



**STATE COUNCIL OF
EDUCATIONAL RESEARCH AND TRAINING
GOA**

Information & Communication Technology

Revised Syllabus 2021

TEACHER'S HANDBOOK

Class VII REGULAR

**Conceptualized & Developed by:
Project Management Unit,
Directorate of Technical Education,
Porvorim Goa**

Preface

“You have a brain and mind of your own. Use it, and reach your own decisions.” –

Napoleon Hill

Government of Goa pioneered in introducing Coding and Robotics Education in Schools Scheme, aimed at introducing critical thinking, problem solving, design thinking; to the young fertile minds in middle schools of the state of Goa.

This scheme resulted in creating the Revised ICT curriculum to keep in tune with the dual objectives of: The National Education Policy -2020 (NEP-2020) - that aims at building a holistic learning culture and making the learning adaptive to the needs of the digital world. Towards the teaching/learning resource creation, the Project Management Unit (PMU) at the Directorate of Technical Education, engaged with the industry resource persons to train a select group of computer teachers drawn from the schools in the state, on the curriculum delivery and pedagogy.

This *Class 7th - Regular Computer Teachers Handbook* is the collaborative creation of the computer teachers from the schools of Goa. Every lesson plan is segregated into a story, that helps the teacher to provide the hook to the lesson during delivery, has learning objectives, provides additional teaching resources and rubrics at the end of every lesson. All this provides the teacher the tools and mechanisms on how to deliver the content, what to expect from the student and provide continuous feedback. The reader of this handbook is also requested to pay attention to the detailed artwork and layout on every page; all very meticulously created. All in all the aim of this Handbook and all resources created is to empower the teacher and provide an avenue for peer-to-peer learning.

The *Class 7 - Regular of the Revised ICT Curriculum*, builds from the previous class by building on the critical thinking and problem solving aspects by using tools like KoJo, Blender and Data Interpretation; as such nurturing students creativity, promotes learning by doing and allowing them to enjoy their other subjects in an ubiquitous manner.

An academic endeavour such as this Teachers Handbook involved dedicated teamwork from many hands. I would like to acknowledge the tireless efforts of our resource persons and industry experts Mr Lalit Pant, Mr Anay Kamat, Mr Venkatesh Prabhu and Mr Yash Naik Ganthe, who mentored the teachers on the curriculum and hand held them on developing the resources. The entire team of Computer teachers who worked many hours even beyond their work timings to develop the various

resources for this handbook. The artwork and design layout was done creatively by the Art teachers from state schools and the proof-reading was meticulously done by the faculty from the Government Polytechnic. A kind request to the reader is to refer to the credit section of this handbook, to read about these wonderful persons who have done this amazing academic work. I take the opportunity to thank my PMU team members, Mr. Devendraprasad Kuvelkar and Ms. Megha Nayak , who worked behind the scenes, to keep the content creation team in good motivation, on track and focussed; Mr. Saieesh Gandhi , who was the glue between the resource persons and the team, noticed the shortfalls and came up with solutions to mitigate divergences. Gratitude to Dr. Vivek B. Kamat, Director, Directorate of Technical Education for having bestowed full support and unflinched confidence towards the entire activity. Gratitude is also expressed to Shri Bhushan K. Savaikar, Director, Department of Education and Shri Nagaraj Honnekeri, Director, SCERT - Goa, for all help and cooperation extended.

Prof. (Dr.) Vijay Borges

Project Director

Project Management Unit

DIRECTORATE OF TECHNICAL EDUCATION, GOVERNMENT OF GOA

Content

Recap of Grade 6-Scratch Practice	1
Episode 1: The Super Six Champion series continued.. Recap of Scratch	
Introduction to Kojo - Square and triangle with turtle commands	5
Episode 2: What's Next after scratch? - From block-based coding to text-based coding	
Polygons- Introduction to recursions to draw a polygon of n side	9
Episode 3: Having Fun with different shapes!	
Colours - Filling the shapes with colours	13
Episode 4: Rainbow shading to our patterns too!	
Drawing house with triangle and square	17
Episode 5: Drawing a house-shaped PiggyBank!	
Colour Gradients - Using gradient to build sky and ground.....	21
Episode 6: Super Six champion's trip to the beach!!	
Using radial gradient to build Sun	25
Episode 7: Make the real Sun glow in our drawing!	
Flying birds with Arcs	29
Episode 8: Ved's curiosity to see the flock of birds fly high up!!	
Scenery Poster	34
Episode 9: The Super Six team participates in the State level drawing competition!	
Pictures: Tangrams of Animals	38
Episode 10: Super Six enjoys the Tangram Activity	
Tangram Houses	43
Episode 11: Reena's Lego game ignites the idea of house drawing using tangrams to Ria	
Tangram trees.....	48
Episode 12: Nidhi's Mother creates a baby quilt easily using Nidhi's idea of tangrams.	
Tangram flowers.	52
Episode 13: Gift of a patchwork design booklet!	
Scenery with Tangram	57
Episode 14: Super six creates T-shirt designs of scenery for sale on the Bazaar Day of school!	
Scenery with Text	62
Episode 15: Super six designs digital Logo for their team!	
Photo Frame.....	68
Episode 16: Designing a photo frame scenery as a gift to the chief guest for the annual Gathering	
Building Picture objects out of turtle graphics designs	72
Episode 17: Gracy wins Best out of waste Prize at Taluka level for her Teddy Bear creation	
Introduction to Animation.....	77
Episode 18: Fun at Gracy and Glen's Birthday party!	
Worksheet and Exercise.....	81
Episode 19: Creating an illusion based pattern -Create a club from the deck of cards	
To create a Dragonfly using Ellipse	84
Episode 20: The game of Tennikoit strikes an ellipse drawing idea to Gracy.	
To convert from Kojo to HTML	88
Episode 21: Salim learns an innovative way of sharing his file	
Blender: Introduction to 3D.....	92
Episode 22: Fun with 3D graphics	

Low Poly Tree.....	97
Episode 23: Nidhi and Ria building MineTest Game trees	
Low Poly House	102
Episode 24: Ved and Gracy build a sweet 3D home on the computer!!	
Low Poly Snowman.....	108
Episode 25: Let us learn to build a Snowman with Gracy and Ria	
Low Poly Animal.....	113
Episode 26: Nidhis Visit to her uncle's farmhouse	
Low Poly Rocket	118
Episode 27: Let us fly a Rocket	
Creating a 3D Scene	124
Episode 28: Ved creating a 3D scene	
Animation	129
Episode 29: Super Six team trip to Big Foot	
Animation and Rendering.....	134
Episode 30: Salim, Raj and Ved creating animation of launching rocket video	
Data Organisation	139
Episode 31: Easy way to store and retrieve data!!	
Visualising Data.....	143
Episode 32: Nidhi's Curiosity in the examination hall	
Appendix.....	147

Information & Communication Technology

Class VII Syllabus

Week	Category	Title	Objective	Learning Outcome
1	KOJO	Scratch practice.	Creating a pattern using basic shapes.	Creating a pattern of shapes with proper placement and rotation of angles.
2	KOJO	Introduction to Kojo - Square and Triangle with the Turtle commands.	Drawing various shapes.	Drawing different shapes in the text-based coding environment using concepts learnt in class 6.
3	KOJO	Polygons- Introduction to recursions to draw a polygon of n side.	Use of recursion and how to draw polygons using it.	Learning to use a recursive function with conditional execution.
4	KOJO	Colours - Filling the Shapes with Colours.	Filling the colours.	Using predefined colours.
5	KOJO	Drawing house with triangle and square.	Learning to use a single function for different sizes.	Learning to create shapes of different sizes by using the size and step as input
6	KOJO	Using Gradients to build sky and ground.	Understanding creative purpose of Gradients.	Developing interest and curiosity towards using linear Multiple Gradient.
7	KOJO	Using Radial Gradient to build the Sun.	Understanding creative purpose of Gradients along the radius.	Providing the right values to attain proper Radial Colour Gradients.
8	KOJO	Crows with arcs.	Moving away from lines in the turtle graphics and understanding arcs.	Understanding the importance of angle and radius and the relationship between the two.
9	KOJO	Scenery Poster.	Using all the elements developed previously to form a picture.	Learning to define different pictures to complete the drawing.

Week	Category	Title	Objective	Learning Outcome
10	KOJO	Pictures: Tangrams Animals	Composing drawings through transformable objects.	Learning to place the shapes using proper rotations, translations to form Tangram shapes.
11	KOJO	Tangram Houses	Composing drawings through transformable objects.	Learning to place the shapes using proper rotations, translations to form Tangram shapes.
12	KOJO	Tangram Trees	Composing drawings through transformable objects.	Learning to place the shapes using proper rotations, translations to form Tangram shapes.
13	KOJO	Tangram Flowers	Composing drawings through transformable objects.	Learning to place the shapes using proper rotations, translations to form Tangram shapes.
14	KOJO	Scenery with Tangram	Combining all the elements learnt previously to draw a scenery using pictures.	Using the knowledge learnt so far, creating an interesting art piece by combining all the tangram shapes.
15	KOJO	Scenery with text	Learning how to include text.	Understanding the usage of text through coding.
16	KOJO	Photo frame	Learning how to combine all the previously drawn individual pictures to form a photo frame .	Learning the usage of different shapes to create innovative patterns/designs.
17	KOJO	Teddy Bear	Learning to draw circle using the picture command and moving away from turtle graphics.	Learning to draw circular shapes of fixed size using simple commands.
18	KOJO	Animation	Learning Animations	Learning to animate a picture that is already created.

