

Pedagogical Design of Bite-Sized Digital Modules

Online Training on: Microlearning and Nano-Learning: Designing Bite-Sized Digital Content to Enhance Teaching-Learning

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Organised by:

Central Institute of Educational Technology (CIET), NCERT, New Delhi

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Today's Session Goals

- Understand microlearning and nano-learning concepts
- Explore pedagogical principles for effective design
- See global and Indian real-life examples
- Connect strategies to NEP 2020 goals
- Learn step-by-step design process
- Apply learning through activities



What does 'Bite-Sized Learning' mean to you?

- A. Short videos only
- B. Any small, focused learning unit
- C. A simpler version of a big topic
- D. Not sure



What is Bite-Sized Learning?

- **Microlearning: 2–15 minute focused learning experiences**
- **Nano-Learning: <2-minute ultra-focused bursts**
- **Not just shorter lectures—designed around single clear learning goals**





Neuroscience

Images Designed by Freepik

Exploring the Brain's Role in the Future of Everything

4.6 ★ 248 Students 32 mins Total

Course content

✕

1 / 1 | 4min

1. What is Neuroscience beyond Medicine?

📺 4min

Section 2: Perceptions & Illusions

▾

1 / 1 | 6min

Section 3: Neuroscience in Leadership & Business

▾

1 / 1 | 7min

Section 4: Neuroscience in Education & Learning

▴

0 / 1 | 6min

4. Neuroscience in Education & Learning

📺 6min

Section 5: Neurotechnology

▾

0 / 1 | 8min

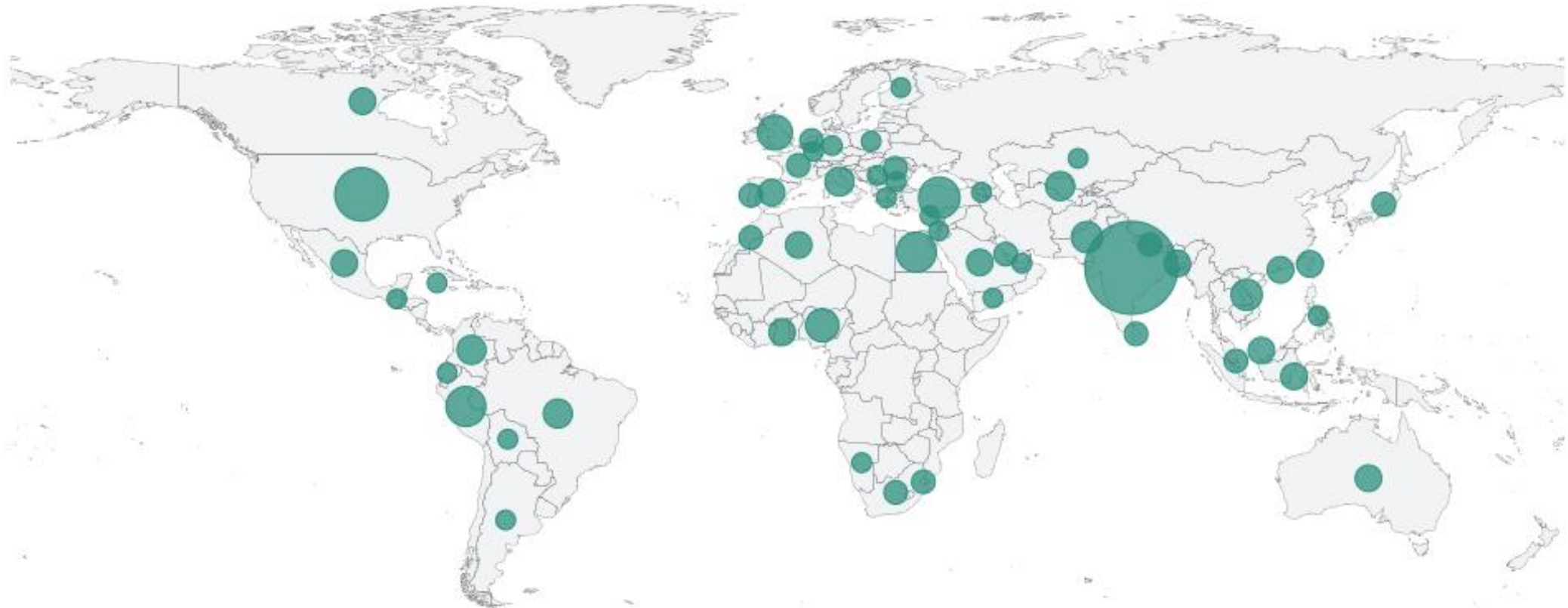
Section 6: Wrap Up and Road Ahead

▾

Neuroscience Beyond Medicine

Your reach

See your students' locations and languages



Neuroscience Beyond Medicine

57 countries

1. India	31.0% (77)
2. United States of America	8.5% (21)
3. Turkey	4.4% (11)
4. Egypt	4.0% (10)
5. Peru	4.0% (10)



14 languages ⓘ

1. English	79.4% (197)
2. Spanish / Castilian	8.1% (20)
3. Turkish	2.8% (7)
4. French	2.0% (5)
5. Chinese	2.0% (5)



Busting Myths About Microlearning

- **✘ Myth: Short content = Low quality**
- **✔ Fact: Quality depends on design, not length**


- **✘ Myth: Only for easy topics**
- **✔ Fact: Used even in advanced training**

- **✘ Myth: For lazy learners**
- **✔ Fact: Respects cognitive load theory**

Global Success Stories

- **Duolingo**: <5-min gamified language lessons
- **Khan Academy**: 5–10-min topic videos with practice
- **SWAYAM**: Modular Indian MOOCs with video lectures and assessments



