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 |
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| 1.6 | Nickleirsch | Reformatting brainstorming plan, Added preparation | 06/05/2024 |
| 1.7 | Nickleirsch | Added brainstorming goals and example questions | 06/05/2025 |
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| 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 |
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| 2.6 | Nickleirsch | Added Questionnaire Plan and Major Formatting | 10/05/2025 |
| 2.7 | Lim Xin Yee | Categorised Brainstorming Ideas | 10/05/2025 |
| 2.8 | Lim Xin Yee | Added Brainstorming Benefits | 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 student dashboard — Central hub showing courses, grades, fees.
2. Graphical academic insights — Visual representation of grades, attendance, and trends.
3. Parent performance dashboard — Allows parents to monitor their child’s academic progress.
4. Grade update notifications — Alerts students and optionally parents when new grades are posted
5. SMS for low attendance (<80%) — Notifies parents of attendance issues.
6. SMS summary of academic performance — Periodic updates sent to parents.
7. Emergency alerts (SMS + portal banner) — Notifies campus-wide emergencies.
8. Student notification "quiet hours" — Lets students pause non-critical alerts.
9. Customizable notification preferences — Allows students and parents to control what they receive and how.
10. Admin: targeted SMS blasts to student groups — Enables precise audience communication.
11. Admin: SMS template management — Create and reuse standard templates.
12. Integration with third-party calendars — Sync academic deadlines and class schedule.
13. Student events & clubs integration — View and RSVP to campus events from portal.
14. Fee payment portal with history — View and pay fees directly via portal.
15. SMS reminders for fee deadlines — Automated multi-round reminders.
16. "My Documents" repository — Stores academic and official documents.
17. Single Sign-On (SSO) — Log in using one secure account across services.
18. Customizable session timeout — Users can set auto-logout time for security.
19. Mobile-first responsive design — Optimized for smartphones and tablets.
20. Mobile app companion — A standalone app version of the portal.
21. Effective portal-wide search — Quickly find pages, forms, or features.
22. Accessibility compliant design — Supports screen readers and WCAG standards.
23. Multilingual support — Interface available in multiple languages.
24. Customizable interface — Light/dark mode and movable widgets.
25. AI-powered personalized recommendations — E.g., study tips, reminders, events (like a Copilot).
26. Feature guide/help center — Documents how to use all portal features.
27. Augmented reality campus map — AR-based navigation on campus.

## **Brainstorming Follow Up**

Categorized Brainstorming:

* Usable:
* Personalized student dashboard
* Graphical academic insights
* Parent performance dashboard
* Grade update notifications
* SMS for low attendance (<80%)
* SMS summary of academic performance
* Emergency alerts (SMS + portal banner)
* Customizable notification preferences
* Admin: targeted SMS blasts to student groups
* Admin: SMS template management
* Fee payment portal with history
* SMS reminders for fee deadlines
* "My Documents" repository
* Single Sign-On (SSO)
* Mobile-first responsive design
* Effective portal-wide search
* Accessibility compliant design
* Multilingual support
* Feature guide/help center
* Not-decided:
* Customizable session timeout and auto-logout – May have security/policy implications
* A Student notification "quiet hours" — useful but may require more UX design consideration.
* Integration with third-party calendars — depends on integration scope and privacy implications. (API quota handling, etc.)
* Student events & clubs integration — depends on how active the community is and how it’s managed.
* Mobile app companion — depends on resources; responsive design might be enough initially.
* Customizable interface (light/dark mode, widgets) — useful but might delay minimum viable product delivery.
* Unusable:
  + Augmented reality campus map — high cost, hardware dependency, and limited daily use.
  + AI-powered personalized recommendations — requires substantial data and ML infrastructure, may be overkill early on.

## **Brainstorming Benefits**

* encourage the free flow of creative ideas in a collaborative setting
* enables stakeholders and team members to think beyond conventional solutions, helping to uncover innovative features and functionalities that may not surface through structured interviews or surveys alone
* compile an extensive list of potential features
* sets a strong foundation for identifying core of minimum viable product features but also helps visualize long-term product scalability

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 |