## *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.

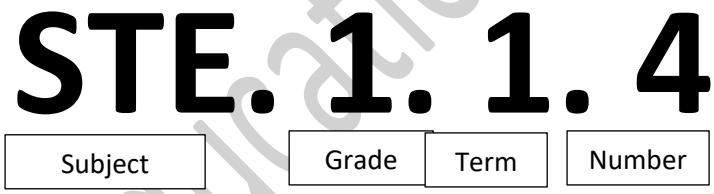
A total number of periods is also suggested for each unit, but the amount of time needed to complete each unit or activity may vary according to its degree of difficulty and the abilities and skills of the students. Teachers can adjust the times to suit their particular needs and context. Advanced preparation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

# THE NEXT SCHOOL

**DAILY LESSON PLAN**

**Class: 1** **Term 1** **Lesson 1 and 2**

| **Project:** Introduction to historical places and landmarks: **Challenge Card Activity** | **Duration** |
|---|---|
| | 40 min |

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

- Identify the famous landmarks.
- create replicas of the landmarks using basic building blocks/Legos

**Teaching Objectives: Teacher will**

- Use different picture words to tell the children the history about selected landmark.
- Enable the students to acquire the knowledge about the topic
- Help the children participate in collaborative conversations about the topic

**Skills involved:**

Thinking skills · Problem Solving · Communication · Self-management

**Resources required:**

·Lego Building Blocks, Printed Challenge Cards

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

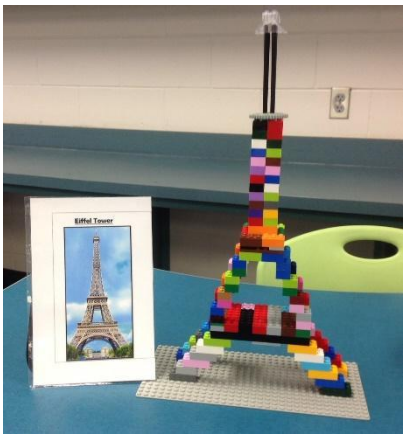
**Instructions:**

**Warm up: Invite students to talk about the famous places they have visited.**

Now tell them about different landmarks by showing them cards or media pictures.

**Step1:** Print the challenge cards on cardstock to give them extra durability and cut apart the pieces.

**Step2:** Help and ensure that the set stays together, punch a hole in the upper left-hand corner of each card and bind them with a ring. mark the four landmarks: The White House, Eiffel Tower, the Giza Pyramids and Kukulkan Pyramid and print all the sheets.




**Building Famous Landmarks**

**Step 3:** Guide them to work through the complete process of planning and designing their structure before diving into the LEGOs Once they have a solid plan in place, they will start building their structures.

**Step 4:** Now ask them to build a structure.

**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 3 and 4**

| **Project:** Introduction to animals' home and habitats: **Building a snake with dough** | **Duration** 40 min |
|---|---|

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

- Identifying the animals that live in a particular habitat have adaptations that allow them to survive there.
- Learn about the snakes that come in a variety of colors and patterns.

**Teaching Objectives: Teacher will**

- Help them to define how animals live and adopt their habitats.
- Help the children participate in collaborative conversations about the topic

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

**Resources required:**
· Play Dough (Green, yellow, and blue are great colors), Googly eyes, Tongues (cut from red craft foam), Small buttons, Sequins
https://www.youtube.com/watch?v=xllxjtTJrq4&t=29s

**Instructions:**
**Warm up: Ask the students to sit down and show them the video attached in the above link.**
**Now discuss about the snake and its habitat.**
**Say: Are Snakes really dangerous? How many types of Snakes exist? How do they contribute to our environment? Learn about Snakes and the role they play in our environment.**
**Take different answers from the students and encourage them and guide them how to stay safe from all types of snakes.**


**Now it's time to build a snake by using play dough.**
**Building Instruction:**

**Step1:** Set out the supplies! Paper cupcake liners work really well to corral the materials and put all the supplies into it.
**Step2:** Make a tongue from red craft foam. The tongues just make the snakes look so cute.
**Step3:** Now make a snake from dough as shown in the picture.
**Step4:** Put eyes, tongue and Sequins on it.
**Step5:** Give it any shape that you want.
**Challenge: Try to make different colors of snakes with help of different doughs**

**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 5 and 6**

| **Project:** Concept of addition: **Simple Addition by building blocks** | **Duration** |
|---|---|
| | 40 min |

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

- Do the addition because students can really see what's happening.
- Do the counts and figure out the sums

**Teaching Objectives: Teacher will**

- Use laminated LEGO® addition mats so that the students can use a wipe off marker and do the activity over and over.
- Make the clear concept of addition by demonstration using objects.

