

**LESSON**  
**EXEMPLAR 4 :**

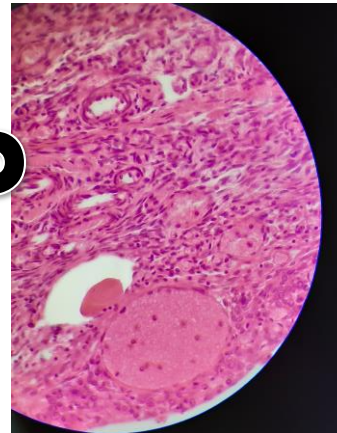
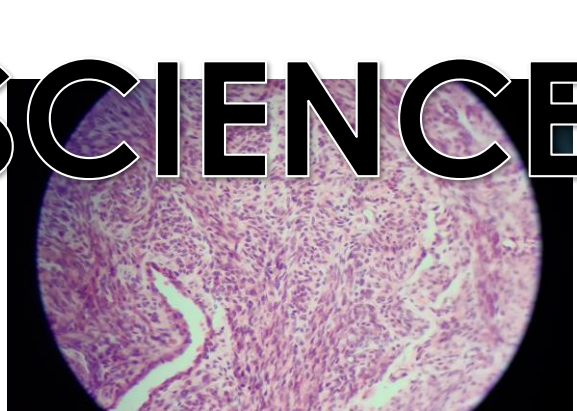
**SCIENCE CLUSTER**



**BIOLOGICAL**



**SCIENCES GROUP**



# ENHANCED TPACK LESSON PLAN TEMPLATE

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**Program** : **B.S. Biology  
Major in Animal Biology**

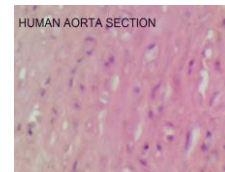
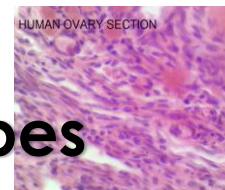
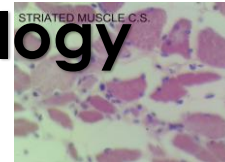
**Course** : **Animal Physiology**

**Topic** : **Movement**

**Lesson Title** : **Different Muscle Types**

**Level** : **Third Year**

**Lesson Duration:** **1 ½ hours Lecture and  
3 hours Laboratory**



# Learning Outcome(s)

<b>Learning Outcomes</b>	<b>Objectives</b>	<b>Tasks</b> <i>(What task/s should I give my students to ensure realization of the objectives?)</i>
<p><b>Performance Standards</b> <i>(What should the students be able to do?)</i></p> <p>1. Demonstrate the knowledge and understanding of the different types of muscles.</p>	<p>1.a Discuss extensively and articulately the different muscle types.</p> <p>1.b Explain the physical characteristics of the different muscle types using the prepared slides, microscope and models.</p>	<p>Laboratory activities, report, quiz, and practical exam</p> <p>Laboratory activities, report, quiz, and practical exam</p>

Learning Outcomes	Objectives	Tasks (What task/s should I give my students to ensure realization of the objectives?)
<p><b>Performance Standards</b> (What should the students be able to do?)</p> <p>2. Design and perform techniques and procedures following safe and responsible laboratory practices.</p>	<p>2.a Practice responsible laboratory practices</p> <p>2. b Demonstrate precision in making observation and in distinguishing difference between muscle types.</p>	<p>Laboratory activities</p> <p>Laboratory report, and practical exam</p>



## **Content Standards**

*(What should the students know to be able to do?)*

1. Develop an in-depth understanding of the different muscle types.

1a. Identify the different muscle types

Laboratory activities

2. Develop and utilize techniques/ procedures for biological work in laboratory.

1b. Relate the physical characteristics of the different types of muscles and their location in the body to their functions.

Laboratory activities and practical exam

2a. Perform basic laboratory techniques designed to study the different muscle types.

Laboratory activities

2b. Appreciate the uniqueness of the physical characteristics of each muscle type and its implication to human movement.

Answer the question, “What do you think will happen to you if you don't have muscles?”

