Risk Management Report for EduCards

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Risk Identification

1. Data Privacy Breach

- Unauthorized access to teacher or student personal information
- Exposure of educational materials intended for limited distribution
- Compromised user credentials

2. Technical Reliability Concerns

- System unavailability during scheduled quiz times
- Loss of quiz progress or results
- Server overload during peak usage times
- Database corruption affecting historical data

3. Accessibility And Usability Problems

- Barriers for users with disabilities
- Device compatibility issues preventing access
- Interface complexity creating usage difficulties for non-technical users

4. Content Quality Issues

- Factually incorrect AI-generated questions
- Ambiguous questions leading to scoring disputes
- Content not aligned with educational objectives or curriculum

5. Authentication Failures

- QR code generation or scanning failures
- Session management vulnerabilities
- Inability to verify student identity during remote assessments

6. Performance Degradation

- Slow response times affecting user experience
- Long processing times for AI question generation
- Excessive resource consumption affecting other systems

7. Algorithmic Bias

- AI system generating questions with unintended bias
- Unfair question distribution across topics
- Cultural assumptions embedded in generated content

8. Administrative Control Problems

- Insufficient teacher oversight capabilities
- Inability to modify AI-generated content effectively
- Limited control over quiz timing and conditions

Qualitative Analysis of Identified Risks

Risk List

1. Data Privacy Breach

- **Probability**: P3

- **Severity**: S3
- **Risk Level**: Not that common but should be dealt with because sensitive student/teacher information.

2. Technical Reliability Concerns

- **Probability**: P4 (Likely)
- **Severity**: S2 (Marginal)
- **Risk Level**: Likely because a the program will have a lot of users but not that harmful since it only causes slowdowns.

3. Accessibility and Usability Problems

- **Probability**: P4 (Likely)
- **Severity**: S1 (Negligible)
- **Risk Level**: Acceptable but should be addressed to ensure inclusive.

4. Content Quality Issues

- **Probability**: P3 (Possible)
- **Severity**: S2 (Marginal)
- **Risk Level**: Acceptable with human oversight of AI-generated content.

5. Authentication Failures

- **Probability**: P3 (Possible)
- **Severity**: S2 (Marginal)
- **Risk Level**: Acceptable with multiple authentication methods and monitoring.

6. Performance Degradation

- **Probability**: P5 (Certain)
- **Severity**: S1 (Negligible)
- **Risk Level**: Acceptable with proper capacity planning and performance optimization.

7. Algorithmic Bias

- **Probability**: P3 (Possible)
- **Severity**: S2 (Marginal)
- **Risk Level**: Acceptable with diverse training data and regular bias audits.

8. Administrative Control Problems

- **Probability**: P3 (Possible)
- **Severity**: S1 (Negligible)
- **Risk Level**: Acceptable with proper training and user-centered design.

Risk Matrix

Probability	S1: Negligible	S2: Marginal	S3: Critical	S4: Catastrophic

Probability	S1: Negligible	S2: Marginal	S3: Critical	S4: Catastrophic
P5: Certain	6	0	0	0
P4: Likely	3	2	0	0
P3: Possible	8	4, 5, 7	1	0
P2: Unlikely	0	0	0	0
P1: Rare	0	0	0	0

Risk Management Plan for EduCards

High Priority Risks

1. Data Privacy Breach (P3, S3)

- Implement end-to-end encryption for all personal data storage and transmission
- Establish role-based access controls with principle of least privilege
- Number of unauthorized access attempts

Medium Priority Risks

2. Technical Reliability Concerns (P4, S2)

- Implement redundant server architecture
- Implement database integrity checks and validation
- Establish manual quiz administration procedures as fallback
- Deploy automated recovery procedures for database issues
- System up-time percentage

4. Content Quality Issues (P3, S2)

Mitigation Strategies:

- Implement multi-stage content review processes (AI + human reviewers)
- Develop procedures for scoring adjustments for identified issues
- Question rejection rate during review
- Student dispute rate for questions

5. Authentication Failures (P3, S2)

- Implement multiple authentication methods beyond QR codes
- Create robust session management with automatic timeouts
- Develop identity verification protocols for remote assessments
- Test authentication systems across multiple devices and conditions
- Create backup access methods when primary authentication fails
- Authentication failure rate
- QR code scanning success rate across devices

- Session timeout incidents

7. Algorithmic Bias (P3, S2)

Mitigation Strategies:

- Use diverse training data for AI question generation
- Implement bias detection algorithms in the content pipeline
- Establish rapid content correction procedures for identified bias
- User feedback on content inclusivity

Lower Priority Risks

3. Accessibility and Usability Problems (P4, S1)

- Test across multiple devices and screen readers
- Create simplified interface options for different user abilities
- Establish alternative assessment delivery methods for users with specific needs
- Develop partnerships with accessibility experts for ongoing improvements

6. Performance Degradation (P5, S1)

- Optimize database queries and caching
- Conduct regular performance testing under load
- Establish queue systems for resource-intensive operations
- Develop communication templates for scheduled performance limitations
- Average response time during peak usage
- AI question generation processing time
- Server resource utilization patterns
- User-reported performance satisfaction

8. Administrative Control Problems (P3, S1)

- Create intuitive teacher dashboard with comprehensive controls
- Implement AI content modification tools for easy editing
- Provide flexible quiz scheduling and condition setting options
- Develop detailed documentation and training for administrators
- Establish technical support escalation paths for administrative issues
- Create templates for common administrative tasks
- Teacher satisfaction with administrative controls
- Time spent on administrative tasks