**Skills involved:**

Thinking skills · Problem Solving · Communication · Self-management

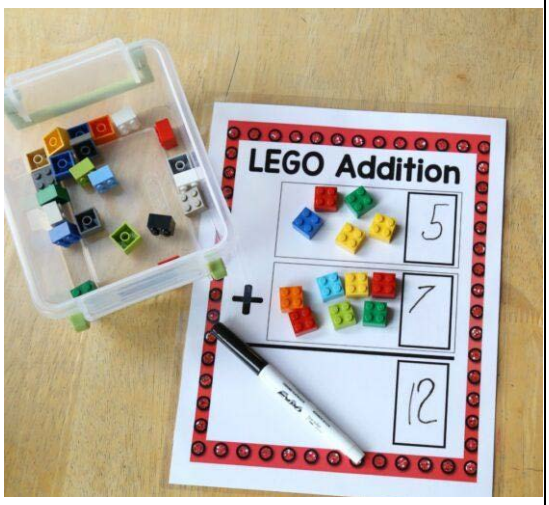
**Resources required:**

·Lego Building Blocks ·Printed Challenge Cards

https://www.youtube.com/watch?v=Fe8u2I3vmHU

**Instructions:**

**Warm up: Ask the students to sit down and discuss the number with help of bricks e.g., like if I have 3 red bricks ad 3 yellow how many bricks altogether?**
**Now count the bricks and write the total number in the sheet.**
**Say: find the right number of yellows and oranges and build a tower of four yellows on top and then add on a stack of four oranges to match the equation.**




**Step 1:** Print the addition cards on cardstock to give them extra durability.
**Step 2:** Let the students choose how many bricks to put in each square when done
**Step3:** Ask them to count up the total and write the number at the bottom.
ask the children to solve one card after another
**Easy peasy!**
**Step 4:** Another way to approach this activity would be to keep the same number on the bottom (10, for example) and then find all the ways to make 10. Then switch out the sum at the bottom to practice number bonds for a different sum.

**Evaluation/Reflection:**

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Signature of the teacher Signature of the Head/Coordinate

# THE NEXT SCHOOL

**DAILY LESSON PLAN**

**Class: 1** **Term 1** **Lesson 7 and 8**

| **Project:** Learning the concept of multiplication with the help of building bricks: **Time Table Race** | **Duration** 40 min |
|---|---|

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

- Create and interpret a range of representations in mathematics, including times tables.
- Compare and contrast two or more mathematical objects or ideas by using multiplication.

**Teaching Objectives: Teacher will**

- Support students to create different kinds of tables.
- Clarify the concept of multiplication.

**Skills involved:**

Thinking skills · Problem Solving · Communication · Self-management

**Resources required:**

·Lego Building Blocks, One large base plate, 15 green 1 x 1 bricks, 30 orange 1 x 1 bricks

https://www.youtube.com/watch?v=AFgWj5GRL5U

**Instructions:**

**Warm up:** Challenge your child to build each of the numerals 0-9 using Lego bricks. Ask the student to sit down and count the studs on the top of each brick. How many are there? Which brick has the most studs? A 4x2 brick has 8 studs on the top. An 8x6 plate has 48 studs.

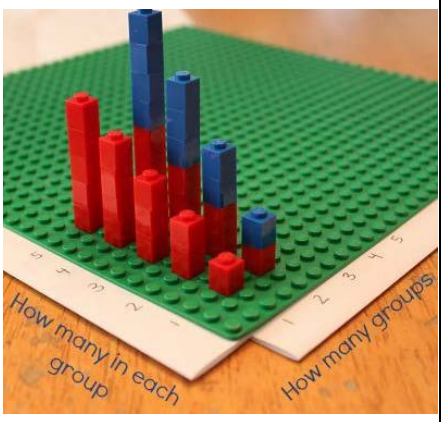
**Instruction: Give the concept of multiplication to students and ask them to build the table of 2 with bricks.**

**Step 1:** Label your base plate. Tape a paper to two edges and label the rows of dots with 1, 2, 3, 4, 5 on each side, skip a dot row between each number.

**Step 2:** Tell the students how to build the rows in this graph. The bottom axis tells how many groups to build, and the side axis tells how many bricks will be in each group. The groups will be different colors. The first row is all the same color. 1 group of 1, 1 group of 2, 1 group of 3, etc.

The second row has two colors. 2 groups of 1, 2 groups of 2, 2 groups of 3, etc.

And so on.




**Step 3:** Make observations along the way.

Look! The rows count by 2's, 3's, etc.! The towers on the two rows go 2, 4, 6, 8, 10.

The color groupings are not the same, but the height of the towers match. The finished graph lends itself to interesting observations if you look at it from different angles.

**Evaluation/Reflection:**

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Signature of the teacher Signature of the Head/Coordinator