Week	Category	Title	Objective	Learning Outcome
19	KOJO	Create a club from the deck of cards.	Creatively using the same shape to create an Illusion of another shape.	Learning to draw pictures using the circles.
20	KOJO	To create a Dragonfly using ellipse.	Creatively using the same shape to create another shape.	Understanding how to draw ellipses using pictures.
21	KOJO	To convert from KOJO to HTML	Getting introduced to HTML	Understanding why we need to export the file.
22	BLENDER	Introduction to 3D	Evolving from 2D graphics to 3D graphics	Students should be able to create 3D objects with the use of default objects/Meshes.
23	BLENDER	Low poly tree	Learning how to create a model using smaller objects in a 3D environment	Students should be able to create an object using shapes.
24	BLENDER	Low poly house	Learning how to create a model using smaller objects in a 3D environment	Students should be able to use Vertex Select, Edge Select, and Face Select to reconstruct the new shape or modify the existing shape.
25	BLENDER	Low poly snowman	Learning how to create a model using smaller objects in a 3D environment	Students should be able to use predefined shapes to build a snowman and paint it
26	BLENDER	Low poly animal	Learning how to create a model using smaller objects in a 3D environment	Student should be able to build low poly rabbit using predefined shapes and colour it
27	BLENDER	Low poly rocket	Learning how to create a model using smaller objects in a 3D environment	Students should be able to build a low poly rocket using a single shape.
28	BLENDER	Using Blender	Learning how to create a model using smaller objects in a 3D environment	Students should be able to insert real-world objects required to do the task.

Week	Category	Title	Objective	Learning Outcome
29	BLENDER	Animation	Learning how to animate objects by inserting Keyframes.	Students should be able to animate the objects using Keyframes.
30	BLENDER	Animation and rendering	Learning how to animate objects and render the same into MP4 Format.	Students should be able to render animation(Converting to MP4 Format).
31	SPREADSHEET	Data organisation	Organising related data together.	Students should be able to arrange information in a table form by placing related columns together.
32	SPREADSHEET	Visualising Data	Visualising the data in picture form and drawing conclusions from it.	Students should be able to compare the data in a picture form and derive conclusions based on it.
33	Hackathon	Project	Project Planning	Students should be able to form the team, collaborate, plan and present the idea.
34	Hackathon	Project	Project execution	Students should be able to build a game on Scratch using the artwork created by them as a team.
35	Hackathon	Project	Presentation	Student should be able to present their project to the teacher.

Connect – (2 minutes)

Episode No. 1: The Super Six Champion series continued.. Recap of Scratch

Class 6 was enjoyable with all that they learnt, experimented with, and built using Scratch and GIMP. They participated in various competitions, Hackathons and won prizes too in class 6.

After class 6 results, it was time for summer vacation. A week before the commencement of school, Super-six champion group members Raj, Ved, Salim, Ria, Nidhi and Gracy decided to have a Google meet session to share the fun they had during their vacations.



Gracy: “Surely! In class 7 we are going to learn a new environment of coding too.”

After some more chats and discussion, they ended up G-meet with the excitement of meeting each other personally in the next week.

The week ended soon and the first day of the new academic year arrived. All the children once again were happy to meet each other. Regular classes started by midweek.

During the ICT period, students were taken to the ICT lab.

ICT Teacher Rashmi: “Good Morning students. Welcome back to the fresh and new academic year. This year too we will be doing interesting projects and we are going to learn a new coding environment too. But before we start, let us revise what we have learnt last year.”

She keeps a house shaped piggy bank on the table and asks students to identify what it is and explain how to code the same in block based-coding that they had studied. Students recognise that it is a house-shaped piggy bank.

Ved : “Teacher, that piggy bank is of house shape for which we can use a triangle and rectangle block to draw.”

ICT Teacher Rashmi: “Very good Ved. Now you all can try doing it in a team of two, using the concepts which you have learnt and then share the project file with me.”

In today's class let us also revise what we have learnt in Class 6

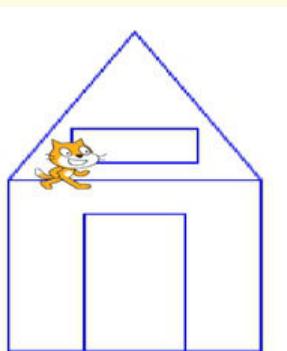


Learning Objectives:

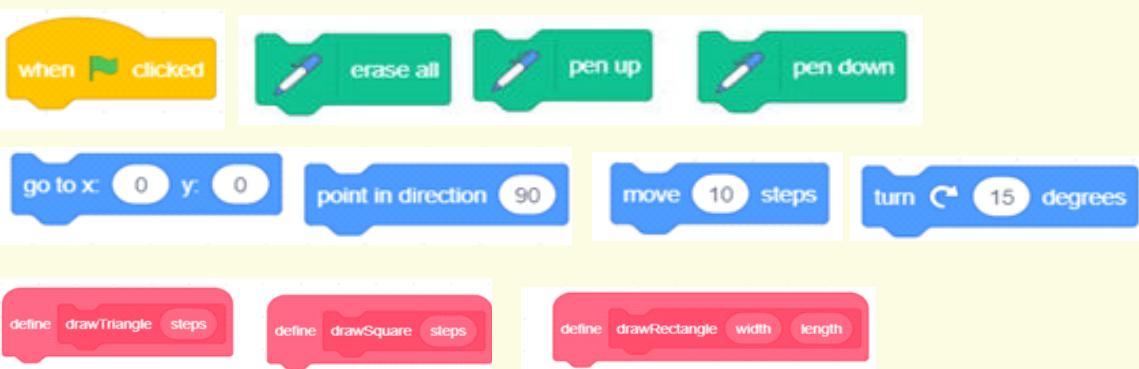
1. Creating a pattern of shapes with proper placement and rotation of angles.
2. Realising the need to learn the new coding environment.
3. Revision of drawing basic shapes.
4. Creating a pattern using these shapes.
5. Proper placement of all the shapes.
6. Identifying the angle of rotation for the basic shapes.

Expected outcome – (3 minutes)

<https://youtu.be/z0yaof5rgxg>

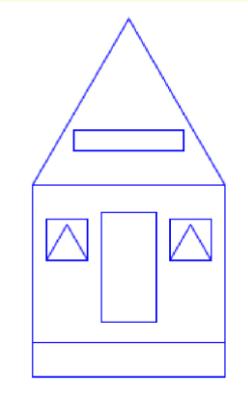


Design – (5 minutes)



Tasks – (50 minutes)

Task 1 - Observe the figure below and try to build the code.



Task 2 - Draw different types of piggy banks using basic shape blocks that have been created by you.

Task 3 - Try to fill the colour into the shapes drawn.

Task 4 - Try to write text and name the shape.

Observations to be done by the teachers - (simultaneous)

1. Is the student performing or discussing with his/her partner?
2. Is the student finding it difficult to explore the blocks needed?
3. Is the student struggling to arrange the commands in the order that would produce the right output?
4. Is the student moving the blocks up and down to get the desired result
5. Are the students happy with the design they get during the manipulation of the program?
6. Is the student interested in finding a solution to the given problem?
7. Has the student completed the given task in time?

Evaluation - (10 minutes/simultaneous)

- 1. Understanding of the problem**
 - a. Understood clearly and can explain.
 - b. Understood the given task and also the other tasks.
 - c. Partly understood the problem and requires help.
 - d. Did not understand the required outcome.
- 2. Execution**
 - a. Did not complete the program.
 - b. Completed only the first task.
 - c. Completed the other tasks.
 - d. Completed and also explored the other blocks.
- 3. Understanding of the coding blocks (tick all that applies)**
 - a. What do you think the move block does?
 - b. What do you think the turn block does?
 - c. What do you think the set pencolor block does?
 - d. What do you think the goto x,y block does?
 - e. What do you think a clean slate does?
- 4. Using the computer (tick all that applies)**
 - a. Was able to explore all blocks from the palette.
 - b. Was able to save the file properly.

EVALUATION RUBRICS

Assessment Skill	Beginner (25%)	Needs Improvement (50%)	Comfortable (75%)	Skilled (100%)
Discovery	It was a challenge for the student to find the appropriate blocks in the palette.	The student was able to find some blocks, however, required help for discovering the others.	The student found all the required blocks without any difficulty.	The student was not only able to discover all the blocks in the palette but also explored other blocks in the palette.
Understanding/ Problem Solving	The student found it a challenge to understand the task	The student partially understood the task.	The student could get the output but could partially explain the task.	The student was quick to understand the task and could explain the same with clarity.
Completion of tasks and Keyboard Skills	The student could not get a solution within the given time.	The student struggled to get a solution for the first task.	The student got a solution for the first task but struggled a bit with further tasks.	The student could get the solution for most of the tasks easily and also experimented with new tasks.
Interest/ Motivation	The student showed very little interest in the activity.	The student displayed a fair interest in the activity.	The student participated in the activity with interest.	The student was excited about performing the activity.
Team Work	The student was a passive member of the team.	The student was considering all the opinions of the peer team members.	The student was able to filter and go ahead with the right opinion provided by the teammates.	The student completed his/her work and also helped the other team members by solving their difficulties wherever possible.

Guidelines (if required)

Connect – (2 minutes)

**Episode No. 2: What's Next after Scratch? -
From block-based coding to text-based
coding.**



ICT Teacher Rashmi: “How many of you could share your projects with your teammates over the mobile while working on them?”

Ved : “Teacher, I did try to share the project with my teammate Ria. I was facing difficulty as she constantly repeated that she was receiving the file as a zipped file.

ICT Teacher Rashmi: “So how did you solve this issue?”

Ria: “Teacher, finally Ved shared the screenshots with me and then I had to re-write the code on my computer to check the problem.”

Ved: “Teacher, I was trying to code a Super Mario game and I realised that as the blocks increased it became rather difficult to search for a particular block.”

ICT Teacher Rashmi : “Hmmm! So you all have your observations, I wanted you to come up with. Now can you also come up with a way to solve this problem?”

Salim: “Teacher, when we write a message in text, to each other, we can easily copy and edit it anywhere. Maybe, instead of drag and drop blocks, we could post a message to the computer in the text?”

The whole class chuckles.