 **Your Turn!**
**What topic could
you teach or study
in a bite-sized
format?**

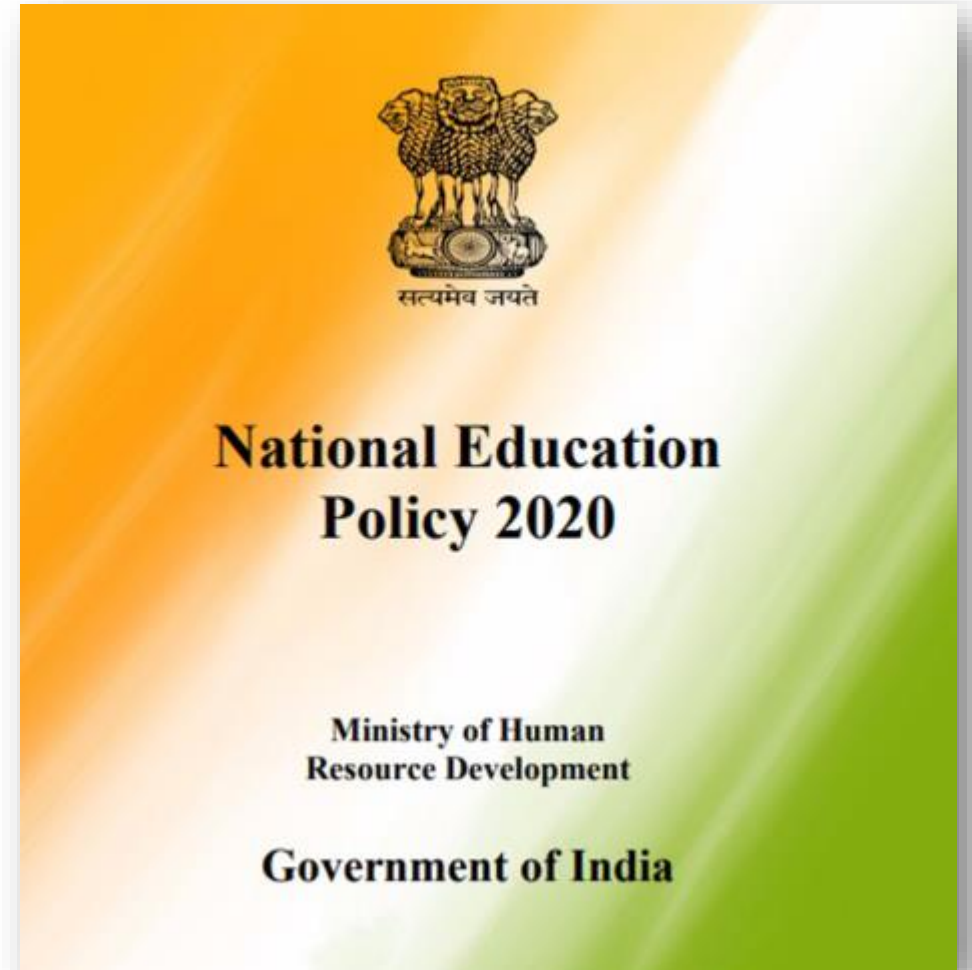




Alignment with NEP 2020

NEP 2020 promotes:

- Modular, flexible learning
- Competency-based outcomes
- Self-paced pathways
- Bite-sized learning supports these goals



Pedagogical Foundations

Why bite-sized modules work:

- Learning science, design principles, and
- NEP 2020 connections



- Competency-based education
- Flexible, modular curriculum
- Personalized learning pathways

Cognitive Load Theory

- Working memory = limited capacity
- Overloading leads to confusion
- Bite-sized modules reduce cognitive load




Writing Effective Goals

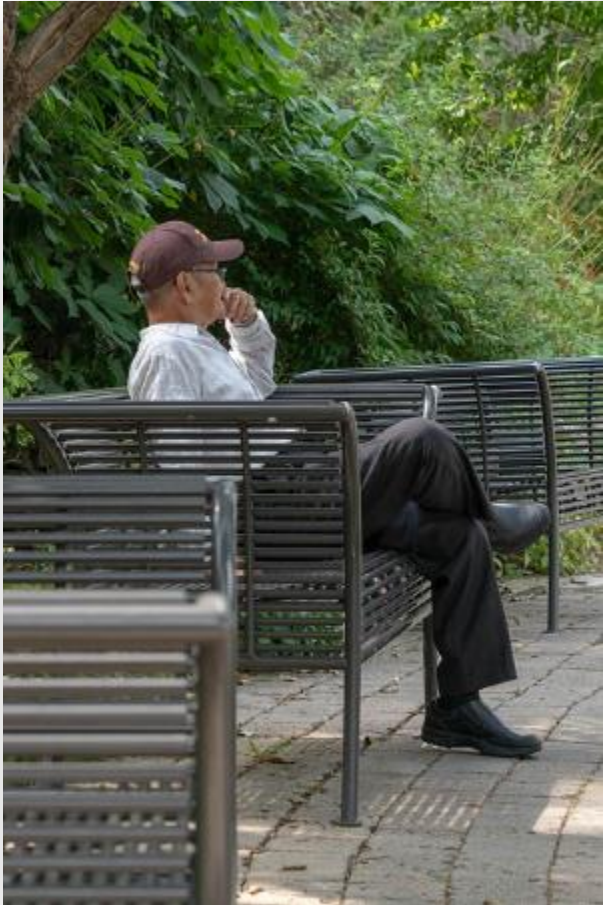
- **Bad:** “Understand climate change”
- **Good:** “Explain 3 causes of global warming in 2 minutes”



Chunking and Scaffolding

- **Chunking = splitting complex info into units**
- **Scaffolding = supporting mastery step by step**
-  **Example:**
- **Variables → Loops → Functions (Python course)**

Adult Learning Principles (Knowles' Andragogy)



- Adults need relevance
- Prefer self-direction
- Bring prior experience
- Want problem-centered learning
- Bite-sized modules support all these needs

Real-Life Example:

Professional Development


- Employees choose 5-min videos they need
- Self-paced learning supports diverse needs
- Flexible for busy schedules



Designing Bite-Sized Modules

Step-by-step approach to plan and create effective microlearning content

Step 1 – Analyze Goals

- Ask: What should learners be able to do?
- Keep goals specific and measurable
-  Example:
- Bad: “Understand research methods”
- Good: “List 3 sampling techniques in 2 minutes”

 NEP 2020 Alignment

Emphasizes:


