PREFACE

"Study the science of art. Study the art of science."

Leonardo Da Vinci

STEAM is an educational discipline that aims to spark an interest and lifelong love of the arts and sciences in children from an early age. Science, Technology, Engineering, the Arts and Math are similar fields of study in that they all involve creative processes and none uses just one method for inquiry and investigation. Teaching relevant, in-demand skills that will prepare students to become innovators in an ever-evolving world is paramount, not only for the future of the students themselves but for the future of the world.

STEAM empowers teachers to employ project-based learning that crosses each of the five disciplines and fosters an inclusive learning environment in which all students are able to engage and contribute. As opposed to traditional models of teaching, educators using the STEAM framework bring the disciplines together, leveraging the synergy between the modeling process and math and science content, for example, in order to blur the boundaries between modeling techniques and scientific/mathematical thinking. Through this holistic approach, students are able to exercise both sides of their brain at once.

An important part of this educational approach is that students who are taught under a STEAM framework are not just taught the subject matter but they are taught how to learn, how to ask questions, how to experiment and how to create.

The goal of this guide is to provide instructional tools in line with the National Curriculum of Pakistan, and it will be useful for teachers of students in all grades. It presents a teaching approach that encourages the active participation and involvement of students in the learning process, with an appropriate balance between thinking and hands-on activities. Sometimes students will be engaged in discussion, and if teachers use questioning effectively, it can improve their students' thinking and communication skills.

To make the guide user-friendly, simple step by step instructions are provided.

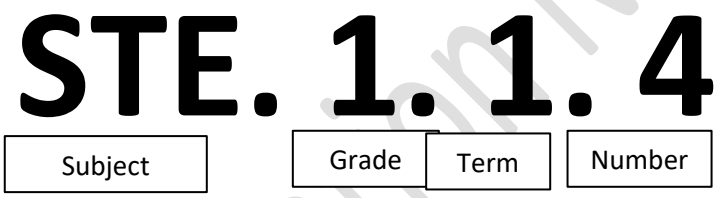
A total number of periods is also suggested for each unit, but the amount of time needed to complete each unit or activity may vary according to its degree of difficulty and the abilities and skills of the students. Teachers can adjust the times to suit their particular needs and context. Advanced preparation and clear instructions by teachers will help to minimize classroom management problems.

All materials suggested for the activities should be easily available at low/no cost: alternative materials can be substituted if necessary.

HOW TO USE THIS GUIDE

Following the simple guidelines can help you get most out of these lesson plans. However, as all teachers know, in order to deliver the best lessons, you should be thoroughly familiar with the subject matter before you plan your lessons.

1. Always read the lesson plans thoroughly before the class to maximize confidence and command over your teaching. It will also enable you to modify in advance the plans to suit the needs of your particular students.
2. Collect and test all the materials listed in the plan before the lesson in order to obtain the required results. This will also minimize classroom management problems.
3. Instead of giving your input directly, introduce the key vocabulary using the glossary or dictionary. Involve the students in exploring the meanings of the key vocabulary using the glossary and if any meaning is not there, ask them to look up the meanings in a dictionary. You can also prepare flash cards for the new terms and display them on the walls. Before starting your lesson, ask the students to read these words aloud and share their meanings. This will help your students improve the pronunciation of the new scientific terms and their fluency in using these terms in discussion of the topics.
4. Before any activity, give clear instructions about what, how, and why they are going to do it.
5. Each additional worksheet has been coded according to the following criteria.



6. The concept of STEAM education is new for everyone. If a child takes longer time than you had anticipated, adjust accordingly. Always be appreciative of the work done in class.

We hope that this guide will prove useful in making the learning and teaching something to be looked forward to and enjoyed by teachers and students alike.

IQRA ZAHID

DEPARTMENT OF ACADEMICS

THE NEXT SCHOOL

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DAILY LESSON PLAN

Class: 1 **Term 1** **Lesson 9 and 10**

Project: Building up a 3D house: **Lego House**	**Duration**
	40 min

Learning Objectives: At the end of the lesson, students will be able to

- Work collaboratively in a small group to create something together.
- Do teamwork as it encourages joint focus, sharing, reinforces positive behavior and social contact.

