CONVERSION OF TRADITIONAL MATERIAL TO AN ONLINE COURSE

POVE WATER

INTRODUCTION TO ONLINE COURSE CREATION

- Importance of thoughtful planning and design.

- Aim to make content engaging, interactive, and effective for online learners.

STEP 1: ANALYZE AND STRUCTURE YOUR CONTENT

- Objective: Modular, online-friendly format.

- Action: Review existing materials.

- Example: Key topics identification.

- Exercise: Mind map or outline creation.

INSTRUCTIONAL DESIGN PRINCIPLE: CHUNKING

- Breaking down information into bite-sized pieces helps learners process information.

1: Prioritize the information: Determine the content hierarchy of the course by choosing the main points, primary supporting materials or visuals and then secondary supporting materials. In addition, you'll need to think about logical progression of content, so your course builds on the information that your learners are covering, rather than skipping around.

2: Design for your learners' working memory
The phrase "less is more" is helpful when you're accommodating actual working memory. If you present your learners with too much information at once, they won't remember it. Only include relevant and carefully chosen content. Visuals are a good way to lessen the demands of working memory.

INSTRUCTIONAL DESIGN PRINCIPLE: CHUNKING

3. Go screen-by-screen:

Plan what will be on each screen before you start designing. Each new topic, or chunk of information, should be on a new screen to keep your course organized and properly chunked. If you do this at the very beginning, try storyboarding to plan ahead. This blog has some helpful information and resources on storyboarding.

4. Take advantage of bullets and numbered lists:

If you're having trouble organizing your chunks of content, bullets and numbered lists are easy ways to present your information clearly. People often don't read every single word and skim content instead. Organizing content into lists creates a concise presentation, and your learners will still take in the content even if they skim.

STEP 2: CREATE ENGAGING CONTENT

OBJECTIVE:

TRANSFORM NOTES AND TEXTBOOKS INTO MULTIMEDIA RESOURCES.

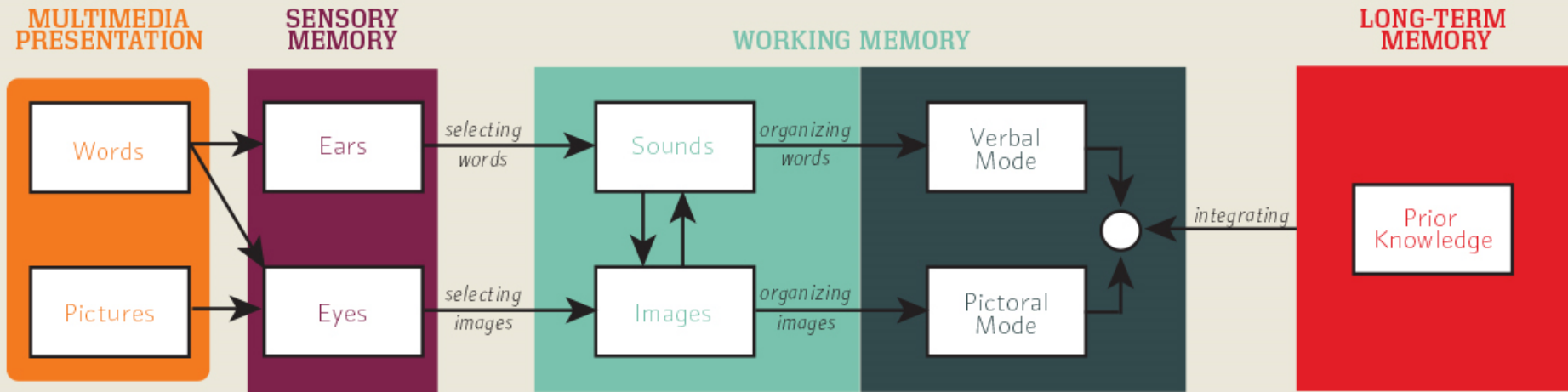**ACTION:**

DEVELOP VIDEO LECTURES/PRESENTATIONS.

EXAMPLE:

WATER TREATMENT PROCESSES MODULE.

EXERCISE:

INTERACTIVE CASE STUDY CONVERSION.