# Target Audience

## Knowing the Learner

*Based on your survey data from earlier in the course, describe the target audience for this lesson; what types of learning styles will you need to be mindful of?*

Year Level : Third Year

Ethnicity : \_\_\_\_\_

Course/Discipline : Animal Physiology

Language : English

General Attribute (characteristics of the class):

The target audience are the Biology students composed of regular students, second courser students, and transferees from other college/university or from the same university but from different programs.

# Pedagogies (Remembering to consider relevance and career/workforce readiness skills around what is being taught)

1. Walkthrough of the lesson (how will you deliver the lesson/topic (from engaging the student to ensuring achievement of learning objectives?)

- Video presentation link

<https://www.youtube.com/watch?v=xiAmpAx2jP0> is given as assignment to maximize time for lecture and other teaching strategies. It will be used to introduce the three types of muscles and their functions (motivation part)

2. How will the lesson delivery manifest efficient classroom management?

- The different muscle types and functions will be presented using laptop and LCD through PowerPoint presentation in connection to the video presented. (lecture method)

**Pedagogies** (Remembering to consider relevance and career/workforce readiness skills around what is being taught)

3. What student misconceptions did you consider in designing this lesson?

- Many students hold the misconception that they are already familiar with the basics because of the mass media (material on the TV, Internet, magazine, etc.)

Example: Muscles are only use for voluntary physical actions like walking, running, or throwing.



# **Pedagogies** (Remembering to consider relevance and career/workforce readiness skills around what is being taught)

## 4. How will I integrate technology in the lesson delivery?

- The use of the 2 Models (Human Body and Mr. Muscle) will enable the learners to relate the physical characteristics of the different muscle types to their location in the body to the functions.
- The binocular and digital microscopes and prepared slides will be used to present the physical characteristics of the different muscle types (group laboratory activity and individual laboratory practical exam)
- Laboratory manuals and experiments for the basic laboratory techniques in studying the three types of muscles, and their functions.

**Summary:** *How are technology, content, and pedagogical knowledge working together in this lesson?*

- For the motivational part, video presentation <https://www.youtube.com/watch?v=xiAmpAx2jP0> to introduce the three types of muscles and their functions in the body to produce movements.

- In the lesson proper, PowerPoint presentation of the different types of muscles and their functions will be discussed. Presentation of the skeletal muscles, their location, and functions using Mr. Muscle Model. Presentation of the cardiac muscles, their locations and functions using the model of the Human Body.

**Summary:** *How are technology, content, and pedagogical knowledge working together in this lesson?*

- For the Laboratory part, there will be pre-lab discussions on the use of flow charting. The students will conduct experiments using the laboratory sheet in the laboratory manual, microscopes and prepared slides on the three types of muscles, their location and function. They will identify the different skeletal muscles, their locations and functions using the Mr. Muscle Model by group. Identification of the cardiac muscle and visceral muscles in relation to locations and functions using the Model of Human Body by group/peer evaluation.

## Technology Being Used by Students

*What technology will my students use in this lesson?*

- Mr. Muscle Model
- Human Body Model
- Binocular Microscopes
- Prepared slides
- Laboratory manual and experiments.

## Technology Being Used by Teacher

*What technology will I use in this lesson?*

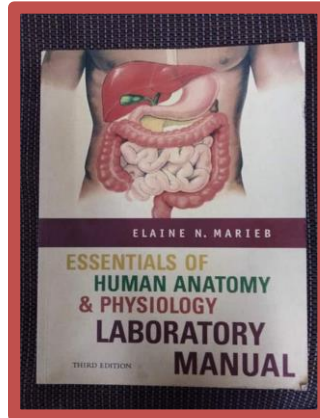
Video clips

- Laptop
- LCD
- Mr. Muscle Model
- Human Body model
- Digital microscope and prepared slides
- Laboratory manual
- Speakers

