool increases the chance of finding great solutions.
2. Free association and visionary thinking are explicitly desired: Imaginative, futuristic, or even wild ideas must be encouraged as creativity and unfiltered thinking can lead to breakthrough insights.
3. Taking on and combining expressed ideas is allowed and desired: Participants can build on each other's ideas. Collaboration and synergy should be welcomed to develop stronger concepts.
4. Criticizing other participants’ ideas is forbidden: No negative feedback or judgment should be given during the idea-sharing phase. This keeps the environment safe and open for expression.
5. Questions for clarification are allowed: Participants can ask questions to better understand others’ ideas but should do so respectfully and without judgment.
6. Don’t stop the session if there is a long-lasting deadlock. Stimulate the participants and overcome at least two long-lasting deadlocks: If silence or hesitation occurs, the moderator should re-energize the group and push through at least two such moments to maintain momentum.
7. Wait until the brainstorming comes to a natural end: Don’t force a conclusion. Let the session end organically when idea flow naturally decreases.

Topics to Explore During Brainstorming:

1. Current challenges
2. Preferred communication channels
3. Expectations of features
4. Customization & Personalization
5. Notification Timing & Frequency
6. Integration with other tools (Google Calendar, etc.)

Example Questions

1. What’s one time you missed an important university update?
2. What frustrates you the most about using the current university portal?
3. If you could design your perfect student portal, what 3 things would it do?
4. Which notifications do you actually pay attention to?
5. What info do you wish your parents could easily access (or not)?
6. What’s one tool or feature from another app you'd want added to this portal?
7. Have you ever had to rely on friends for updates or deadlines? Why?

## **Brainstorming Execution**

Initial Brainstorming:

1. Personalized dashboard (courses, grades, fees). - Core student/parent info hub
2. SMS for class cancellation (instant). - Critical, timely SMS update
3. SMS for parents: attendance < 80%. - Key parental SMS alert (CMS data)
4. Export timetable to Microsoft Calendar. - High student/lecturer convenience
5. Visual GPA progress chart. - Enhances academic understanding
6. Direct fee payment link & history. - Essential administrative service
7. SMS for parents: academic performance summary. - Key parental SMS info (CMS data)
8. Student "quiet hours" for non-critical notifications. - Improves user notification control
9. Admin: targeted SMS to student groups. - Crucial admin communication tool
10. "My Documents" section. - Centralized important document access
11. Notification (portal + optional SMS) for new grades. - Important academic update
12. Parents: easy update of their contact details. - Ensures communication accuracy
13. Lecturers: quick communication of timetable changes. - Core lecturer communication need
14. Admin: manage SMS templates. - Essential for efficient SMS use
15. Emergency alert system (portal banner + SMS). - Critical campus-wide safety communication
16. SMS for fee payment deadlines (multiple reminders). - Proactive administrative SMS
17. Mobile-first/responsive design. - Essential for modern accessibility
18. Effective portal-wide search. - Improves information findability
19. Admin: SMS/portal message stats. - Measures communication effectiveness
20. Single Sign-On (SSO). - Key for user convenience/security
21. Customizable notification preferences: Allow students and parents to adjust their notification preferences to enable/disable certain notifications.
22. Clubs & event integration: Show upcoming events and let students RSVP
23. Calendar integration: Allow students to sync deadlines with external third party calendar apps
24. Guide Page which documents the features of the system and how to access them.
25. Parent dashboard which shows how well the pupil is doing
26. Accessibility compliance (WCAG, screen reader)
27. Multilingual interface support
28. Mobile app companion to the portal
29. Customizable session timeout and auto-logout features (can set to 20 mins or 1 hour etc)
30. SMS template customization by admin
31. AI-based personalized recommendations (maybe AI integration, like copilot)
32. Graphical representation of academic information
33. Augmented reality campus map
34. Customizable interface (light/dark mode, move widgets around)

## **Brainstorming Follow Up**

Categorized Brainstorming:

* Usable:
  + Idea
* Not-decided:
  + Idea
* Unusable:
  + Idea

If needed, could include a section about the benefits of brainstorming to justify why we choose it

Slides:

A close up of a text

AI-generated content may be incorrect.A screenshot of a white paper with red text

AI-generated content may be incorrect.A white background with words and a person in the background

AI-generated content may be incorrect.A close-up of a text

AI-generated content may be incorrect.

# **Technique: Interview**

## **Interview: Preparation**

|  |  |
| --- | --- |
| Purpose | To gain detailed insight into user expectations, current challenges, and workflows. |
| Participants | Lecturers, administrators, and some senior students. |
| Approach | One-on-one discussions. Questions will be open-ended to allow users to express needs freely. |
| Effort Estimation | 2 students  1 lecturer  1 parent  Justification: The system’s main stakeholder is the student. |
| Preparation Activities | 1. Create a structured interview schedule and timeline with key topics to be discussed. 2. Utilize appropriate meeting spaces for face-to-face interviews. 3. Prepare recording equipment and note-taking materials 4. Identify role-specific question sets according to stakeholder group. |

**Interview Format**

**For Students:**

Questions:

Short introduction (1-2 minutes)

1. How do you currently keep track of your academic information (grades, billing, deadlines)?
2. What frustrates you the most about the current university communication system?
3. Can you recall a time when you missed an important university update? What happened?
4. What is your preferred method of receiving university notifications? (Email, SMS, app notifications)
5. Which notifications do you tend to pay attention to, and which do you tend to ignore?
6. How do you share university related stuff with your parents?
7. How important is having one centralised system instead of multiple different ones be to you?
8. Is there any feature you’ve seen in other educational platforms that you wish our university had?
9. Do you have any other suggestions or concerns you’d like to share?