Cognitive Theory of Multimedia Learning

http://homepages.gac.edu/~dmoos/edtech/introtomultitheory.pdf

INSTRUCTIONAL DESIGN PRINCIPLE: MULTIMEDIA LEARNING

- Role in Learning: These tools enhance the learning experience by incorporating audio, video, and interactive content.

- Features: They include video creation and editing software, podcasting tools, and interactive whiteboards. Examples are Adobe Creative Cloud, Audacity, and Miro.

- Advantages: Multimedia tools cater to different learning styles, making learning more engaging and improving retention.

INSTRUCTIONAL DESIGN PRINCIPLE: MULTIMEDIA LEARNING

- Enhances understanding and retention through multimedia.

- Richard Mayer's seminal book Multimedia Learning details his extensive research on how to structure multimedia materials effectively to maximize learning. Relying on numerous experiments, he distills his findings into 12 principles that constitute (in part) what he refers to as the "cognitive theory of multimedia learning." https://ctl.wiley.com/principles-of-multimedia-learning/

- When it comes to learning, the human mind is a dual-channel, limited-capacity, active-processing system.

- Instructors should manage their learners' essential processing, optimize their generative processing, and minimize their extraneous processing through thoughtful construction of multimedia presentations.

UNIVERSAL DESIGN FOR LEARNING (UDL)

Provide multiple means of Engagement
Affective Networks
The "WHY" of Learning

Provide multiple means of Representation
Recognition Networks
The "WHAT" of Learning

Provide multiple means of Action & Expression
Strategic Networks
The "HOW" of Learning

Access

Provide options for Recruiting Interest (7)
- Optimize individual choice and autonomy (7.1)
- Optimize relevance, value, and authenticity (7.2)
- Minimize threats and distractions (7.3)

Provide options for Perception (1)
- Offer ways of customizing the display of information (1.1)
- Offer alternatives for auditory information (1.2)
- Offer alternatives for visual information (1.3)

Provide options for Physical Action (4)
- Vary the methods for response and navigation (4.1)
- Optimize access to tools and assistive technologies (4.2)

Build

Provide options for Sustaining Effort & Persistence (8)
- Heighten salience of goals and objectives (8.1)
- Vary demands and resources to optimize challenge (8.2)
- Foster collaboration and community (8.3)
- Increase mastery-oriented feedback (8.4)

Provide options for Language & Symbols (2)
- Clarify vocabulary and symbols (2.1)
- Clarify syntax and structure (2.2)
- Support decoding of text, mathematical notation, and symbols (2.3)
- Promote understanding across languages (2.4)
- Illustrate through multiple media (2.5)

Provide options for Expression & Communication (5)
- Use multiple media for communication (5.1)
- Use multiple tools for construction and composition (5.2)
- Build fluencies with graduated levels of support for practice and performance (5.3)

Internalize

Provide options for Self Regulation (9)
- Promote expectations and beliefs that optimize motivation (9.1)
- Facilitate personal coping skills and strategies (9.2)
- Develop self-assessment and reflection (9.3)

Provide options for Comprehension (3)
- Activate or supply background knowledge (3.1)
- Highlight patterns, critical features, big ideas, and relationships (3.2)
- Guide information processing and visualization (3.3)
- Maximize transfer and generalization (3.4)

Provide options for Executive Functions (6)
- Guide appropriate goal-setting (6.1)
- Support planning and strategy development (6.2)
- Facilitate managing information and resources (6.3)
- Enhance capacity for monitoring progress (6.4)

Goal

Expert learners who are...

| Purposeful & Motivated | Resourceful & Knowledgeable | Strategic & Goal-Directed |

STEP 3: INTERACTIVE AND APPLIED LEARNING

OBJECTIVE:

APPLY CONCEPTS IN REAL-WORLD CONTEXTS.

ACTION:

CREATE INTERACTIVE SIMULATIONS/VIRTUAL LABS.