ICT Teacher Rashmi: “Yes. You are correct Salim. We can easily share the text-based code over mobile and identify the issues quickly and also copy the code and run it to test unlike rewriting it fully.”

Ved : “Teacher, if it is so powerful, we will definitely enjoy coding it.”
All are excited about coding using the text-based method.

Let us also join them to learn a new type of text based coding.

Learning Objectives:

1. Drawing various shapes in the text-based coding environment using concepts learnt in class 6.
2. Using proper indentation which would make the code easily readable.
3. Using ‘Auto Suggestion’ effectively to avoid common typing mistakes.
4. Writing and maintaining the proper structure of code.
5. Getting comfortable with a text-based coding environment.

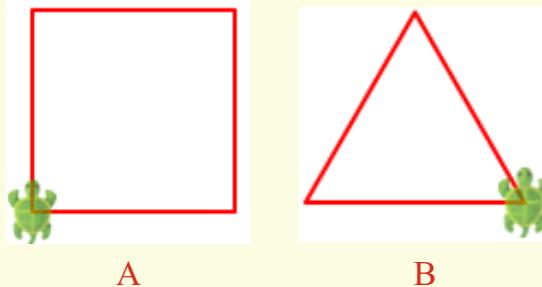
Expected outcome – (3 minutes)

<https://youtu.be/m8s08ghnd5w>



Design – (5 minutes)

Draw the below shapes : Square and Triangle of size 100.



Use the commands :

- **left()** , **right()** and **forward()** to understand the movement of the turtle at every step.
- **CTRL + Space** for Auto Suggestion On

Tasks – (50 minutes)

Task 1- Draw the square and triangle of different sizes.

Task 2- Draw a rectangle shape of any size.

Task 3- Draw a polygon of any size and sides.

Observations to be done by the teachers - (simultaneous)

1. Is the student performing or discussing with his/her partner?
2. Is the student facing difficulty in using the keyboard?
3. Is the student searching for keys?
4. Does the student hold their hands properly while typing?
5. Does the student type comfortably without looking at the keyboard?
6. Is the student following the proper naming conventions ?

7. Is the student finding it difficult to explore the given task?
8. Is the student struggling to write the code to produce the right outcome ?
9. Is the student interested in finding the solution to the given problem?
10. Has the student completed the given task in time?

Evaluation - (10 minutes / simultaneous)

1. *Understanding of the problem*

- a. Understood clearly and can explain.
- b. Understood the given tasks and also the other tasks.
- c. Partly understood the problem and requires help.
- d. Did not understand the required outcome.

2. *Execution*

- a. Did not complete the program.
- b. Completed only the first task.
- c. Completed the other tasks.
- d. Completed and also explored the other commands.

3. *Understanding of the text-based coding (tick all that applies)*

- a. Can explain the behaviour of each command.
- b. Can explain the behaviour of some of the commands.
- c. Did not understand the behaviour of all the commands used.
- d. Was able to write commands from the explanation and make use of it to get the output.

4. *Using the computer (tick all that applies)*

- a. Was able to start Coding Environment on their own.
- b. Was comfortable with the keyboard and the mouse.
- c. Was able to save the file properly in the system.

EVALUATION RUBRICS

Assessment Skill	Beginner (25%)	Needs Improvement (50%)	Comfortable (75%)	Skilled (100%)
Discovery	The student found it difficult to draw the shape using the code.	The student was able to type the commands however needed help to understand the task and steps to be taken.	The student could type the commands on their own after struggling for a while.	The student could easily type the required commands and could also use it effectively.
Understanding/ Problem solving	The student found it a challenge to understand the task.	The student partially understood the task.	The student could produce the output but partially explain the task.	The student was quick to understand the task and could explain the same with clarity.
Completion of tasks & Keyboard Skills	The student could not get a running solution within the given time. As the student struggled to type or to find the right keys quickly	The student struggled to get a running solution for the first task as the student managed to find the keys but was not comfortable typing.	The student got a running solution for the first task but struggled a bit with further tasks as the student was able to type comfortably but was not quick in finding the new commands from the suggestions.	The student could get the running solution for most of the tasks easily and also tried some tasks on their own as the student was able to type easily and also find the keyboard shortcuts.
Team Work	The student was a passive member of the team.	The student was considering all the opinions of the peer team members.	The student was able to filter and go ahead with the right opinion provided by the teammates.	The student completed his/her work and also helped the other team members by solving their difficulties wherever possible.

Guidelines (if required)

Connect – (2 minutes)

Episode No. 3: Having Fun with different shapes!



Raj and Salim are discussing during the free period

Raj : “During the last ICT period, it was a real fun to learn to code basic shapes using text-based coding.”

Salim : “Yes, Raj and I found the ‘Inline Auto-Suggest’ option very helpful as I don't have to remember any command.”

Raj : “Yes Salim. You are very much correct.”

Salim : “Do you remember we had drawn polygons last year?”

Raj : “Yes, we created wonderful patterns using polygons. It was simple when we drew shapes using blocks.”

Salim: “We have already drawn the polygons in text-based coding during last class. Now we have to try if we can draw those shapes as one block that can be reused as required.”

Raj : “Yes, I feel it should be possible to use a similar concept.”

Salim and Raj started working on the task of creating blocks of shapes that can be reused.

In today's class, we will learn to create Polygons which can be easily reused.

Learning Objectives:

1. Learning to use a recursive function with conditional execution.
2. Creating shapes that can be reused as required.
3. Developing interest and curiosity towards figures.
4. Understanding the directions and angles while drawing a figure.
5. Learning to create a parameterised command to draw polygons of different shapes and sizes.

Expected outcome – (3 minutes)

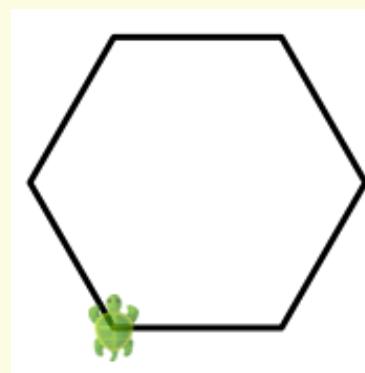
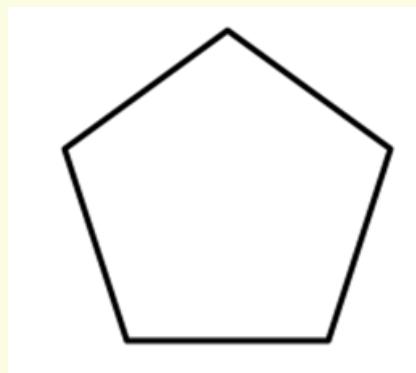
<https://youtu.be/19-sTCmWm4c>



Design – (5 minutes)

Draw the below shapes : Pentagon and Hexagon of size 100 using conditional recursion.

To create a recursive function Use: def pentagon(step: Long, size: Double) and if..else to implement conditional recursion.



Tasks – (50 minutes)

Task 1- Write a code to draw different polygons and understand the movement of the turtle at every step.

Task 2- Use the code to draw octagon and heptagon of different sizes.

Observations to be done by the teachers - (simultaneous)

1. Is the student performing or discussing with his/her partner?
2. Is the student facing difficulty in using the keyboard?
3. Is the student searching for keys?
4. Does the student hold their hands properly while typing?
5. Does the student type comfortably without looking at the keyboard?
6. Is the student following the proper naming conventions ?

7. Is the student finding it difficult to explore the given task?
8. Is the student struggling to write the code to produce the right outcome ?
9. Is the student interested in finding the solution to the given problem?
10. Has the student completed the given task in time?

Evaluation - (10 minutes/simultaneous)

1. Understanding of the problem

- a. Understood clearly and can explain.
- b. Understood the given tasks and also the other tasks.
- c. Partly understood the problem and requires help.
- d. Did not understand the required outcome.

2. Execution

- a. Did not complete the program.
- b. Completed only the first task.
- c. Completed the other tasks also.
- D. Completed and also explored the other components.

3. Understanding of the text-based coding (tick all that applies)

- a. Can explain the behaviour of each command used.
- b. Can explain the behaviour of some of the commands.
- c. Did not understand the behaviour of all the commands used.
- d. Was able to type the required commands in order.

4. Using the computer (tick all that applies)

- a. Was able to start a coding environment on their own.
- b. Was comfortable with the keyboard and the mouse.
- c. Was able to save the file properly at the desired location.

EVALUATION RUBRICS

Assessment Skill	Beginner (25%)	Needs Improvement (50%)	Comfortable (75%)	Skilled (100%)
Discovery	The student found it difficult to draw the n sided shapes using the code.	The student was able to type the commands however needed help to understand the task and steps to be taken.	The student could type the commands on their own after struggling for a while.	The student could easily type the required commands and could also use it effectively.
Understanding/ Problem Solving	The student found it a challenge to understand the task.	The student partially understood the task.	The student could produce the output but could partially understand and explain the task.	The student was quick to understand the task and could explain the same.
Completion of tasks and Keyboard Skills	The student could not get a running solution within the given time. As the student struggled to type or to find the right keys quickly.	The student struggled to get a running solution for the first task as the student managed to find the keys, but was not comfortable with typing.	The student got a running solution for the first task but struggled a bit with further tasks as the student was able to type comfortably, but was not quick in finding the new commands from the suggestions.	The student could get the running solution for most of the tasks easily and also tried some tasks on their own as the student was able to type easily and also find the keyboard shortcuts.
Team Work	The student was a passive member of the team.	The student was considering all the opinions of the peer team members.	The student was able to filter and go ahead with the right opinion provided by the teammates.	The student completed his/her work and also helped the other team members by solving their difficulties wherever possible.

Guidelines (if required)

Connect – (2 minutes)

Episode No. 4: Rainbow shading to our patterns too!

During P.E. period students are playing and have fun on the playground. Suddenly Ved notices a rainbow in the sky and is very curious about the colours. P.E Teacher Neha also comes to the ground to see the rainbow.