Clearly defined competencies

Outcome-focused curriculum

Supports modular design

Step 2 – Structure Content:


□ □ Break into Micro/Nano Units

- Single idea per module
- Logical sequence of small chunks
-  Example:
- Research Methods Course →
- Sampling
- Questionnaire Design
- Data Analysis Basics




Step 3 – Design Clear Outcomes: Focus on Outcomes



- Even short modules need outcomes
- Make them concise, specific, measurable
-  **Example:**
- “Learner can list 4 sampling methods”

Step 4 – Ensure Coherence: Link Modules Together

- Maintain consistency in style and flow
- Provide clear navigation and guidance
-  Example:
- SWAYAM courses → Modular but sequenced



The 6-Second Rule: Hook Your Learners

You have ~6 seconds to grab attention

Use:

- Questions
- Surprising facts
- Problem-solving promises

 **Example Hook:**

- “Can you master hypothesis testing in under 5 minutes?”



Multimedia & Interactivity in Bite-Sized Design

**Make learning engaging, memorable, and effective
with media and interactive elements**






Why Multimedia Matters?

- Holds attention
- Clarifies complex ideas
- Supports varied learning styles
- Reduces cognitive overload



Types of Multimedia:

Enhance Your Modules

-  Videos
-  Infographics
-  Audio clips/podcasts
-  Animations
-  Interactive slides



Interactive Elements: Beyond Static Content

- Quizzes for recall
- Branching scenarios
- Polls for feedback
- Simulations for practice

 Supports active learning



Gamification Brainstorm: Adding Game Elements

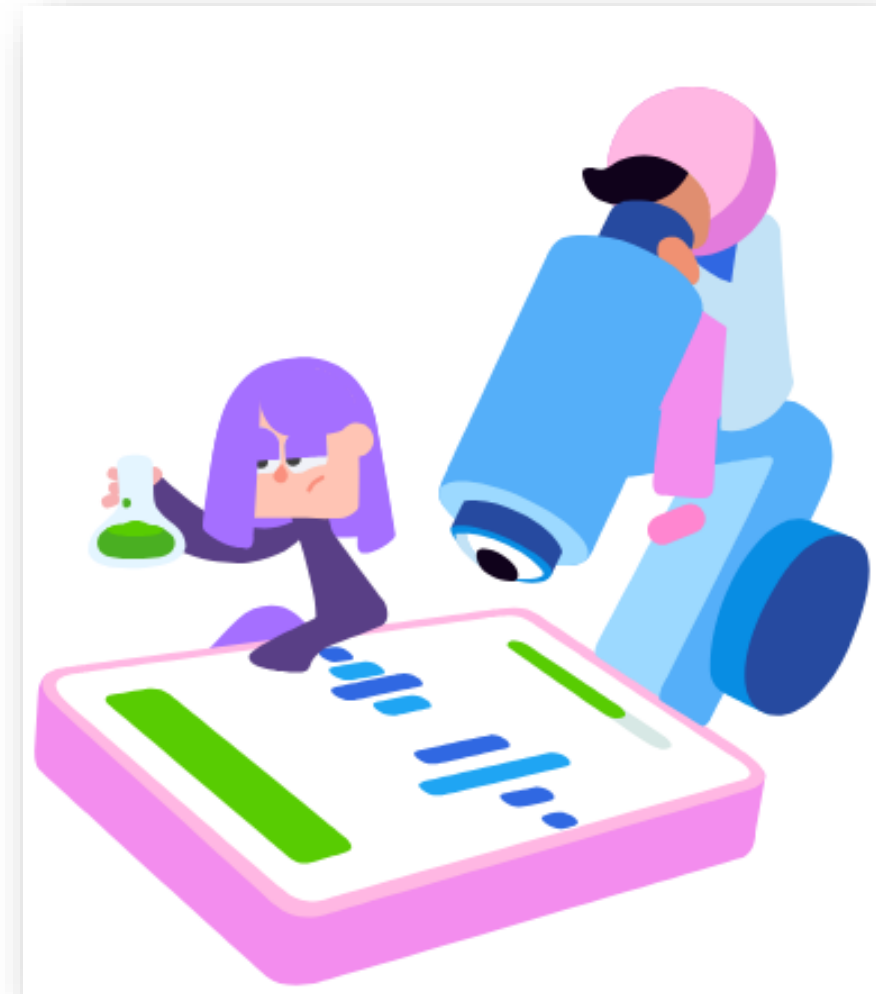
- Badges
- Points
- Leaderboards
- Challenges



