Content Development Engineer Position Description

Job Classification

Major Category: Technical Category
Subcategory: Comprehensive Technical Position
Level: Mid-Level to Senior (Depending on Experience)
Location: [Insert Location] | Remote Available
Reports To: Director of Educational Technology

Core Responsibilities

As a Content Development Engineer, you will bridge the gap between educational theory and technical implementation to create innovative learning solutions. Your work will directly impact both learner success and organizational growth.

1. Educational Innovation & Market Alignment

Objective: Ensure content remains competitive in the evolving edtech landscape
Key Tasks:

- Conduct **SWOT analysis** on competitors' digital learning platforms (e.g., Coursera, Udemy)
- Perform **learning analytics** using Tableau/Power BI to track engagement metrics
- Implement **AI-driven content personalization** through tools like:
    - Adaptive learning engines (e.g., Knewton, Smart Sparrow)
    - NLP-powered chatbots for interactive content delivery
- Maintain **ISO 21001 compliance** for educational content standards

2. Curriculum Design & Development

Tools & Standards:

- **Authoring Tools:** Articulate 360, Lectora Inspire, Camtasia
- **Learning Standards:** SCORM, xAPI, CMI-5
- **Accessibility:** WCAG 2.1 compliance for ADA requirements

Workflow Examples:

1. **Storyboard Development:**
    - Collaborate with subject matter experts (SMEs) to create detailed storyboards
    - Use Miro for collaborative visual planning
2. **Interactive Development:**
    - Build gamified elements using Twine or H5P
    - Integrate VR/AR components with Unity or Unreal Engine

3. Content Optimization Framework

Data-Driven Process:

1. **Feedback Loop:**
    - Implement **Net Promoter Score (NPS)** surveys via SurveyMonkey
    - Analyze **LMS analytics** (e.g., Moodle reports) for completion rates
2. **Version Control:**
    - Use GitLab for content version tracking
    - Maintain changelogs with semantic versioning (v1.0.0 format)

4. Cross-Functional Collaboration

Team Interactions:

- **Instructional Designers:** Coordinate using Asana for task tracking
- **Technical Teams:** Participate in daily standups via Jira
- **Marketing:** Align launch strategies using HubSpot for campaign tracking

5. Platform Integration

Supported Systems:

- **LMS Platforms:** Canvas LMS, Blackboard, Brightspace
- **Mobile Apps:** React Native/Flutter integration
- **Analytics:** Google Analytics 4 for user behavior tracking

6. Teacher Enablement

Training Programs:

- Create **microlearning modules** for Quickfire LMS
- Develop **video tutorials** using ScreenFlow
- Host **live workshops** via Zoom with breakout rooms

7. Data-Driven Evaluation

Metrics Dashboard:

- Build custom dashboards in Power BI with KPIs:
    - Learner retention rate
    - Content completion time
    - Pre/post-assessment score comparison

Workflow Management

Needs Analysis

Tools & Methodologies:

- **Requirement Gathering:** Use Miro whiteboards for stakeholder mapping
- **Documentation:** Create requirement specs in Confluence

- **SMART Goals Example:**
  - Specific: "Increase course completion rate by 25% Q2"
  - Measurable: Track via LMS analytics
  - Achievable: Allocate 200 hours for content redesign
  - Relevant: Aligns with Q4 business goals
  - Time-bound: Complete by 6/30/2024

Development Phase

Best Practices:

- **Agile Workflow:** 2-week sprints with Jira
- **Content Prototyping:** Use Figma for UI/UX mockups
- **Code Quality:** Implement automated testing via GitHub Actions

Review Process

Quality Assurance:

- **Peer Review:** Use GitHub's pull request system
- **User Testing:** Conduct A/B tests with Optimizely
- **Accessibility Testing:** Use WAVE tool for WCAG compliance

Release Strategy

Deployment Checklist:

1. Final QA testing in staging environment
2. DNS propagation check with Pingdom
3. Load testing using Apache JMeter

Launch Monitoring

Post-Launch Protocol:

- **Health Checks:** Implement uptime monitoring with UptimeRobot
- **Incident Response:** Follow ITIL service management framework
- **Performance Optimization:** Use New Relic for application performance monitoring

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Common Anomalies & Solutions

1. Server Resource Issues

Phenomenon:

- High CPU usage (>85%) causing slow content delivery
- Memory leaks in content rendering processes

Resolution Steps:

```
# Diagnose server issues
ssh user@content-server-01
top -b -n 1 | head -20
htop  # For interactive process viewing
```

Advanced Troubleshooting:

```
# Check disk usage
df -h
# Analyze memory
free -m
# Monitor specific process
pidstat -d <PID>
```

2. Kubernetes Pod Failures

Phenomenon:

- Pod restart loops in EKS cluster
- CrashLoopBackOff errors in pod status

Resolution Steps:

```
# Diagnose Kubernetes issues
kubectl get pods -n content-namespace
kubectl describe pod content-pod -n content-namespace
kubectl logs content-pod -n content-namespace --previous
```

Preventative Measures:

```
# Add liveness/readiness probes
livenessProbe:
  httpGet:
    path: /health
    port: 8080
  initialDelaySeconds: 30
  periodSeconds: 10
```

3. Monitoring System Alarms

Phenomenon:

- Unexpected spikes in API response times
- Sudden increase in 500 errors from content endpoints

Resolution Steps:

- **Identify Affected Services:**

```
kubectl get services -n content-namespace
```

- **Check Application Logs:**

```
kubectl logs <pod-name> -n content-namespace
```

- **Scale Resources Temporarily:**

```
kubectl scale deployment content-deployment --replicas=5
```

Performance Metrics Dashboard

Metric	Target	Current	Status
Content Approval Rate	95%	92%	⚠
Course Completion Rate	80%	78%	⚠
User Satisfaction NPS	40	38	⚠
Deployment Success	100%	98%	✅

Required Skills & Certifications

Technical Proficiency:

- SCORM packaging (Level 2 certification recommended)
- JavaScript/TypeScript for interactive content
- API integration (REST/SOAP)

Certifications:

- Advanced Certified eLearning Developer (ACED)
- Certified Learning and Development Professional (CLDP)
- Google Analytics Individual Qualification (GAIQ)

Soft Skills:

- Stakeholder management (Certified ScrumMaster helpful)
- Cross-cultural communication (for global content teams)
- Change management (ADKAR model familiarity)

Career Development Path

Typical Progression:

1. **Content Developer I** (0-3 years)
2. **Senior Content Developer** (3-6 years)
3. **Lead Content Architect** (6+ years)
4. **Director of EdTech Solutions** (Management track)

Specialization Options:

- AI-Powered Learning Systems
- Immersive Learning Technologies
- Enterprise LMS Solutions

Compliance & Legal Considerations

Key Regulations:

- FERPA compliance for student data privacy
- COPPA compliance for minor users
- GDPR compliance for EU learners

Document Management:

- Store legal documents in SharePoint
- Maintain audit trails in DocuSign

Version History

Version	Date	Changes	Author
v2.1	2024-03-15	Added Kubernetes troubleshooting	Jane Doe
v2.0	2024-02-28	Expanded anomaly handling	John Smith
v1.0	2024-01-15	Initial release	Emily Johnson