Teaching Objectives: Teacher will

- Helps children to develop their mathematical skills and spatial awareness and encourages them in developing how to problem solve and come up with new ideas.
- Help children to achieve a sense of accomplishment, pride and build on their self-confidence and self-belief

Skills involved:
Thinking skills · Problem Solving · Communication · Self-management

Resources required:
·Lego Building Blocks, One large base plate
https://www.youtube.com/watch?v=I3l0WIJuX2A

Instructions:

Warm up: Gather the students and ask them to give different examples of 2D and 3D shapes and show them a video of how to build a house.

Challenge: Build a 3D house.
Plan your house. Lay a bottom row of bricks as your "foundation," setting up locations for walls, doors, and the different rooms.
Find a base. Get a LEGO table or one of those green LEGO platforms.
Step 1: Build the outside walls. Build up the exterior walls of your house, row by row.
Step 2: Build the interior walls. Finish setting up the rooms in the house with walls inside.
Step 3: Make the furniture. For the living room, you can make chairs and a TV.
Step 4: Add a roof. Adding a roof should be the last step in building your house
Once students are finished with the house, they can customize it with their own LEGO parts. Maybe it needs some trees or flowers, or even a garage.

Evaluation/Reflection:

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Signature of the teacher Signature of the Head/Coordinator

THE NEXT SCHOOL

DAILY LESSON PLAN

Class: 1 **Term 1** **Lesson 11 and 12**

Project: Introduction to pre-coding for children: **Code Monkey Jr**	**Duration**
	80 min

Learning Objectives: At the end of the lesson, students will be able to

- Basic logic of code and how to build an algorithm for a code
- Learn computational thinking and basic coding concepts such as sequencing and loops.

Teaching Objectives: Teacher will

- Make sure that students do the sequence that will take the monkey to the treasure chest and collect all the bananas.
- Help children to achieve a sense of accomplishment.

Skills involved:

Thinking skills · Problem Solving · Communication · Self-management

Resources required:

Laptop/Computer, Any Android Device, Headphones recommended
https://www.codemonkey.com/hour-of-code/codemonkey-jr/

Instructions:

Warm up: Have a good discussion around the computer lab expectations to make sure that students understand the rules. Recall all the lab rules for using a lab.

Introduce the topic:

In a world filled with captivating creatures and bright colors, you will join a monkey on a mission to collect bananas and unlock treasure chests. All the while, we will explore and learn the basics of code as we use blocks to program a monkey's journey through the world.

STEP 1: DOWNLOAD

Download Code Monkey Jr. from the App Store or Google Play onto all your devices. (From Windows press given link and start)

STEP 2: PREPARATION

Go through as many coding levels as you can to get familiar with the program. We also recommend reading Code Monkey's recommendations on how to have a successful hour of code below.

STEP 3: PRINT

Print out certificates for your students to take home. Students who have their own email can request a certificate at the end of the hour of code.

STEP 4: START

Instruct students to go click on the app and start playing. There are a total of 31 levels.

STEP 6: HANDOUT

Give your students their certificates to take home and show their parents!

Note: Encourage them to go back and try to get 3 stars in all 30 challenges. Ask them to help classmates who are having trouble or start a new activity.

Evaluation/Reflection:

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Signature of the teacher Signature of the Head/Coordinator

THE NEXT SCHOOL

DAILY LESSON PLAN

Class: 1 **Term 1** **Lesson 13 and 14**

Project: Basics of programming using simple commands Use a map and give commands to reach the goal: **Programing with Angry Birds**	**Duration**
	80 min
Learning Objectives: At the end of the lesson, students will be able to ● Build a computer program from a set of written instructions. ● Construct a program by reorganizing sequential movements. ● Translate movements into a series of commands.	
Teaching Objectives: Teacher will ● Ask students to use their fingers to point the direction that the bird should go next. ● Encourage students with questions/challenges to start by asking their partner.	
Skills involved: Thinking skills · Problem Solving · Communication · Self-management	
Resources required: Laptop/Computer, Any Android Device, Headphones recommended https://youtu.be/vgkahOzFH2Q	