Ved: “Wow! This colourful rainbow looks so beautiful. It is really a wonderful phenomenon.”

P.E Teacher Neha: “Yes Ved. You are very much correct. A rainbow appears in the sky very rarely. Colours add beauty to every object. May it be rainbows, flowers, paintings, fabric, houses etc.”

Ved: “How nice it will be to create such colourful shapes and patterns in coding too. But what we have created so far are shapes without any colour filled into them. I shall ask the ICT teacher how to go about colour filling into it.”

P.E Teacher Neha: “So then your patterns and shapes would also become colourful.”

Ved is eagerly waiting for the next ICT period to draw colourful shapes.

In today's class, we will learn how easy it is to fill colour into the patterns we have already created.

Learning Objectives:

1. Using predefined colours.
2. Creating new colours by blending different colours.
3. Learning about the colour model used to represent colours in computers.
4. Filling the colour into the shapes/patterns created.
5. Applying different shades of colours using the transparency, saturation, in the commands.

Expected outcome – (3 minutes)

https://youtu.be/aa_He0xSnKs

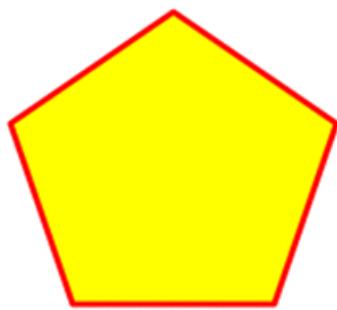


Design – (5 minutes)

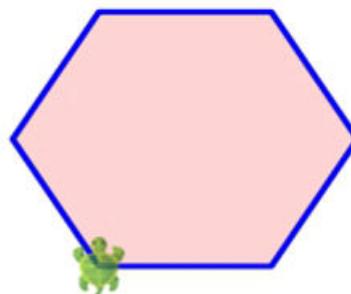
Draw the below shapes : Pentagon and Hexagon

- Fill with colours as shown.
 - Use ‘setFillColor(colour name or colour codes)’ to fill colour in the shapes.
 - Press ‘Ctrl+Click’ on the colour name and choose the RGB or HSL model of colours.
- To run the program you can use the keyboard shortcut ‘Ctrl+Enter’.

To make the Colour totally transparent or opaque use ‘color.fadeOut(factor)’



A



B

Zoom in/out by using the mouse scroll wheel.

Tasks – (50 minutes)

- Task 1-** *Draw Polygons of different size, sides and fill colours into it.*
- Task 2-** *Change the transparency of the colour.*

Observations to be done by the teachers - (*simultaneous*)

1. Is the student performing or discussing with his/her partner?
2. Is the student facing difficulty in using the keyboard?
3. Is the student searching for keys?
4. Does the student hold their hands properly while typing?
5. Does the student type comfortably without looking at the keyboard?
6. Is the student following the proper naming conventions ?
7. Is the student finding it difficult to explore the given task?
8. Is the student struggling to write the code to produce the right outcome ?
9. Is the student interested in finding the solution to the given problem?
10. Has the student completed the given task in time?

Evaluation - (*10 minutes / simultaneous*)

- 1. Understanding of the problem**
 - a. Understood clearly and can explain.
 - b. Understood the given tasks and also the other tasks.
 - c. Partly understood the problem and requires help.
 - d. Did not understand the required outcome.
- 2. Execution**
 - a. Did not complete the program.
 - b. Completed only the first task.
 - c. Completed the other tasks.
 - d. Completed and also explored the other components.
- 3. Understanding of the text-based coding (*tick all that applies*)**
 - a. Can explain the behaviour of each command used.
 - b. Can explain the behaviour of some of the commands.
 - c. Did not understand the behaviour of any of the commands used.
 - d. Was able to find the required command and type them.
- 4. Using the computer (*tick all that applies*)**
 - a. Was able to start a coding environment on their own.
 - b. Was comfortable with the keyboard and the mouse.
 - c. Was able to save the file properly at the desired location.

EVALUATION RUBRICS

Assessment Skill	Beginner (25%)	Needs Improvement (50%)	Comfortable (75%)	Skilled (100%)
Discovery	The student found it difficult to understand the colour palette	The student was struggling to understand the colour palette and set the right colour with the help of peers/teachers.	The student could understand the colour palette and after a little struggle managed to set the desired colour values.	The student could easily set the colour values using the colour palette and use it effectively.
Understanding/ Problem Solving	The student found it a challenge to understand the task.	The student partially understood the task.	The student could understand and partially explain the task.	The student was quick to understand the task and could explain the same.
Completion of tasks And Keyboard Skills	The student could not get a running solution within the given time. As the student struggled to type or to find the right keys quickly.	The student struggled to get a running solution for the first task as the student managed to find the keys but was not comfortable with typing.	The student got a running solution for the first task but struggled a bit with further tasks as the student was able to type comfortably but was not quick in finding the new commands from the suggestions.	The student could get the running solution for most of the tasks easily and also tried some tasks on their own as. The student was able to type easily and also find the keyboard shortcuts.
Team Work	The student was a passive member of the team.	The student was considering all the opinions of the peer team members.	The student was able to filter and go ahead with the right opinion provided by the teammates.	The student completed his/her work and also helped the other team members by solving their difficulties wherever possible.

Guidelines (if required)

Connect – (2 minutes)

Episode No. 5: Drawing a house-shaped PiggyBank!

Nidhi, Ved and Ria are discussing different polygons they have drawn after the Maths class.



Nidhi: “Ved, we have drawn the basic shapes of polygons, and also filled colour into it right?”

Ved: “Yes Nidhi.”

Nidhi: “So why not try to draw a house-shaped piggy bank which we had done using a block-based method earlier?”

Ria: “Now we can also fill colours into the piggy bank.”

Ved: “Yes. Now that we know how to draw basic shapes such as triangle and a square, we just need to place them in a way to form a house-shaped piggy bank and finally fill colours into it.”

Nidhi: “Let's do it. We already have the code for squares and triangles, which we can re-use.”

Ved: “But while doing, keep in mind to name the blocks properly and with a proper indentation for better readability of the code.”

They were successful in completing the task.

Let us try doing it today.

Learning Objectives:

1. Learning to create shapes of different sizes by using size and step as an input.
2. Understanding the directions and angles while drawing a figure.
3. Learning to place the shapes in appropriate places to create patterns.
4. Fill the shapes with required colours and shades.

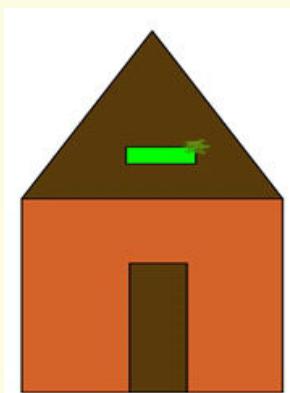
Expected outcome – (3 minutes)

<https://youtu.be/IUd7xmbUUBg>



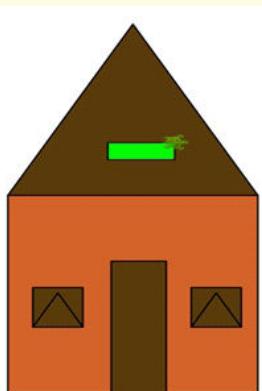
Design – (5 minutes)

- Draw the below given house shaped piggy bank and fill colours.
- Use setSpeed(speed) to change the speed of the drawing, where speed can be: slow, medium, fast, superfast.

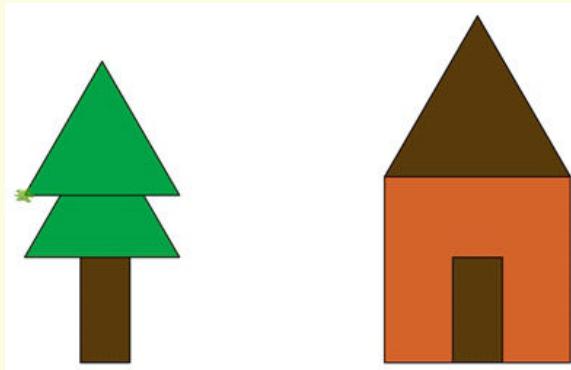


Tasks – (50 minutes)

Task 1- *Modify the above code to get the following output.*



Task 2 - Create the following image by re-using the previously created shapes.



Observations to be done by the teachers - (simultaneous)

1. Is the student performing or discussing with his/her partner?
2. Is the student facing difficulty in using the keyboard?
3. Is the student searching for keys?
4. Does the student hold their hands properly while typing?
5. Does the student type comfortably without looking at the keyboard?
6. Is the student following the proper naming conventions ?
7. Is the student finding it difficult to explore the given task?
8. Is the student struggling to write the code to produce the right outcome ?
9. Is the student interested in finding the solution to the given problem?
10. Has the student completed the given task in time?

Evaluation - (10 minutes / simultaneous)

- 1. Understanding of the problem**
 - a. Understood clearly and can explain.
 - b. Understood the given tasks and also the other tasks.
 - c. Partly understood the problem and requires help.
 - d. Did not understand the required outcome.
- 2. Execution**
 - a. Did not complete the program.
 - b. Completed only the first task.
 - c. Completed the other tasks.
 - d. Completed all the tasks and also explored the other components.
- 3. Understanding of the text-based coding commands (tick all that applies)**
 - a. Can explain the behaviour of each command.
 - b. Can explain the behaviour of some of the commands.
 - c. Was able to type the commands.
 - d. Did not understand the behaviour of the commands used.
- 4. Using the computer (tick all that applies)**
 - a. Was comfortable with the syntax of the commands.
 - b. Was able to save the file properly.
 - c. Was comfortable with the keyboard and the mouse.
 - d. Was able to save the file properly at the desired location.

