Setting the Stage: Optimizing Your Pre-Work to Meet Your Active Learning Goals

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Learning Outcomes

1. Identify barriers that students may encounter when reviewing pre-work materials

2. Determine what material is essential versus what is nice to know during pre-work preparation

3. Develop goals for your active learning session to serve as a guide for your pre-work material

4. Identify alternative ways to deliver your pre-work materials

5. Discuss how these alternative approaches for pre-work delivery can improve student engagement and preparation for your active learning session

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Goals for Today's Workshop

1. Discuss factors that may demotivate students when reviewing pre-work materials

2. Evaluate the guiding principles you use to design your pre-work materials

3. Assess and discuss the limitations associated with the Spinal Cord pre-work document and develop 2-4 strategies to address these

4. Discuss alternative approaches for designing pre-work materials

There's 4 group activities designed to accomplish these goals for today

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What is the Purpose of Pre-work?

1. Means of information transmission

2. Establishes foundational concepts needed in order to apply information in the active learning session

3. Improves cognitive load management of students (Seery 2015).

4. Encourages greater independence of students (Seery 2015).

5. Frees class time for active learning (Seery 2015).

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Scenario

You've been asked to give a workshop for 1st year medical students and need to prepare pre-work materials in addition to your session materials. You want your students to come to your session knowledgeable and ready to participate in the activities you've prepared for them. Before you even start the process of designing pre-work, you imagine what your session will look like and the topics you'll cover with the students. You then determine what the COM standards are for developing pre-work and then get started.

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LCOM-Active Learning SOPs

Quick Overview of Active Learning SOPs	Team-Based Learning	Case-Based Learning	Workshop	Problem-Based Learning	Integrative Review	eLearning Module
Independent Learning (Before class)	Yes	Yes	Yes	No	Yes - previously taught material should be identified	N/A
Time Estimate for Independent Learning (Students)	1:1.5 ratio for class time, prior to class	1:1 ratio for class time, prior to class	1:1 ratio for class time, prior to class	1:1 ratio for class time, after class	1:1 ratio for class time, prior to class	Calendar indicates time needed to complete and meet objectives
Prep Materials Due for Uploading	Monday the week prior to the session	Monday the week prior to the session	Monday the week prior to the session	N/A	Materials for review identified a week in advance	N/A
Prep Materials Available to Students	5 days ahead of session	5 days ahead of session	5 days ahead of session	N/A	5 days ahead of session	All materials available 5 days prior to calendar event
# of Objectives per preparatory hour	Approx. 10 for Independent Learning and 5 for in-class	Approx. 10 for Independent Learning and 5 for in-class	Approx. 10 for Independent Learning and 5 for in-class	Students set objectives.	5 in-class objectives covered	10 or fewer objectives
Graded Component	IRAT & GRAT in class	7-10 question RQ completed by 7 am day of class	7-10 question RQ completed by 7 am day of class	N/A	None	7-10 question RQ completed by 7am day after calendar event

The general rule is 4,000 words or less for a reading and less than the session block time for videos/audio.

Group Activity 1

Large Group Activity: What factors may negatively impact students when reviewing a pre-work document/materials?

Time frame: 5-10 minutes

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Factors negatively impacting student review of a pre-work document/materials

1. Photocopied from a textbook

2. Lengthy document/video

3. Long chunks of text without/minimal figures

4. Not enough engagement with material

5. Student time to review

6. Resources from too many places

1. Difficult to understand

2. No objectives-nothing to guide the student

3. Disinterest-not board relevant

4. Lack or limited access to materials/internet connectivity issues

5. Intrinsic factors that are specific to the student

6. Disability that limits getting the most out of the material

7. Exams and other activities that are scheduled for the day

Negative Influencers of Student Review of Pre-work

1. Length of the pre-work

2. Disorganized pre-work

3. Lack of supporting figures/tables

4. Difficulty to read (poor grammar and/or large chunks of paragraphs)

1. Perceived difficulty of the topic

2. Figures that are too complex and/or not explained well

3. Use of terminology that's unfamiliar or has not been defined/explained

4. Other sessions happening that day for which students are preparing

5. Intrinsic factors

LCOM Attendance Survey

Poor quality pre-work (example: taken from a book chapter)

Pre-work that wasn't clear-what should students take away as key points

Not enough time to learn the material

Preference for other resources

Length of the pre-work

High volume of pre-work for the day

Disorganized pre-work

Poorly written/prepared pre-work translates to students' beliefs that the active learning session will be poorly done.

