

## Tips to Writing an Integrated STEM Education Lesson Plan

**When beginning to write a lesson plan, ask yourself three basic questions:**

1. Where are your students/learners going? (Objectives)
2. How are they going to get there? (MAMR)
3. How will you know when they've arrived? (Assessment)

### **Topic**

What specifically are you teaching about in this lesson? You should create a catchy title for your lesson. Example: "Lettuce Be Different" or "Me, Myself, and My Future Job"

### **Course**

During what course are you facilitating this lesson? You should state the title of the course you are planning for in this particular lesson. Example: "Introduction of Agriculture" or "Life Science"

### **Grade Level & Number of Students**

Who is in your classroom? How many students? How old (level of cognitive development)? Any special needs students? You should describe your students/learners so that other users can determine how they would change it to fit the needs of their learners. Example: "25 Freshman students"

### **Learning Objective/s**

What will your students be able to know and do at the end of your lesson? Learning objectives should include a behavioral verb and direct object. Learning objectives should outline the expected student outcome as well as the degree of the student outcome. Example: "Students will be able to write 5 clear behavioral learning objectives" or "Learners will be able to explain 5 characteristics of an effective teacher"

### **Situating the Content:**

1. What was previously taught?  
Identify the prior knowledge and learning experiences students have that would help them learn in this lesson.
2. What will be taught next?  
Explain the next steps that the students will do to continue learning and/or master the learning objectives of this lesson.
3. Why this content is important to learn?  
Explain the big idea and/or cross-cutting concept and how it will help students in academic, career, and consumer/citizen roles.
4. What is/are the I-STEM goal(s) [At minimum must include student learning]?  
List an integrated STEM goal (or 2-3 goals).
5. What is the relationship between STEM connections (Concepts, Practices or Both)?  
Identify the STEM domains that will be intentional taught in the lesson and explain how each STEM domain will play a role for students to learn integrated STEM and see the STEM connections. Be sure to explain how they might be related as concepts, in practice, or both.

6. How does the addition of a supporting STEM field improve student:
  - a. Understanding of the anchor discipline?  
Explain how the integrated STEM lesson will help students master content from the anchor discipline.
  - b. Understanding of the relationships between fields?  
Explain how the integrated STEM lesson will help students understand the relationships between the STEM domains.

**Learning Standards:**

1. List 1-2 learning standards from the Anchor domain.
2. List 1-2 learning standards from Connector domain(s).  
Example: "IN-B.4.3: Describe how human activities and natural phenomena can change the flow and of matter and energy in an ecosystem and how those changes impact other species."

**Assessment**

Explain the student evidence for each learning objective, and the assessment method that will be used for the teacher to know to extent each student has mastered the learning objectives. Keep in mind that formative assessments may be used more frequently than summative assessments.

**Time**

How much time will each activity take to complete? Identify time estimates.

**Teaching Method**

What teaching method will you use? Briefly label the teaching method.

**Instructions & Learning Activity**

What will your learners do to meet the learning objectives? What will you say? What questions will you ask? How will you divide groups? Outline in DETAIL your plan for the learning experience.

**Materials & Resources**

What materials and resources will you need to have ready to facilitate this lesson? Outline ALL resources.

**Content Connections**

List explicit ways you will help students make connections across the different STEM domains to support intentional integrated learning, AND list contexts where the content is applied in real-world settings outside of the classroom (practice).

**Alignment**

It is important to remember that each learning objective should be matched with a learning activity which should be linked with an assessment. IT JUST MAKES SENSE!! The following chart maybe helpful to you to determine if your lesson matches this criterion:

Learning Objective	Learning Activity	Learning Assessment
Ex: Differentiate between meiosis and mitosis	Online interactive meiosis and mitosis simulation	Print out of online module completion certificate