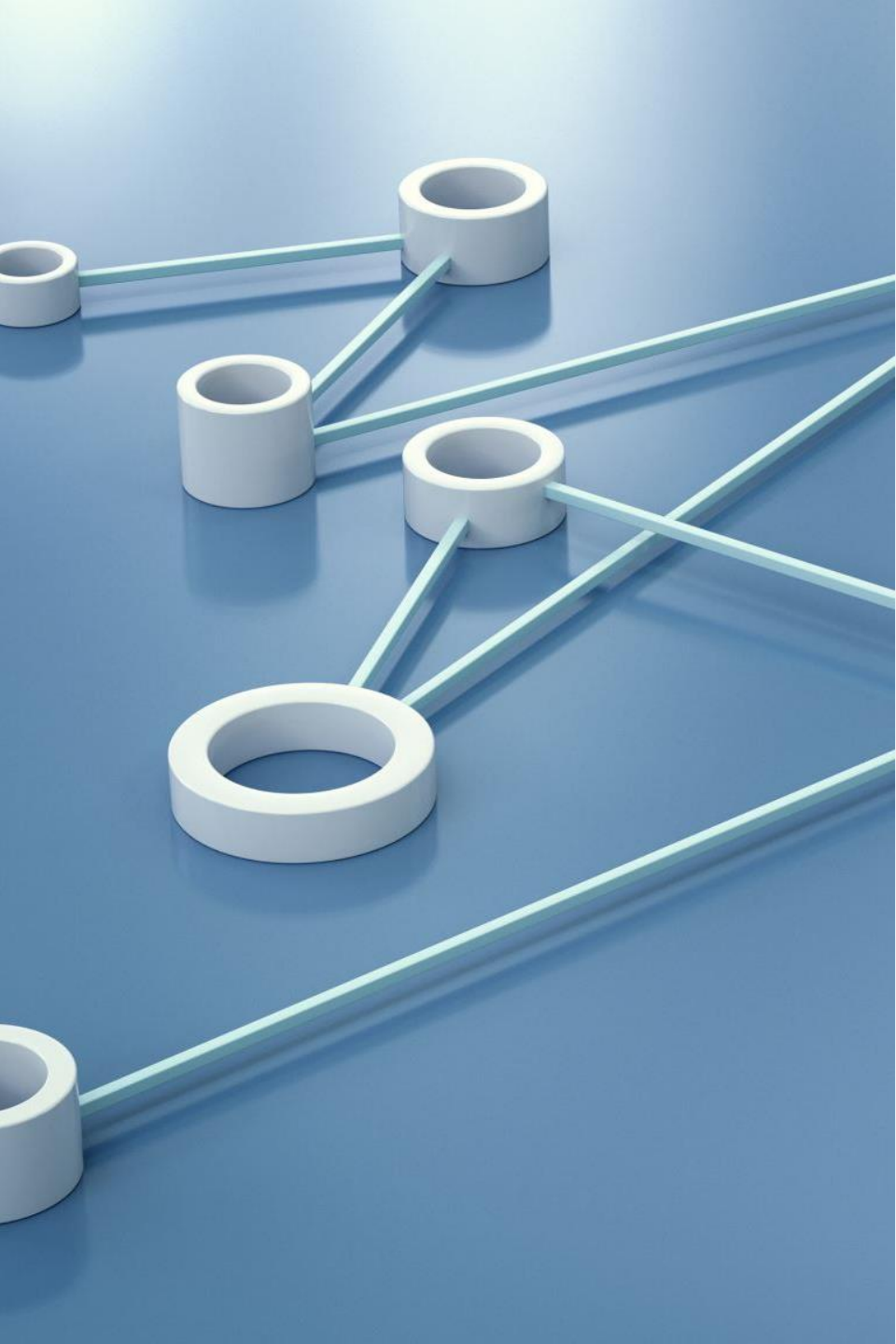**EXAMPLE:**

VIRTUAL WATER TREATMENT PROCESS SIMULATION.

EXERCISE:

DESIGN A SMALL-SCALE WATER TREATMENT SOLUTION.

INSTRUCTIONAL DESIGN PRINCIPLE: EXPERIENTIAL LEARNING

- Learning by doing enhances experience and application.

STEP 4: FOSTER INTERACTION AND COLLABORATION

- Objective: Build a learning community through participation and collaboration.