EVALUATION RUBRICS

Assessment Skill	Beginner (25%)	Needs Improvement (50%)	Comfortable (75%)	Skilled (100%)
Discovery	The student faced difficulty to place the shapes at desired places.	The student was able to understand the placement of the shapes however required help for doing it.	The student upon trying understood the placement of the shapes at desired places.	The student could easily understand the placement of the shapes at desired places.
Understanding/ Problem Solving	The student found it a challenge to understand the task.	The student partially understood the task.	The student could understand and partially explain the task.	The student was quick to understand the task and could explain the same.
Completion of tasks and Keyboard Skills	The student could not get a running solution within the given time, as the student struggled to type or to find the right keys quickly	The student struggled to get a running solution for the first task as the student managed to find the keys, but was not comfortable with typing.	The student got a running solution for the first task but struggled a bit with further tasks as the student was able to type comfortably but was not quick in finding the new commands from the suggestions.	The student could get the running solution for most of the tasks easily and also tried some tasks on their own as the student was able to type easily and also find the keyboard shortcuts.
Team Work	The student was a passive member of the team.	The student was considering all the opinions of the peer team members .	The student was able to filter and go ahead with the right opinion provided by the teammates.	The student completed his/her work and also helped the other team members by solving their difficulties wherever possible.

Guidelines (if required)

Connect – (2 minutes)

Episode No. 6: Super Six Champions' Trip to the Beach!!



Super-six Champions' team members planned a trip on a beach during the weekend. It was like a mini outing. They requested their parents to hire a cab. All of them decided to carry some snacks and cold drinks. When they reached there it was around 6:00 pm. They sat on a docked fishing boat on the beach and started chatting.

Raj: “Look at the sky, it is full of different colours. It looks like one colour gradually mixing into another.”

Gracy: “Superb! Now it's time for sunset too. So as the sun will start setting, the sky will be filled with more shades and colours.”

The super six champions were so engrossed in their chat and discussion that they suddenly realised that the sun had started setting. It was a wonderful trip as they watched the setting sun and clicked photographs and returned home happily.

On Monday while attending the ICT lab session they told the teacher about the fun they had on the beach

Ria: “We have clicked many photographs of the sunset. But also I would love to paint the scenery with colourful horizons, using different colours.”

ICT Teacher Rashmi: “We can do similar colour blending through text coding too. This concept is called ‘Colour Gradients’. Where else in the surroundings do we see similar colour transitions or colour blending?”

Raj: “The mountains also display bluish-green gradients during dawn.”

Ved: “Even the flowers have gradients of colours. Rainbow also has colour gradients.”

ICT Teacher Rashmi: “So now that you have observed different gradients, let us try to create a picture of the sky touching the horizon showing linear gradients of colours using coding.”

Let us try and do colour gradients on our computers today.

Learning Objectives:

1. Developing interest and curiosity towards using ‘Linear Multiple Gradient’.
2. Developing interest and curiosity in using colours.
3. Learning why we need to blend the colours.
4. Learning how to choose the first colour and then select the remaining colours that blend around it.

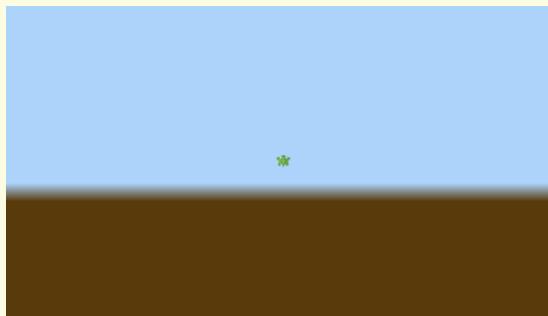
Expected outcome – (3 minutes)

<https://youtu.be/eSQ4VPAWj0Y>



Design – (5 minutes)

- Try to get the below colour combination using ‘Colour Gradient’ and set the right values in the command.
- Explore the new possible colour gradients by changing the colours and by changing the values in the commands and also their spread.

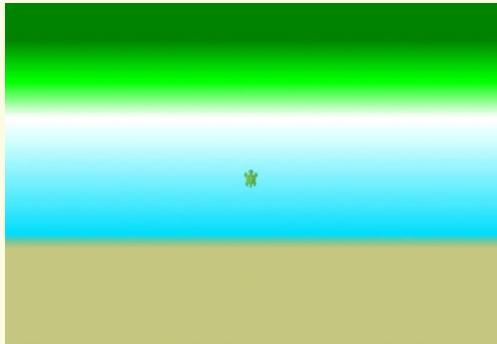


Tasks – (50 minutes)

Task 1- Create a background of flag colours



Task 2- *Create a background of the sea and mountain (you may choose colour combination of your choice. Image below can be used as reference.*



Task 3- *Create a background of any two colours, of your choice using gradients.*

Observations to be done by the teachers - (*simultaneous*)

1. Is the student performing or discussing with his/her partner?
2. Is the student facing difficulty in using the keyboard?
3. Is the student searching for keys?
4. Does the student hold their hands properly while typing?
5. Does the student type comfortably without looking at the keyboard?
6. Is the student following the proper naming conventions ?
7. Is the student finding it difficult to explore the given task?
8. Is the student struggling to write the code producing the right outcome ?
9. Is the student interested in finding the solution to the given problem?
10. Has the student completed the given task in time?

Evaluation - (10 minutes / simultaneous)

- 1. Understanding of the problem**
 - a. Understood clearly and can explain.
 - b. Understood the given tasks and also the other tasks.
 - c. Partly understood the problem and requires help.
 - d. Did not understand the required outcome.
- 2. Execution**
 - a. Did not complete the program.
 - b. Completed only the first task.
 - c. Completed the other tasks.
 - d. Completed and also explored the other components.
- 3. Understanding of the coding blocks (tick all that applies)**
 - a. Can explain the behaviour of each command used.
 - b. Can explain the behaviour of some of the commands.
 - c. Was able to write some of the commands.
 - d. Did not understand the behaviour of all the commands used.
- 4. Using the computer (tick all that applies)**
 - a. Was comfortable with the syntax of the commands.
 - b. Was comfortable with the keyboard and the mouse.
 - c. Was able to use the gradients effectively.

EVALUATION RUBRICS

Assessment Skill	Beginner (25%)	Needs Improvement (50%)	Comfortable (75%)	Skilled (100%)
Discovery	The student faced difficulty in understanding the colour gradients.	The student was able to understand the colour gradients however required help in arriving at proper values for colours.	The student could understand the colour gradients and after trying them out by themselves could arrive at proper values for colours too.	The student could easily understand the colour gradients and type the correct commands and also explore the new variations possible.
Understanding/ Problem Solving	The student found it a challenge to understand the task.	The student partially understood the task.	The student could understand and partially explain the task.	The student was quick to understand the task and could explain the same with clarity.
Completion of tasks and Keyboard Skills	The student could not get a running solution within the given time, as the student struggled to type or to find the right keys quickly	The student struggled to get a running solution for the first task as the student managed to find the keys but was not comfortable typing.	The student got a running solution for the first task but struggled a bit with further tasks as the student was able to type comfortably but was not quick in finding the new commands from the suggestions.	The student could get the running solution for most of the tasks easily and also tried some tasks on their own as the student was able to type easily and also found the keyboard shortcuts.
Team Work	The student was a passive member of the team.	The student was considering all the opinions of the peer team members .	The student was able to filter and go ahead with the right opinion provided by the teammates.	The student completed his/her work and also helped the other team members by solving their difficulties wherever possible.

Guidelines (if required)

Connect – (2 minutes)

Episode No. 7: Make the real sun glow in our drawing!



ICT Teacher Rashmi:

“In the last class we learnt how to make colour transition in either horizontal or vertical direction and we created the picture of sky and ground using linear-gradients vertically.”

Ved :

“Something is missing in the picture though. Looks like a plain ground and the sky.”

Raj:

“Ved, the sun is missing in the sky. We can simply draw a circle with an orange fill.”

ICT Teacher Rashmi :

“But do you think that the colour of the sun is only orange and does it appear like a circle in the sky? Or is it like a bright spot in the sky with a mixture of colours?”

Ria :

“Oh yes, it's not a plain circle with a single colour. It is a bright spot in the centre with a slight glow around it. So paint it bright colour from the centre to some point and then slowly mix with blue and then it's a complete sky colour. That's a Gradient!! Eureka!!”

“Linear Gradient?”

ICT Teacher Rashmi :

“But it should be like a circle right? With linear gradient it would look like a flag that we did as an activity in the last class.”

ICT Teacher Rashmi:

“Yes. So instead of colour changing along a line, it should be changing along the radius of a circle from its centre. Now, if colour transitions along a line are linear gradients, colour transitions along the radius would be.....”

Ved:

“Radial Gradient teacher!! Let us try it right away.”

Today we will learn the Radial Gradient and draw the sun.

Learning Objectives:

1. Providing the right values to attain proper radial colour gradients.
2. To apply ‘Multiple Radial Gradients.’
3. Adding more colours to the Gradient.
4. Making use of ‘Autosuggestions commands’ (CTRL+Space).

Expected outcome – (3 minutes)

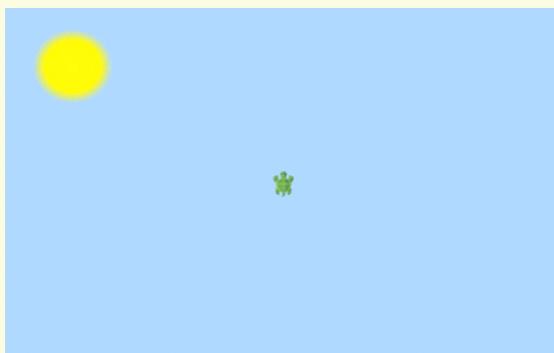
https://youtu.be/EFBwpIt_VeY



Design – (5 minutes)

Draw the below given picture using the following points :

1. Use ‘Radial Multiple Gradient’ to get the glowing Sun.
2. State ‘X’ and ‘Y’ values.
3. The Radius.
4. Specify the distribution of colours.