**What were your reasons for choosing the technology for the students to use?**

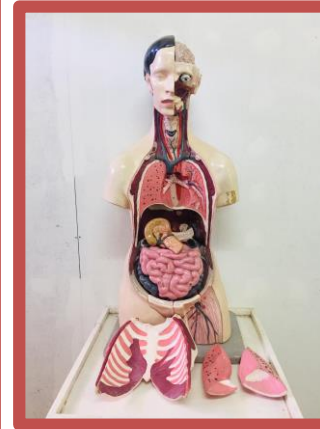
## **MR. MUSCLE MODEL**

for the identification of the locations and functions of the skeletal muscles



## **HUMAN BODY MODEL**

for the identification of the locations and functions of the cardiac muscle and visceral muscles



- **BINOCULAR MICROSCOPES**
- **PREPARED SLIDES OF THE 3 TYPES OF MUSCLES**  
will be used to observe and identify the three types of muscles, their location and their functions

- **LABORATORY MANUAL EXPERIMENTS**  
to perform the basic laboratory technique

## ***What were my reasons for choosing the technology?***

- Video clips/presentation for the motivation
- Laptop for the powerpoint presentation and video presentation of the different types, and functions of muscles for motivation and lecture method
- LCD and speakers for the powerpoint presentation and video presentation of the different types, and functions of muscles for motivation and lecture method
- Mr. Muscle Model to present the locations and functions of the skeletal muscles
- Human Body model to present the locations and functions of the cardiac muscles and visceral muscles
- Binocular microscopes and prepared slides for the presentation of the actual specimen of the different types of muscles, practical exam and experiments
- Laboratory manual for the experimentation on the three types of muscles



***What are the limitations and potential problems in utilizing the technology?***

*Possible Limitation*

1. Technologically Incompetent  
Solution: Orientation on the use of laboratory equipments by the Laboratory In-charge

2. Ineffective time management  
Solution:

- A. Proper time allocation of the laboratory session.
- B. Allow the use of cellphone with saved pictures of prepared slides of muscle tissue available in the Science laboratory
- C. Pre-lab activities
  - B.1 Flow charting
  - B.2 Prepare Pre lab report

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Solution: Proper time allocation of the laboratory session.

**What are the limitations and potential problems in utilizing the technology?**

Potential Problem

*1. Power interruption*

*Solution:*

A. Proper coordination with the maintenance personnel

B. Switch the schedule if power interruption arise- Laboratory first instead of lecture

**What are the limitations and potential problems in utilizing the technology?**

Potential Problem

*1. Power interruption*

*Solution:* Proper coordination with the maintenance personnel

2. Inadequate number of models and microscopes in-proportion to the number of the students

*Solution*

1. Proper allocation of available technology (models and microscopes) through round robin strategy.

2. Utilize interactive simulation application in smart phone like PHET and other related application to topic (previously installed in the student's and teachers smartphones)

## Assessment for Learning (Formative Assessment)

### 1. Assessment Strategy

- Short quiz
- Practical exam (individual)
- Laboratory report (individual)
- Group evaluation  
( peer review- Teacher ensures that each student knows how each student to conduct the laboratory procedure and how each member contribute to the activity)

### 2. Technology which will be integrated in the Assessment

- Use of electronic systems and software to assess and evaluate the progress of the students.  
Example: A video-based computer assisted test

### 1. Feedback Strategy

- Inform students about the results of the quiz, practical exam and laboratory report
- Result of group evaluation using Mr. Muscle and Human body model
- Opportunity to correct misconceptions
- Item analysis of the practical exam results.

### 2. Technology which will be integrated in the Feedback System

- Mr. Muscle and Human body model
- *Laboratory manual*

# Assessment of Learning (Summative Assessment)

*1. How do you know students met the learning objectives and targets?*

- Results of the practical exam, laboratory report, quiz and practical exam

*2. What technology will you use to facilitate assessment of learning?*

- Mr. Muscles
- Microscopes
- Prepared Slides
- Human Body Model

# Concluding Statements/Insights

## 1. Reflections

-Analyze students difficulties in:

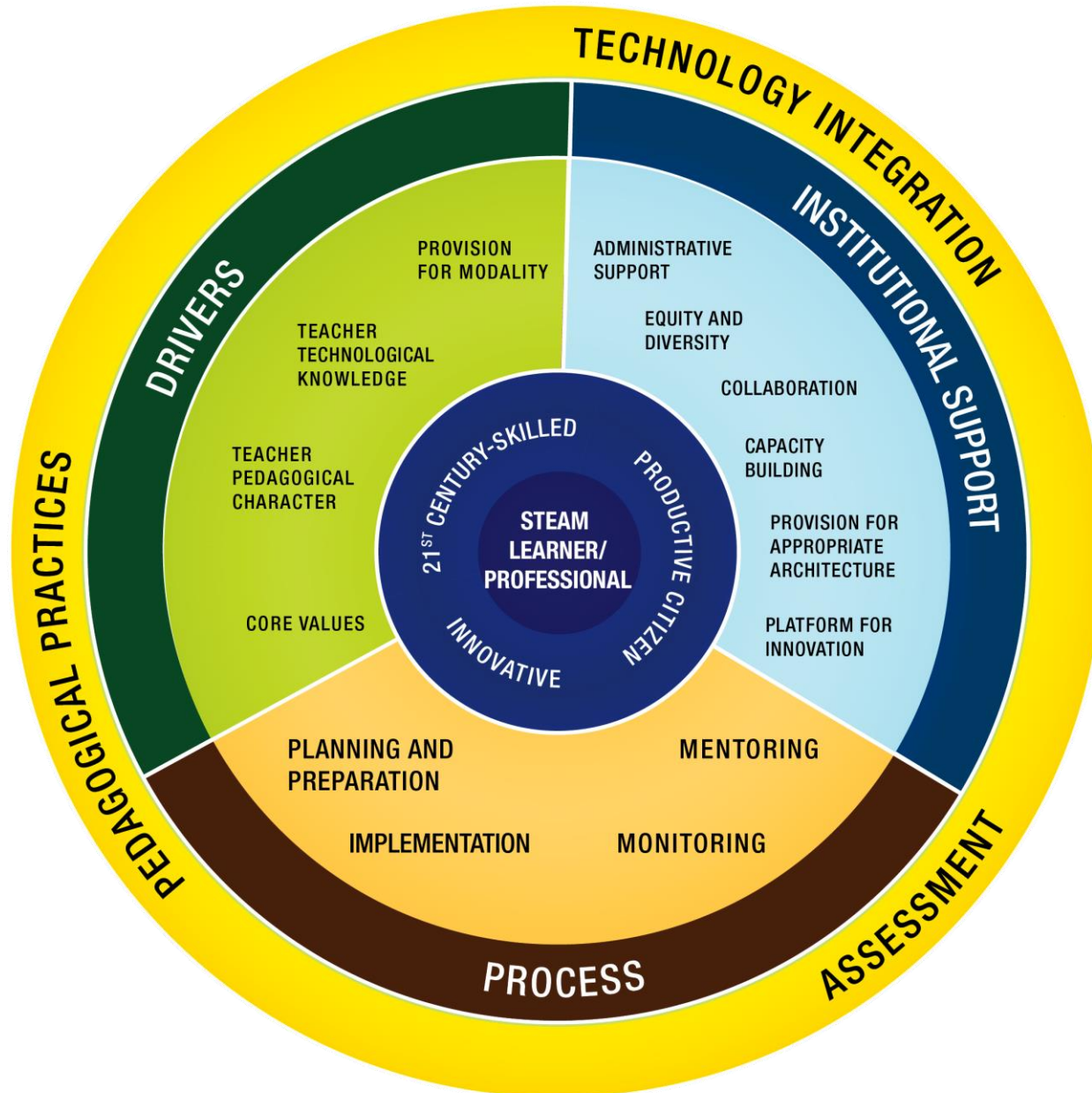
-the use if Mr. Muscle and Human Body models in identifying the types and functions of the 3 types of muscle

- We are on the right track
- Conduct extensive Lesson Exemplar workshops nationwide

## 2. Further Modifications or Enhancement

- Skeletal muscle dance- video or student's activity

# PSE MODEL





# LABORATORY ACTIVITY FLOWCHART

REQUISITION / REQUEST



PRE-LAB (ORIENTATION ) CONFERENCE



ACTIVITY PROPER



POST LAB CONFERENCE



AFTER CARE



*Thank you!*

*Blessed Be*

*God forever and*

*Mabuhay!*