**For Parents:**

Short introduction (1-2 minutes)

1. How do you currently receive information about your child's academic progress?
2. Can you recall a time when you missed important university information? What happened?
3. How do you currently manage and track university fee payments?
4. What kind of financial notifications would be most helpful to receive?
5. How would you prefer to be notified about upcoming payment deadlines?
6. What types of emergency notifications would you consider critical?
7. If you could design a parent portal, what three features would be most important to you?
8. Is there anything else you'd like to share about improving parent-university communication?

## **Interview: Execution**

Interview Structure:

1. Introduction: Explain the project purpose and take note of interviewee’s reactions
2. Main Discussion: Begin with general questions, allow for natural conversation flow.
3. Closing: Summary of key points, ask for additional input.

Document responses in real-time and record sessions

## **Interview: Follow Up**

1. Transcribe interview recordings
2. Review and organize findings
3. Identify key patterns and themes
4. Document initial findings

|  |  |
| --- | --- |
| Critical Success Factors | * Clear communication of project goals and view * Well-prepared interview questions * Proper documentation * Participant engagement * Structured analysis approach |
| Benefits for Requirements Engineering | * Detailed understanding of user needs * First-hand exposure to early challenges * Identification of unstated requirements |

# **Technique: Observation**

## **Observation: Preparation**

|  |  |
| --- | --- |
| Purpose | To understand how users interact with the current systems and communication methods. |
| Participants | Mainly students and administrative staff. |
| Approach | Observe users during real activities such as checking grades, handling billing issues, or sending updates. |
| Focus | Identify pain points, workarounds, and areas for improvement that users might not mention directly. |
| Channels | Student WhatsApp’s groups |

**Have Preparation, Execution, Follow-up**

Observation [Observe these 5 actions.]

1. Checking Attendance
2. Checking Billing Information
3. Checking Calendar
4. Enrolling Courses
5. Checking Academic Records

# **Technique: Questionnaire**

## **Questionnaire: Preparation**

**Define Goals**

Identify user expectations for communication and service access

Discover pain points with the current Campus Management System

Gather suggestions for portal features and UI preferences

To categorize potential portal features based on how users perceive them:

1. What delights users (Delighters)
2. What users expect and value most (Satisfiers)
3. What causes dissatisfaction if missing (Dissatisfiers)

**Target Stakeholders**

1. Students
2. Parents
3. Lecturers
4. Administrators

Will the questionnaire be limited to students and parents or include lecturers and admins?

Each group will receive a slightly tailored questionnaire to match their role and usage context as each group may perceive the same feature differently.

**Design Questions**

Mix of question types:

1. Closed-ended (Likert scale) for quantifiable data
2. Open-ended to capture insights and suggestions

**Questions by Stakeholder:**

For Students:

How do you currently receive academic or administrative updates?

Rate your satisfaction with the current communication system (1–5).

Which services would you like to access through a single portal? (e.g., grades, billing, class schedules)

Do you prefer mobile SMS notifications for urgent matters? Why or why not?

For Parents:

Are you regularly informed about your child’s academic performance or attendance?

What types of alerts would you find most helpful (e.g., low attendance, grade drops, fee reminders)?

For Lecturers and Admins:

What challenges do you face in sharing academic/admin updates with students?

How would you like to submit or update academic data to the portal?

What level of access control would you need?

**Format and Distribution Tool**

**?**

## **Questionnaire Execution**

**Announce and Distribute**

**?**

**Monitor Response**

**?**

**Ensure Data Quality**

**?**

## **Questionnaire Follow Up**

**Analyze the Data**

**?**

For each feature, count how many users chose:

Delight → Consider as differentiators (innovative, optional but high impact)

Satisfy → Consider as core development priorities

Dissatisfy → Consider as must-haves; missing these may cause rejection of the system

**Share Insights with Stakeholders**

**?**

**Use Insights to Define Requirements**

**?**

|  |  |
| --- | --- |
| Purpose | To reach a wider group of users and quantify their preferences. |
| Participants | Students and parents. |
| Approach | Short online survey with both Likert-scale and Kano-style questions. |
| Example Kano-oriented Questions for a Feature (SMS alerts for low attendance) | Functional: "How would you feel if the system sends SMS alerts for low attendance?"  Dysfunctional: "How would you feel if the system does NOT send SMS alerts for low attendance?"  Response options: I like it / I expect it / I am neutral / I can tolerate it / I dislike it |