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Group Activity 2

If you have developed pre-work before, take a moment to think about what factors you use to guide you as you prepare your document/materials. If you've never developed pre-work, but plan to do so, imagine what factors would guide you in this process.

Objective 1

> Working on your own, write down some factors you use or plan to use in order to guide pre-work development

> Time frame: 7 minutes

Objective 2

> Discuss these guiding factors with 3-5 other members

> Time frame: 5 minutes

Objective 3

> We'll discuss as a large group-10 minutes

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What do you use as a model to guide your pre-work development?

1. Depth of knowledge guided by LOs for the pre-work and session

2. Student's background and prior knowledge

3. Feedback from previous iterations

4. How much should they know the info- should they just be familiar?

5. Clear objectives

6. Getting the appropriate figures

1. Provide content in multiple modalities for different learners

2. Do you want the learner to know a lot about something or just be familiar

3. Add simple examples

4. Consider the length

5. Define terms and abbreviations

6. Address the why it's important

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Guiding Your Pre-work Development

Goal(s) of your active learning session

- What do I want the students to know at the end of my active learning session?
- What content will the students need to know in order to come ready to engage in the active learning session?
- The goals of your active learning session should be reasonable for the time you're given
- Ultimately, you want to give your learners the foundational concepts in the pre-work, then build on these during your session
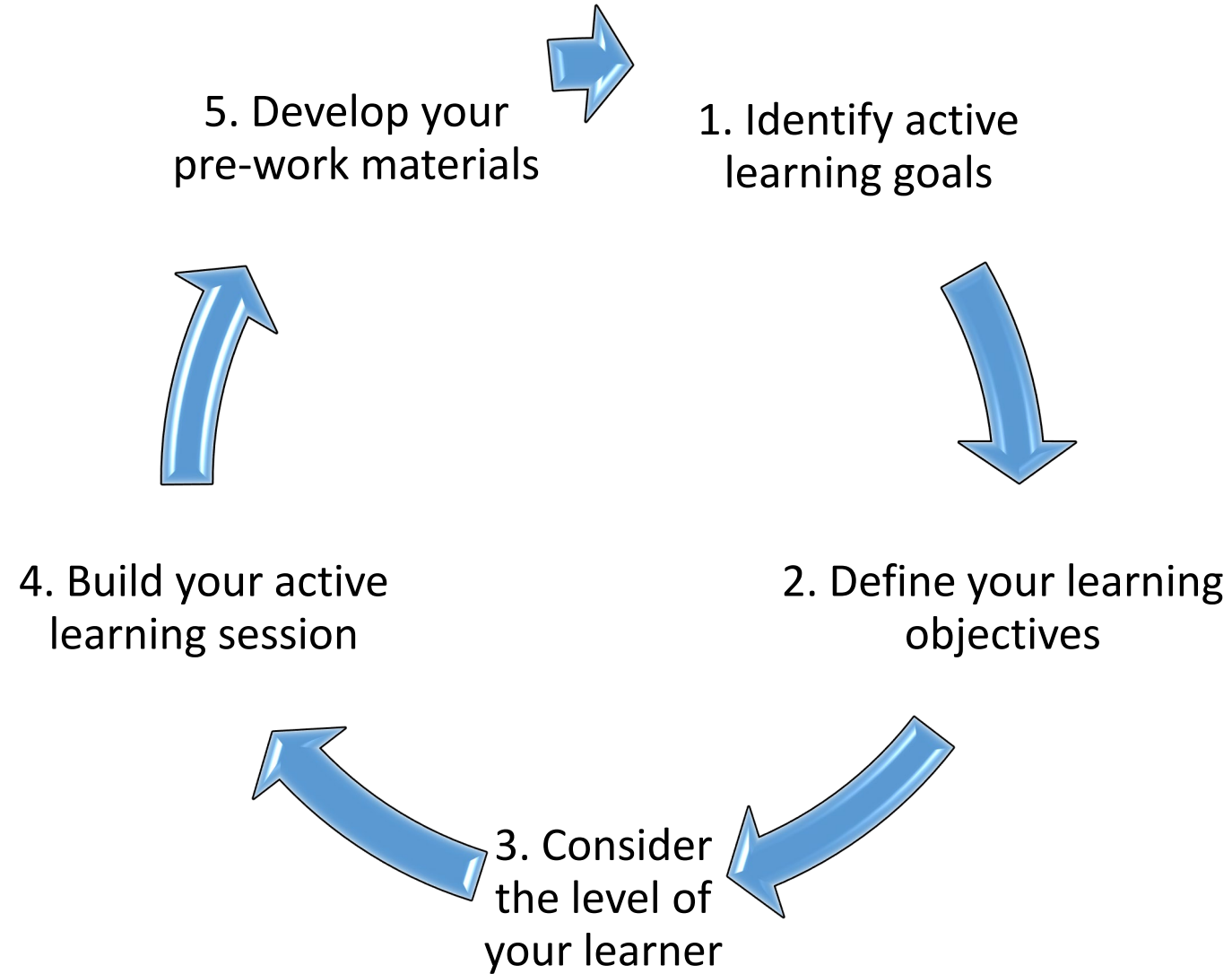
Learning objectives

