Personalised and Adaptive Learning through Technology

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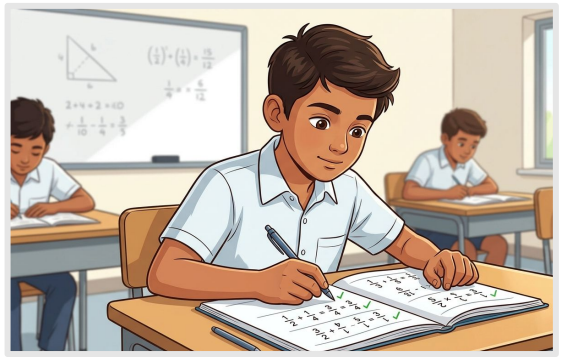
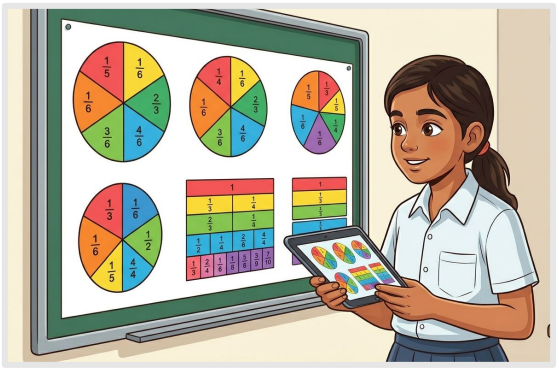
Let’s go to a classroom!

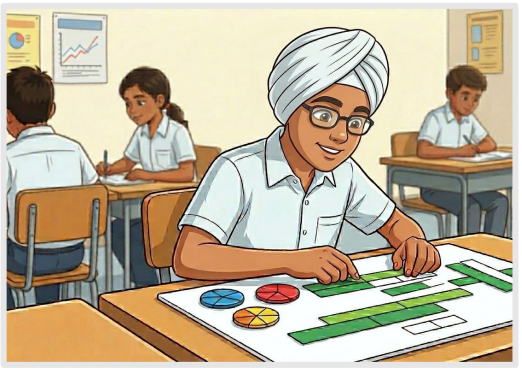
$$\frac{3}{4} + \frac{1}{2} = ?$$

Is the challenge really fractions?

Let’s Meet Our Learners

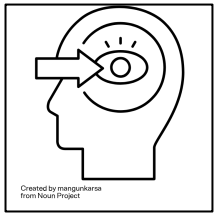






Reality of Learner Variability

Prior knowledge

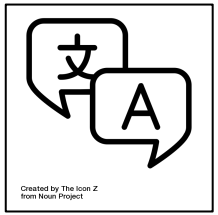


Interests

Confidence/ Self-efficacy

Learning Pace

Language



Learning preferences

Differentiation in Our Fraction Lesson

- Challenging Problems
- Visual models
- Guided practice with support
- ….
- …..

But What If We Designed for Variability From the Beginning?

Universal Design of Learning

Multiple means of Representation

- Symbols
- Diagrams
- Fraction circles
- Animations

Multiple means of Engagement

- Real-life examples
- Games
- Challenges
- Inquiry questions

Multiple means of Action and Expression

- Quiz
- Drawing
- Explanation
- Demonstration

From UDL to Personalised Learning

Personalised Learning

Pace

Pathways

Resources

Support

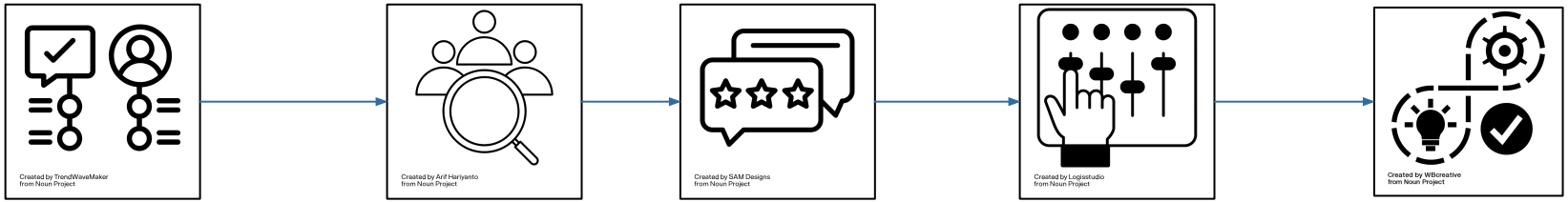
Technology as an Enabler of Personalisation

- ✓ Diagnose needs
- ✓ Provide multiple pathways
- ✓ Support self-paced learning
- ✓ Offer immediate feedback

Personalised Learning Environment

- Assign different resources
- Monitor progress
- Provide targeted feedback

What is Adaptive Learning?