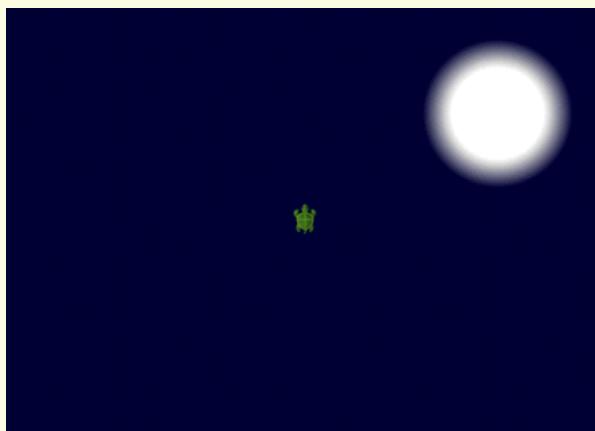


Tasks – (50 minutes)

Task 1- Create the Sunset by using Multiple Radial Gradients.



Task 1- Create a Night Sky with the Moon using gradients.



Observations to be done by the teachers - (*simultaneous*)

1. Is the student performing or discussing with his/her partner?
2. Is the student facing difficulty in using the keyboard?
3. Is the student searching for keys?
4. Does the student hold their hands properly while typing?
5. Does the student type comfortably without looking at the keyboard?
6. Is the student following the proper naming conventions ?
7. Is the student finding it difficult to explore the given task?
8. Is the student struggling to write the code to produce the right outcome ?
9. Is the student interested in finding the solution to the given problem?
10. Has the student completed the given task in time?

Evaluation - (10 minutes / simultaneous)

- 1. Understanding of the problem**
 - a. Understood clearly the given task and can explain.
 - b. Understood the given task but cannot explain/express it clearly.
 - c. Partly understood the task and requires help to start.
 - d. Did not understand the required outcome.
- 2. Execution**
 - a. Did not complete the program.
 - b. Completed only the first task.
 - c. Completed the other tasks.
 - d. Completed and also explored the other components.
- 3. Understanding of the text based coding (tick all that applies)**
 - a. Can explain the behaviour of each command used.
 - b. Can explain the behaviour of some of the commands.
 - c. Was able to write some of the commands.
 - d. Did not understand the behaviour of all the commands used.
- 4. Using the computer (tick all that applies)**
 - a. Was comfortable with the syntax of the commands.
 - b. Was comfortable with the keyboard and the mouse.
 - c. Was able to use the gradients effectively.

EVALUATION RUBRICS

Assessment Skill	Beginner (25%)	Needs Improvement (50%)	Comfortable (75%)	Skilled (100%)
Discovery	The student faced difficulty in understanding the distribution of colours.	The student was able to understand the distribution of colours however, required help for the code.	The student could understand the distribution of colours and after trying out by themselves, could code.	The student could easily understand the distribution of colours and also explore the new variations possible.
Understanding/ Problem Solving	The student found it a challenge to understand the task.	The student partially understood the task.	The student could understand and partially explain the task.	The student was quick to understand the task and could explain the same with clarity.
Completion of tasks and Keyboard Skills	The student could not get a running solution within the given time, as the student struggled to type or to find the right keys quickly.	The student struggled to get a running solution for the first task as the student managed to find the keys but was not comfortable with typing.	The student got a running solution for the first task but struggled a bit with further tasks as the student was able to type comfortably but was not quick in finding the new commands from the suggestions.	The student could get the running solution for most of the tasks easily and also tried some tasks on their own as the student was able to type easily and also find the keyboard shortcuts.
Team Work	The student was a passive member of the team.	The student was considering all the opinions of the peer team members.	The student was able to filter and go ahead with the right opinion provided by the teammates.	The student completed his/her work and also helped the other team members by solving their difficulties wherever possible.

Guidelines (if required)

Connect – (2 minutes)

Episode No. 8: Ved's curiosity to see the flock of birds fly high up!!

Art teacher Lata planned to have an Art exhibition on the theme ‘Nature’. So she planned to take class VII students to a nearby garden and called them to school in the evenings.



Art Teacher Lata: “Students, since you know our annual Art exhibition theme for this year is ‘Nature’, I have planned a visit to the nearby garden to observe and draw the various elements of nature.”

(Raj was busy looking outside the class window at something.)

Art Teacher Lata: “Raj, what are you looking at?”

Raj: “Teacher, I was looking at the birds sitting on the electric wire. When they fly, they form a beautiful pattern. It is really amazing to watch them fly.”

Art Teacher Lata: “Yes Raj, you can include the same pattern of the flying birds in your drawing.”

(Raj starts with his painting. Meanwhile Ved comes there and starts watching his paint.)

Ved: “Raj, you are painting like a professional artist. I don't have much drawing skills but I can try to do something like this using code.”

Raj: “Oh God! for that we would need to write codes for circles and arcs.”

Ved: “Lots of things have become simpler in the text coding. Now it's easier to draw circles and arcs too. I'll check with Rashmi teacher and give it a try.”

Art Teacher Lata: “All the best Ved, I would like to see your project once it is done.”

Ved: “Yes, teacher. I shall surely share it with you.”

Ved completes his project and shows to Art teacher during next Art class.

In today's class we will learn to draw circles and arcs in text coding

Learning Objectives:

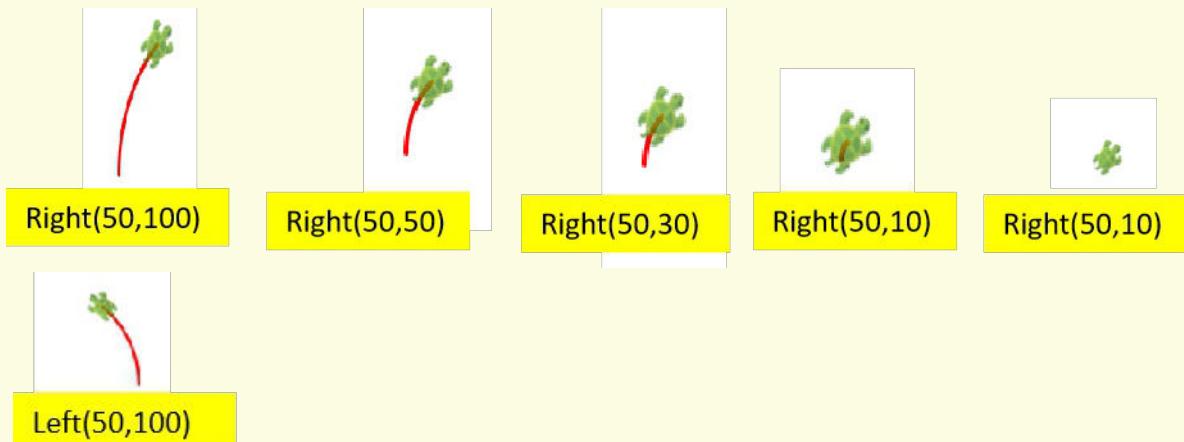
1. Understanding the importance of angle and radius and the relationship between the two.
2. To draw a picture using an arc of a circle.
3. Making use of proper pen size to draw a pattern.
4. Understanding the direction of the 'X' and 'Y' axis to use colours.

Expected outcome – (3 minutes)

<https://youtu.be/mKVLrBp4igU>



Design – (5 minutes)



The left(angle, radius) command works similarly to the right(angle, radius) command, except that the turtle turns anticlockwise instead of clockwise.

right(angle, radius) – Makes the turtle move right through the given angle, along a circle with the given radius.

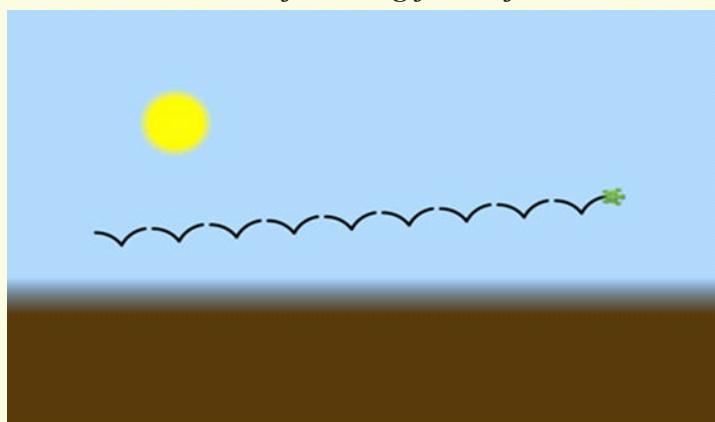
left(angle, radius) – Makes the turtle move left through the given angle, along a circle with the given radius.

Write the code to get the following output.



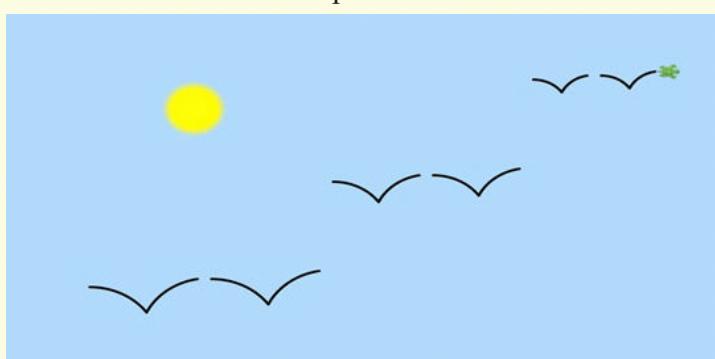
Tasks – (50 minutes)

Task 1- Create the following flock of birds:



Task 2- Create the following flock of birds using the points given below:

1. Change the thickness of the pen.
2. Reduce the number of crows.
3. Change the background gradient.
4. Increase the size of the crow.
5. Give size as input to draw different sizes of a crow.



Task 3- Create the following pattern.



