Problem Understanding

Problem Solving

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1. State the Business Problem

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Student course-completion rates in a Data Science program have dropped from 72% to 58% in the last two quarters.

2. Why the Problem Matters

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- Low completion reduces learner satisfaction.
- Refund and dropout rates increase.
- Impacts brand trust and revenue.

3. Identify Stakeholders

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- Product team: wants to improve learning outcomes.
- Mentors: want to understand where students struggle.
- Marketing: wants more positive reviews.
- Leadership: targets higher revenue and retention.

4. Map the Current Process

4. Current Business Process

- Student enrolls.
- Student attends onboar-ding session.
- Access to LMS modules.
- Weekly mentor sessions.
- Assignments and quizzes.
- Final project submission.

Observation: Many students drop after Week 3.

5. Business Problem -> Analytical Problem (Build Hypothesis)

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Identify key factors influencing student dropout after Week 3 and predict students at risk of dropping out.

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Students who gradually reduce their engagement in the early weeks shown through **declining attendance, lower assignment activity, and fewer LMS logins** are significantly more likely to drop out later.

A. Engagement Patterns

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1. Does attendance start declining a few weeks before the student drops out?

2. Do dropout students show fewer weekly logins compared to active students?

3. Is there a clear drop in course interaction (videos watched, sessions attended) before dropout?

B. Assignment Behavior

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4.Are dropout students submitting fewer assignments?

5. Do they start missing assignments earlier than others?

6. Is their submission delay (late submissions) higher than active learners?

C. Time-Based Trends

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7. Which week shows the first major dip in engagement for dropout students?

8. Is the dropout rate higher in the early weeks or mid-course?

9. Are there specific modules or topics where engagement drops sharply?

D. Student Segmentation

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10. Are working professionals more prone to dropout compared to full-time learners?

11. Do students with low prior academic performance show weaker engagement patterns?

12. Are students from certain batches or timings dropping out more?

E. Operational/Content Insights

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13. Do students raise more doubts or support tickets before they drop out?

14. Are sessions during certain days/times associated with lower attendance?

15. Is negative feedback more common among students who eventually leave?

F. Intervention Opportunities

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16. How early can we detect a sharp decline in engagement?

17. Which metric shows decline first—attendance, assignments, or logins?

18. What specific actions could have prevented dropout for previous students?

6. Identify Data Requirements

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- Login frequency
- Lecture completion %
- Assignment submission status
- Session attendance
- Mentor feedback
- Student background (optional)

7. Define KPIs and Metrics

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- Course-completion rate
- Weekly engagement rate
- Assignment submission rate
- Mentor session attendance rate

8. List Assumptions & Constraints

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- Some engagement data may be missing for older batches.
- Not all learners fill feedback, i.e bias in sentiment.
- Students may leave due to personal reasons.
- Slow loading website can reduce engagement.

9. Validate with Stakeholders

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Exp Outcome: 12% increase in completion rate.
Data access: Teams confirm which tables can be shared.
Risks: Ops team signals delays due to data cleanup.
Deadline: Give pilot report 4 weeks from now.

10. Summarize the End-to-End Flow

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Business Problem	→	Low completion rates
Business Process	→	Drop after Week 3
Analytical Problem	→	Predict dropout drivers
Data	→	Engagement, assignments, attendance
KPIs	→	Completion, engagement
Outcome	→	Targeted interventions for at-risk learners

Identify early indicators of dropout in the first three weeks of the Data Science program and recommend targeted interventions to improve completion rates by **10–12%.**

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Ashish Jangra

Thanks

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