Instructions:
Warm up: Ask the students to learn cardinal directions, then changing "Up" and "Down" to "North" and "South" shouldn't be a problem. Ask students to recall the directions we are using to move it.
Record the answers for students to reference throughout the activity.(For your reference activity solution links are attached with each step)
Activity Link :https://studio.code.org/s/courseb-2021/lessons/4/levels/1

Step 1: Play with these blocks and try to get me to the bad pig!":https://studio.code.org/s/courseb-2021/lessons/4/levels/2?solution=true

Step 2:Give this one a try.(https://studio.code.org/s/courseb-2021/lessons/4/levels/3?solution=true)

Step 3:What can you add to the end of this code to get the bird to the pig?(https://studio.code.org/s/courseb-2021/lessons/4/levels/4?solution=true)

Step 4:Move one way, then another to get the bird to the pig!(https://studio.code.org/s/courseb-2021/lessons/4/levels/5?solution=true)

Step 5:Solve this level and get the bird to the pig!(https://studio.code.org/s/courseb-2021/lessons/4/levels/6?solution=true)

Step 6:Avoid the TNT to get the bird to the pig!(https://studio.code.org/s/courseb-2021/lessons/4/levels/7?solution=true)

Step 7:ime for a shorter puzzle! Move one way, then another to get the bird to the pig (https://studio.code.org/s/courseb-2021/lessons/4/levels/8?solution=true)

Step 8:Get that pig!(https://studio.code.org/s/courseb-2021/lessons/4/levels/9?solution=true)

Step 9:Get on your own way!

Evaluation/Reflection:

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Signature of the teacher Signature of the Head/Coordinator

THE NEXT SCHOOL

DAILY LESSON PLAN

Class: 1 **Term 1** **Lesson 15 and 16**

Project: Concept of living and nonliving things by using sorting cards**: Living or Nonliving**	**Duration**
	40 min

Learning Objectives: At the end of the lesson, students will be able to

- classify items as living and nonliving by completing a sorting activity.
- build the foundational understanding of living and nonliving things.

Teaching Objectives: Teacher will

- help children use observations to describe patterns of what plants and animals (including humans) need to survive.
- Define what a living organism is, so the children can then identify what these organisms need to survive.

Skills involved:

Thinking skills · Problem Solving · Communication · Self-management

Resources required:

Worksheets, Sorting Cards

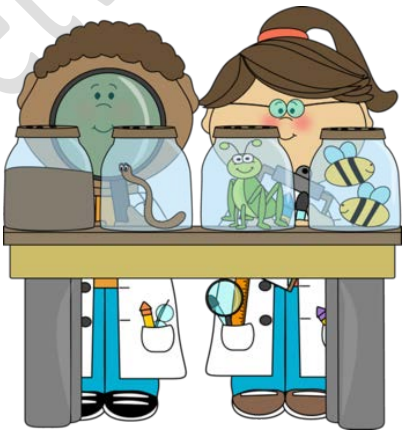
https://www.youtube.com/watch?v=p51FiPO2_kQ

Instructions:

For the opening of this lesson, you will need the **Living or Nonliving** sort cards included as a PDF with this lesson. Take a print out and laminate one set of cards for each table group. Cut out the cards on the lines. Set aside the header cards that say, "living" and "nonliving".

Warm up: Distribute one set of cards to each table group and tell the students that they are going to be sorting some cards into two groups and that they need to figure out how to do that as a group. ask them to look at the cards and see how they are alike. Make sure you can tell me how you sorted the cards

Check: After the students have completed the sort, go around the room and each table to share how they sorted the cards.



Step 1: Open up the downloaded pdf and start discussing with the students.

Step2: Living things can do these things: Grow, Move Reproduce. (Ask them will show you in next slides)

Step3: Living things move. (Explain with examples how living things move)

Step4: Living things reproduce (Explain with examples how living things reproduce)

Now distribute the activity sheet to the students and have them write their name at the top. Tell the students, now it's time for you to show me that you know the difference between things that are living and nonliving. A*sk them* to cut out the pictures and sort them into living and non-living *and* place the living things here (point to spot on the activity sheet) and the non-living things here.

Evaluation/Reflection:

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Signature of the teacher Signature of the Head/Coordinator