Observations to be done by the teachers - (*simultaneous*)

1. Is the student performing or discussing with his/her partner?
2. Is the student facing difficulty in using the keyboard?
3. Is the student searching for keys?
4. Does the student hold their hands properly while typing?
5. Does the student type comfortably without looking at the keyboard?
6. Is the student following the proper naming conventions ?
7. Is the student finding it difficult to explore the given task?
8. Is the student struggling to write the code to produce the right outcome ?
9. Is the student interested in finding the solution to the given problem?
10. Has the student completed the given task in time?

Evaluation - (10 minutes / simultaneous)

1. Understanding of the problem

- a. Understood clearly the given task and can explain.
- b. Understood the given task but cannot explain/express it clearly.
- c. Partly understood the task and requires help to start.
- d. Did not understand the required outcome.

2. Execution

- a. Did not complete the program.
- b. Completed only the first task.
- c. Completed the tasks with help.
- d. Completed all the tasks and also explored new commands/code by themselves.

3. Understanding of the text-based coding (tick all that applies)

- a. What do you think the two inputs to the right command specify?
- b. How many curved lines are there in the drawing?
- c. How the above command changes both, the direction and the position of the turtle?
- d. Can you modify the command so that it changes only the direction of the turtle, and not its position?

4. Using the computer (tick all that applies)

- a. Was able to rectify the mistakes by themselves.
- b. Was comfortable with the syntax of the commands.
- c. Was comfortable with the keyboard and the mouse.
- d. Was able to use the gradients effectively.

EVALUATION RUBRICS

Assessment Skill	Beginner (25%)	Needs Improvement (50%)	Comfortable (75%)	Skilled (100%)
Discovery	The student could not understand the angle and radius commands.	The student could understand the angle and radius commands after seeking help.	The student could easily understand the angle and radius commands and could code with little difficulty.	The student could easily understand the angle and radius commands and tried the same with different values.
Understanding/ Problem Solving	The student found it a challenge to understand the task.	The student partially understood the task.	The student could produce the output but could partially understand and explain the task.	The student was quick to understand the task and could explain the same with clarity.
Completion of tasks and Keyboard Skills	The student could not get a running solution within the given time, as the student struggled to type or to find the right keys quickly.	The student struggled to get a running solution for the first task as the student managed to find the keys, but was not comfortable with typing.	The student got a running solution for the first task but struggled a bit with further tasks as the student was able to type comfortably, but was not quick in finding the new commands from the suggestions.	The student could get the running solution for most of the tasks easily and also tried some tasks on their own as the student was able to type easily and also find the keyboard shortcuts.
Interest/ Motivation	The student showed very little interest in the activity.	The student displayed a fair bit of interest in the activity.	The student participated in the activity with interest.	The student was excited about performing the activity.
Team Work	The student was a passive member of the team.	The student was considering all the opinions of the peer team members.	The student was able to filter and go ahead with the right opinion provided by the teammates.	The student completed his/her work and also helped the other team members by solving their difficulties wherever possible.

Guidelines (if required)

Connect – (2 minutes)

Episode No. 9: The Super Six team participates in the State level drawing competition!

ICT teacher informed the class about the state-level competition for drawing a scenery using text-based coding. Before recess, all the team members decided to have a small meeting to discuss the details of participation in that competition. Their classmates also joined them in the discussion.



Ved: “The teacher shared such great a news about the state-level competition. According to the rules, we shall make a group of 3 students, agreeing unanimously to form 02 groups.”

Gracy: “Of course.”

Raj: “We have learnt to draw polygon shapes, the linear and radial gradients and also the arcs and curves.”

Salim: “We also know how to fill the colour with different shades.”

Ved: “So using all that we have studied so far, we can draw scenery and participate in the competition.”

Ria: “Let us first note down our ideas on paper and then try to draw accordingly.”

Salim: “So let us start working on our ideas right from now.”

Super-six champions were very happy to participate in the competition and started preparing for it, with full enthusiasm.

Let us also get ready for the competition by learning how to draw a scenery.

Learning Objectives:

1. Learning how to define different pictures to complete the drawing.
2. Creating a pattern combining all the basic shapes learnt so far.
3. Learning to use a recursive function with conditional execution.
4. Learning the directions and angles while drawing figures.
5. Learning the use of different pen colours and sizes to make a figure look attractive.

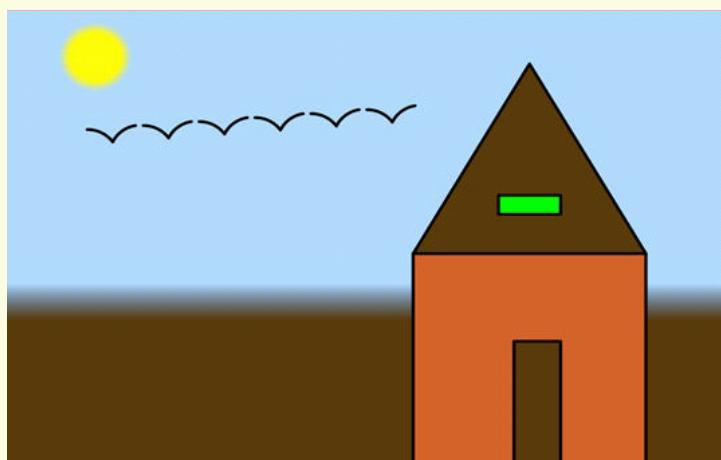
Expected outcome – (3 minutes)

<https://youtu.be/iB9pqzx9Swg>



Design – (5 minutes)

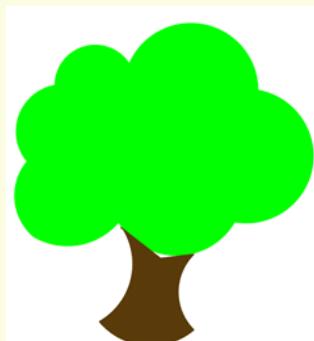
Use all the previously learnt elements and draw the scenery shown below.



Tasks – (50 minutes)

Task 1- Try to use different colours for the scenery.

Task 2- Draw trees by using arcs, shapes and curves and include them in the scenery.



Task 3 - Draw a Building to show an urban city.

Task 4 - Draw a forest having different types of trees and clouds.

Observations to be done by the teachers - (*simultaneous*)

1. Is the student performing or discussing with his/her partner?
2. Is the student facing difficulty in using the keyboard?
3. Is the student searching for keys?
4. Does the student hold their hands properly while typing?
5. Does the student type comfortably without looking at the keyboard?
6. Is the student following the proper naming conventions?
7. Is the student finding it difficult to explore the given task?
8. Is the student struggling to write the code to produce the right outcome ?
9. Is the student interested in finding the solution to the given problem?
10. Has the student completed the given task in time?

Evaluation - (10 minutes / simultaneous)

1. Understanding of the problem

- a. Understood clearly the given task and can explain.
- b. Understood the given task but cannot explain/express it clearly.
- c. Partly understood the task and requires help to start.
- d. Did not understand the required outcome.

2. Execution

- a. Did not complete the program.
- b. Completed only the first task.
- c. Completed the tasks with help.
- d. Completed all the tasks and also explored new commands/code by themselves.

3. Understanding of the text-based coding (tick all that applies)

- a. Can explain the behaviour of each command used.
- b. Can explain the behaviour of some of the commands.
- c. Was able to write some of the commands.
- d. Did not understand the behaviour of all the commands used.

4. Using the computer (tick all that applies)

- a. Was comfortable with the syntax of the commands.
- b. Was able to use the gradients effectively.
- c. Was able to rectify the mistakes by themselves.

EVALUATION RUBRICS

Assessment Skill	Beginner (25%)	Needs Improvement (50%)	Comfortable (75%)	Skilled (100%)
Discovery	The student faced difficulty in typing the commands for defining different shapes.	The student was able to type commands, however required help for discovering it.	The student could type the commands and create the shapes required for the drawing by trying them out by themselves .	The student could easily type the correct commands and create the shapes required for the drawing and also explored new shapes in the process.
Understanding/ Problem Solving	The student found it a challenge to understand the task.	The student partially understood the task.	The student could understand and explain the task later.	The student was quick to understand the task and could explain the same with clarity.
Completion of tasks and Keyboard Skills	The student could not get a running solution within the given time as the student struggled to type or to find the right keys quickly	The student struggled to get a running solution for the first task as the student managed to find the keys but was not comfortable with typing.	The student got a running solution for the first task but struggled a bit with further tasks as the student was able to type comfortably but was not quick in finding the new commands from the suggestions.	The student could get the running solution for most of the tasks easily and also tried some tasks on their own as the student was able to type easily and also find the keyboard shortcuts.
Team Work	The student was a passive member of the team.	The student was considering all the opinions of the peer team members.	The student was able to filter and go ahead with the right opinion provided by the teammates.	The student completed his/her work and also helped the other team members by solving their difficulties wherever possible.

Guidelines (if required)

Connect – (2 minutes)

Episode No. 10: Super Six enjoys the ‘Tangram’ Activity.

ICT Teacher Rashmi engages the class during a substitution period.



ICT Teacher Rashmi: “Students, today we are going to do an interesting activity called Tangram. Has anyone heard about this activity before?”

Nidhi: “Yes. I have heard it from Niladidi. It is about arranging different shapes to form a picture.”

ICT Teacher Rashmi: “Yes! You are correct! Here I have brought cut-outs of different shapes, using which you can form your own pictures. You have to rotate and arrange these shapes at certain places and in a specific way to create a picture. For your reference, I have also got the poster of animals done using ‘Tangrams’.”

Salim: “Wow! That's very exciting!”

ICT Teacher Rashmi: “Students, you have to make a team of two, to carry out this activity. Let us see who completes the activity first and creates the best picture.”

ICT Teacher Rashmi hands over the set of cut-outs of ‘Tangrams’ to Salim, to distribute among at all the teams. The students enjoy the activity very much

ICT Teacher Rashmi: “Students, now can you tell me if we could do this activity with the shapes we have drawn during our practicals? They were also basic shapes like these, right?”