Learner Response

Analysis

Feedback

Adjustment

New Activity

QUESTION 1

Which picture represents $\frac{3}{4}$?

Choose one option.

A

B

C

D

Correct → Great! Let's move to **Question 2.**

Incorrect → That's okay! Let's understand $\frac{3}{4}$ first.

3 out of 4 equal parts are shaded.

QUESTION 2

Add the fractions.

$\frac{1}{4} + \frac{2}{4} = ?$

Choose one option.

A $\frac{1}{4}$

B $\frac{2}{4}$

C $\frac{3}{4}$

D $\frac{4}{4}$

Correct → **Well done!** Let's try the next question.

Incorrect → Not quite! Remember: when denominators are same, add the numerators.

$\frac{1}{4} + \frac{2}{4} = \frac{3}{4}$

QUESTION 3

Add the fractions.

$\frac{3}{4} + \frac{1}{2} = ?$

Choose one option.

A $\frac{4}{6}$

B $\frac{5}{4}$

C $\frac{7}{4}$

D $\frac{3}{2}$

Correct → **Excellent!** You have completed the quiz.

Incorrect → Let's review unlike denominators. Watch the short video and try again.

Demo using Forms

AI and Personalisation

Prompt 1:

Explain fractions to a 7-year-old.

Prompt 2:

Explain fractions to a learner struggling with mathematics.

Prompt 3:

Explain fractions using a cooking example.

Notebook LM as a Learning Companion

Opportunities and Challenges

- ✓ Learner agency
- ✓ Inclusion
- ✓ Self-paced learning
- ✓ Immediate feedback
- ✓ Enhanced engagement

- ⚠️ Digital divide
- ⚠️ Data privacy
- ⚠️ Algorithmic bias
- ⚠️ Teacher preparedness
- ⚠️ Ethical AI use

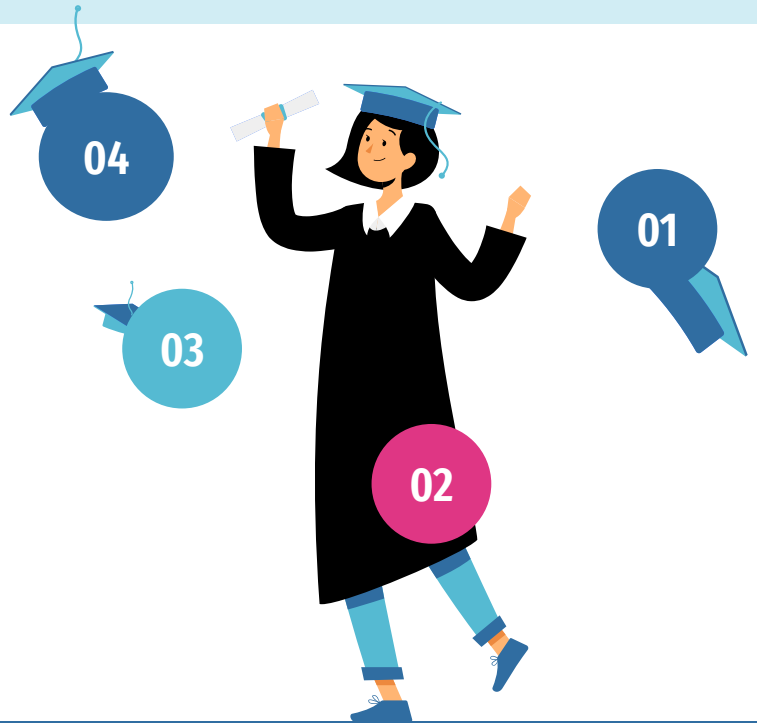
Evolving Role of Teachers

01 Content Deliverer

02 Learning Designer

03 Facilitator

04 Mentor



All achieved the learning goal. Different pathways. Common destination.

Key Takeaways

- ✓ Differentiation acknowledges learner differences.
- ✓ UDL designs for variability.
- ✓ Personalised learning responds to learner needs.
- ✓ Adaptive learning supports those responses through technology.

Final Reflection

Instead of asking:" Can this learner learn fractions?"

"What pathway does this learner need to learn fractions?"

Personalised learning is not about lowering expectations. It is about increasing opportunities to achieve them.

Thankyou 🙏

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