- What are my learning objectives?
- The learning objectives should be specific and measureable and align with the session goals

Learner profile

- What is the level of my learner? M1, M2, etc.
- What do the students already know? The Course Director or Foundations Director can help guide you

Difficulty of the topic

Pre-work Development

5. Develop your pre-work materials

1. Identify active learning goals

2. Define your learning objectives

3. Consider the level of your learner

4. Build your active learning session

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Back to the Scenario

You've been asked to deliver a 2-hr workshop on the spinal cord. You quickly begin planning all of the content you want the students to know in your session. You first develop the goals of your session which are listed below:

1. Draw the following spinal cord pathways on provided schematics and list sites of synapse and decussation (crossing over)
   - Dorsal column-medial lemniscus
   - Spinothalamic
   - Corticospinal

2. Describe the functions of each of the aforementioned spinal cord tracts and the sensory or motor information they carry

3. Determine what parts of the body sensory and motor losses present following a lesion to one of the aforementioned spinal cord tracts

4. Describe the differences between an upper motor neuron (UMN) and a lower motor neuron (LMN) and describe the typical clinical presentation of injuries affecting these

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Group Activity 3

Take a glance at the spinal cord pre-work document I've given you

Objective 1:

Work with 3-5 members to answer the questions on the next slide

Time frame: 10 minutes

Objective 2:

Come together as a large group to discuss answers

Time frame: 10 minutes

Group Activity 3

Question 1: What were your initial thoughts looking at this document?

Question 2: What would you do differently in this pre-work document to improve student engagement with the material? You can reference the session goals provided in your handout

Guiding principles:

Think about the limiting factors we discussed in the Group Activity 1 and how these may relate to the pre-work document.

You can think about revising the document as is or can propose an entirely different way to present the material.

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Reflections on the Provided Pre-work Document

Part 1: Reflections on the Provided Pre-work Document

1. The content is overwhelming, dense and long

2. The topic is generally perceived to be difficult by students

3. There's terminology that's new and challenging to understand

4. The figures don't do an adequate job conveying the course of the spinal cord tracts

5. There's content that's not covered in the active learning session. This is a challenging area as we often want students to have a comprehensive knowledge of the subject.

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Back to the Guiding Principles

1. There's information that's need to know and information that's nice to know,

   1. Too much information/lengthy documents can be overwhelming and demotivating
   2. If you want the learner to be familiar with some concepts that aren't directly tied to the active learning session, you can always place this at the end of the document and label accordingly (e.g. supplemental)

2. Be conscientious about the time it will take students to review your pre-work as well as the other activities they have scheduled during the day

3. Consider highlighting key concepts in the pre-work and reinforce these in your active learning session

Ultimately, what do the students need to know in order to come to your session ready to participate and apply their knowledge.

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Part 2: What Would You Do Differently to Maximize Student Engagement with the Material?

What Would You Do Differently to Maximize Student Engagement with the Material?

1. Revise content that's not related to the goals of the active learning session.

   1. List as supplemental knowledge (ex: all of the extra tracts in the document that aren't going to be covered in the active learning session)
   2. Reserve it for a different session-check with the course director for input here

2. Remove any content that the students have already covered.

   1. If you want the students to review content covered in a prior session, include this in your session notes and tell the students where to find the info

3. Revise some of the figures

   1. Highlight the sequences of events taking place with the spinal cord tracts

4. Provide an alternative way of learning the material

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Group Activity 4

Objective 1

1. Work with 3-5 members to identify alternative ways in which pre-work materials can be delivered

2. Discuss how these alternative approaches for pre-work delivery can improve student engagement and preparation for your active learning session