Global Case Studies: 🌐 Success Stories

- Google Whisper Courses → 2-min mobile training
- Duolingo Stories → Short interactive reading

📌 Emphasize brevity and interactivity



Indian Case Study – SWAYAM: NEP 2020 in Action

- Modular, flexible learning design
- Short, outcome-tagged video lessons
- Quizzes and forums for interaction
- Supports NEP goals for lifelong learning



Introduction to Virtual Reality

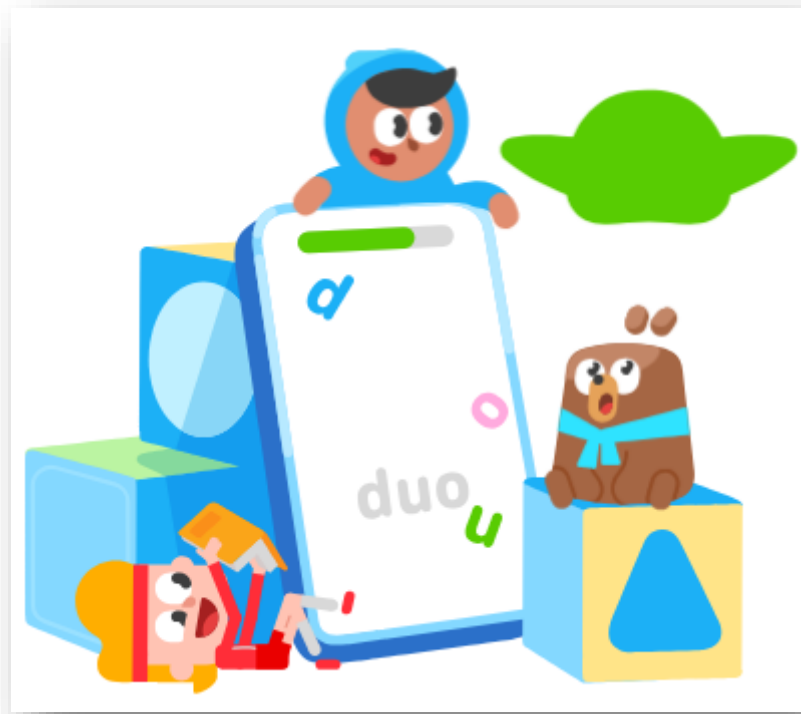
By Dr. Ramesh C Sharma | Dr. B R Ambedkar University Delhi, New Delhi

Join

Learners enrolled: 312



Assessment Strategies for Bite-Sized Modules



Make learning measurable, continuous, and competency-based

Why Assess in Small Units:

✓ Benefits of Micro-Assessment

- Immediate reinforcement
- Feedback when it matters
- Reduces test anxiety
- Supports self-paced learning



Real Example:

Coursera's Micro-Quizzes

- 1–2 question quizzes after videos
- Encourages active recall
- Builds confidence with low-stakes checks



POWERFUL, INTELLIGENT FLASHCARDS.

Remembering is easier with **Anki**

Anki is a flashcard program that helps you spend more time on challenging material, and less on what you already know.

[Download Anki](#)[Learn more →](#)

Challenges & Solutions



- Addressing barriers to implementing bite-sized learning
- Inclusive design and NEP 2020 strategies

Barriers to Microlearning

-  **Technological access issues**
-  **Motivation and self-discipline**
-  **Over-fragmentation risk**
-  **Faculty training and mindset shifts**



NEP 2020 Inclusion Emphasis: 📌 Equitable Access

NEP 2020 calls for:

- Reducing the digital divide
- Low-bandwidth options
- Faculty training in digital pedagogy
- Inclusive design for all learners



 **Thank You!**