- Action: Use forums and wikis.

- Example: Forum activity on advancements in water technology.

- Exercise: Group wiki project on emerging technologies.

INSTRUCTIONAL DESIGN PRINCIPLE: SOCIAL LEARNING

- Interaction and collaboration with peers enhance motivation and understanding.

- Tools include discussion boards, direct messaging, video conferencing, and real-time chat functions. Apps like Zoom, Discord, Microsoft Teams, and Slack are popular choices.

- These platforms enable synchronous (live) and asynchronous (delayed) communication, making it easier for students to collaborate and seek help outside of scheduled class times.

INSTRUCTIONAL DESIGN PRINCIPLE: FEEDBACK

Crucial for learning, helping students understand their achievements and areas for improvement.

STEP 5: ASSESSMENT AND FEEDBACK

Objective: Accurately measure student understanding and provide feedback.

Action: Develop a mix of assessments.

Example: Quiz on water quality, peer-reviewed assignments.

Exercise: Rubric creation for peer assessment.

- Summary of steps and principles for converting traditional materials to online courses.

- Encouragement to experiment and iterate based on feedback.

MOVING FORWARD

COURSE DESIGN CHECKLIST

✓ Are the learning objectives measurable?

✓ Does all the content support the learning objectives?

✓ Is there any content that could be taken out?

✓ Is there any content missing?

✓ Have all the facts been checked and referenced appropriately?

✓ Does the course follow a logical order?

✓ Do the images accurately represent the course material?

✓ Do the examples and/or scenarios accurately portray the real-life context?

✓ Will the learners find the characters relatable?

✓ Does the quiz focus on the course objectives?

✓ Are the quiz questions clearly stated?

✓ Are all the quiz options believable (even the wrong answers)?

✓ Do you clearly state what learners need to do to pass the course?

FUNCTIONALITY TESTS

- Building a course from scratch using a tool like Moodle that allows you to personalize everything (course layout, activities, resources, navigation, quiz options, etc.) lets you create your course exactly how you imagine it.

- But with all this freedom comes responsibility: it's your job to make sure everything is working the way you intended. Here are some items to test the functionality of your course:

Switch your role to student to test:

1. Visibility/Access to the different sections/activities/resources
2. Buttons and Hyperlinks
3. Menu navigation
4. Players e.g. youtube videos
5. Quiz questions
6. Activity completion options
7. Any conditional access (group restrictions, activity completion etc.)
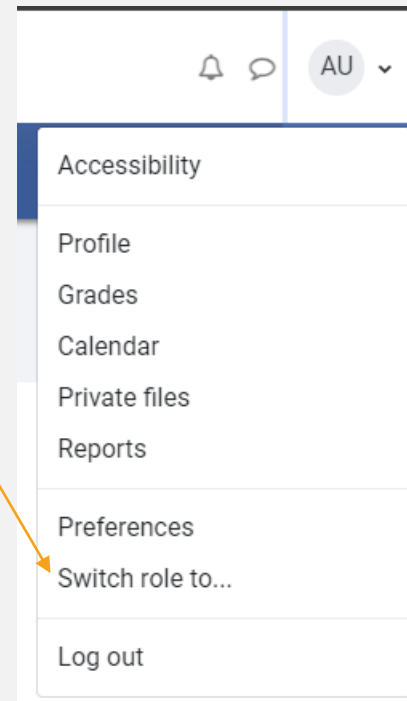
EXAMPLE FUNCTIONALITY TEST: QUIZZES

1

Go through the quiz, making sure to select the correct answers and review the feedback. Make sure the score correctly shows you've gotten 100% at the end and that the correct amount of points is shown (if applicable).

2

Go through the quiz again, this time selecting the incorrect answers and reviewing the feedback. Make sure the score correctly shows you've gotten 0% at the end and that the correct amount of points is shown (if applicable).

3

Go through the quiz a third time. Alternate right and wrong answers. Check the score again and make sure it's correct.

4

Go through the quiz a final time, alternating right and wrong answers again but in the opposite order as the time before. Make sure the score is reporting correctly.