3. Time frame: 7 minutes

Objective 2

1. Discuss as a large group

2. Time frame: 7 minutes

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Alternative Approaches for Pre-work Design

Alternative Approaches for Pre-work Design

1. **Document that supports active reading**
   1. Provide questions that students should be able to answer upon reviewing their pre-work document
   2. Create your own visual aids in the document to help establish connections for the student

2. **Powerpoint slides**

3. **Audio or video recordings**
   1. Screencast or Camtasia-both are available for free download at https://software.uvm.edu/
   2. Training: http://www.med.uvm.edu/techservices/educationaltechnologies/curriculum_resources

4. **Interactive modules**

5. **Outside resources**

6. **Give students some options**

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Pre-Work Format	Pros	Cons
Document	Easy to prepare. Traditional and familiar format for facilitator and student.	Requires considerable proofreading to ensure content is grammatically correct, organized and communicated well. Students may not prefer reading.
Powerpoint	Information can be presented in a more manageable way. Features incorporating interactivity and animations can be utilized so students can assess their knowledge and interact with the information.	Slide decks can be lengthy and cumbersome for students to preview. Although information can be presented in a brief way, students may lack context needed to understand more difficult concepts.
Video/audio recording	Students are likely to be more engaged as they're incorporating information in audio and visual formats. The student can pick up on verbal/visual cues that may help them understand that a concept(s) is important. Students can pause or speed up the recording.	Time consuming. Requires advanced planning to ensure that one is prepared to deliver the content and that the content meets ADA standards. It can feel awkward the first few times recording yourself
Interactive module	Students can interact with the information in a way that enables them to assess their knowledge. One can incorporate drag/drop features, quizzes, labeling exercises and embed videos as well. You can parse out the information into smaller sub-modules so students can track their progress.	Very time consuming. This format takes considerable planning-what do you cover, what exercises will you use, what and how much help do you need to accomplish your goals. You need to work with the LCOM Active Learning team early on so that they understand your goals and can give you a time frame from materials submission to final product.
Outside resources (Khan academy, Osmosis, etc)	Less effort required from facilitator. Students are likely already using these to supplement their knowledge.	May not be as gratifying from an academic point of view. There may be content not covered or too much content covered.
Combination	Engage different styles of learning.	Time developing analogous materials. This isn't a con, but it is important... The facilitator should specify that the content is similar and is provided in multiple formats to engage different learners.

How Do You Know If Your Pre-Work Set the Stage?

You don't

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How Do You Know If Students are Prepared?

1. **Student engagement in active learning session**

2. **Questions that students are asking or aren't asking**

3. **Discussion forums**

    1. Allows the facilitator to monitor where the students are struggling and can address student comments/questions ahead of the session

    2. Discussion forums can be used in Vic Portal, but it's essential that the facilitator communicate this with students and check the forum regularly

4. What do you use to gauge student preparedness for your session?

Concluding Thoughts

1. Start planning well ahead of time! Think about what format of pre-work are you going to use and what resources you will need to assist your development

2. Ask a colleague or someone in the Active Learning Team for their input

3. There are many ways to deliver pre-work. It's likely that a combination of approaches will be successful at engaging the students.

4. Whatever the format, pre-work should be guided, brief and include clear objectives which align with the active learning session. **Be sure to check your materials with Active Learning to ensure ADA compliance!**

5. The goal of the facilitator should never be perfection, but rather progress. Be flexible and utilize feedback

6. No matter how amazing your pre-work materials, there are factors you can't control
   1. Other activities scheduled during the day that compete for student time
   2. Intrinsic factors that are specific for each student

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Questions?

Thank you!

1. Teaching Academy

2. LCOM Active Learning-especially Nelly (Karina) Lopez for all her assistance with developing interactive modules

3. Dana Medical Library-especially Kelli Kauffroath for assistance with building an endnote library specific for pre-work/active learning

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LCOM Active Learning Support

Guidance on writing learning objectives

Assist with creation of interactive learning modules and with video editing

Suggest appropriate content to support your active learning session

Ensure that your materials are ADA compliant

Many others (use the contact site below to reach out regarding your needs)

Contact: https://www.med.uvm.edu/activelearning/contact

https://www.med.uvm.edu/activelearning/facultysupport

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I'm happy to pass along my EndNote library that was created by Kelli Kauffroath, Research & Instruction Librarian, Library Assistant Professor, Dana Medical Library