Ved: “Teacher, but what we were doing in our exercises before was a drawing. There those shapes were actually drawn, just like how we draw using a pencil, but here you want us to arrange the shapes and create a picture.”

Salim: “I wish this was possible to do.”
ICT Teacher Rashmi: “Correct Ved. And Yes Salim, it is possible to do it. You only need to have a complete picture of a shape, which you can rotate, move etc. So instead of drawing the shapes line by line, what if you are provided with shapes just like in ‘Tangram’?”
Ved: “Teacher then it would be only about placing the shapes correctly, we could try moving and rotating them as well.”
Ria: “That will be a very interesting project. I will also join you.”

All are now curious about creating ‘Tangram’ pictures of different animals through coding. We will also learn to draw the new ‘Tangram’ pictures of animals.

Learning Objective:

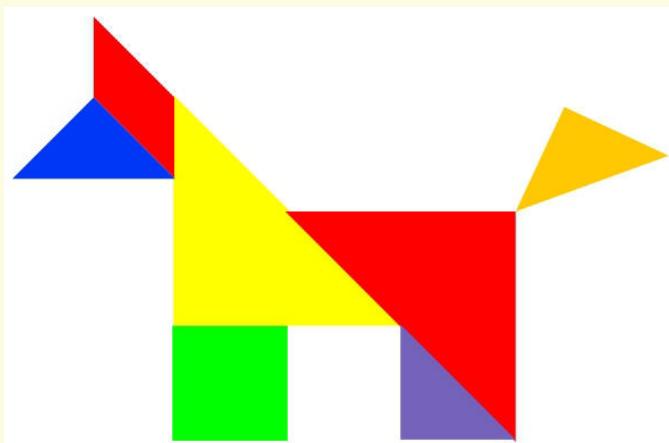
1. Learning to place the shapes using proper rotations, and translations to form Tangram shapes.
2. Fill each portion of the figure with a different colour.
3. Learning proper usage of the shapes to form a particular pattern.
4. Learning that every tangram shape has to be used once and avoid repetitions.

Expected outcome – (3 minutes)

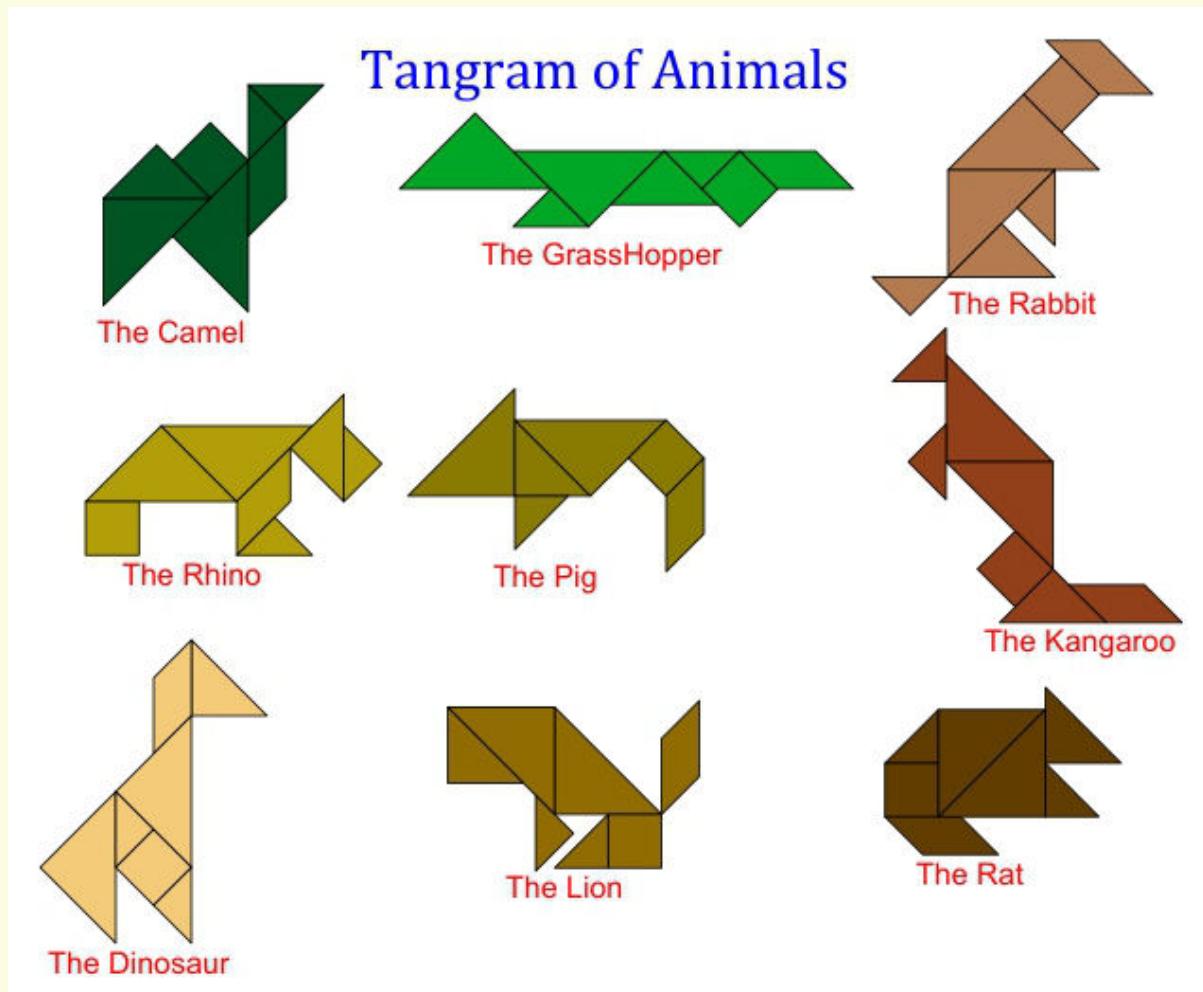
<https://youtu.be/m-RupPFhq7c>



Design – (5 minutes)



Task – (50 minutes)



Task 1- Try to complete the tangram of animals chart/poster as shown above.

Task 2- Try to apply a gradient to the above poster.

Observations to be done by the teachers - (simultaneous)

1. Is the student performing or discussing with his/her partner?
2. Is the student facing difficulty in using the keyboard?
3. Is the student searching for keys?
4. Does the student hold their hands properly while typing?
5. Does the student type comfortably without looking at the keyboard?
6. Is the student following the proper naming conventions ?
7. Is the student finding it difficult to explore the given task?
8. Is the student struggling to write the code to produce the right outcome ?
9. Is the student interested in finding the solution to the given problem?
10. Has the student completed the given task in time?

Evaluation - (10 minutes / simultaneous)

1. Understanding of the problem

- a. Understood clearly the given task and can explain.
- b. Understood the given task but cannot explain/express it clearly.
- c. Partly understood the task and requires help to start.
- d. Did not understand the required outcome.

2. *Execution*

- a. Did not complete the program.
- b. Completed only the first task.
- c. Completed the tasks with help.
- d. Completed all the tasks and also explored new commands/code by themselves.

3. *Understanding of the text-based coding (tick all that applies)*

- a. The significance of proper turn angle in making closed shapes patterns.
- b. Defining the function and calling the function when needed in the program.

4. *Using the computer (tick all that applies)*

- a. Was comfortable with the syntax of the commands.
- b. Was able to use the gradients effectively.
- c. Was able to rectify the mistakes by themselves.

EVALUATION RUBRICS

Assessment Skill	Beginner (25%)	Needs Improvement (50%)	Comfortable (75%)	Skilled (100%)
Discovery	The student could not understand the ‘rotation angle’ and the ‘translation’.	The student could understand the ‘rotation angle’ and ‘translation’ after seeking help or either of them partially.	The student could easily understand ‘rotation angle’ and ‘translation’ or either of the two and could code with little difficulty.	The student could easily understand ‘rotation angle’ and ‘translation’ and tried the same with different values.
Understanding/ Problem solving	The student found it a challenge to understand the task.	The student partially understood the task.	The student could produce the output but also understand and partially explain the task.	The student was quick to understand the task and could explain the same with clarity.
Completion of tasks and Keyboard Skills	The student could not get a running solution within the given time as the student struggled to type or to find the right keys quickly.	The student struggled to get a running solution for the first task as the student managed to find the keys but was not comfortable with typing.	The student got a running solution for the first task but struggled a bit with further tasks as the student was able to type comfortably, but was not quick in finding the new commands from the suggestions.	The student could get the running solution for most of the tasks easily and also tried some tasks on their own as the student was able to type easily and also find the keyboard shortcuts.
Interest/ Motivation	The student showed very little interest in the activity.	The student displayed a fair bit of interest in the activity.	The student participated in the activity with interest.	The student was excited about performing the activity.
Team Work	The student was a passive member of the team.	The student was considering all the opinions of the peer team members.	The student was able to filter and go ahead with the right opinion provided by the teammates.	The student completed his/her work and also helped the other team members by solving their difficulties wherever possible.

Guidelines (if required)

Connect – (2 minutes)

Episode No. 11: Reena's 'Lego' game ignites the idea of house drawing in Ria, using 'Tangrams'.

Ria and Raj decided to do their geography project together and on the weekend Ria came to Raj's place to carry out the project.

When Ria reached Raj's house, his sister Reena was playing with blocks. She was stacking the different sized blocks on each other and making different patterns. Ria started talking to her.



Ria: "Wow! Reena, you are very creative. With those blocks, you are making different shapes."

Reena: "Thanks Ria didi! Yesterday I made different types of vehicles with these blocks. Today I am trying to do different houses."

Ria: "That's so nice! Do show me once you complete it."

(Raj comes there)

Ria: "Raj, looking at Reena's block game, one idea has come to my mind."

Raj: "What's that?"

Ria: "Last time we did a poster of tangram animals using coding. How about doing different types of houses using tangram shapes?"

Raj: "Great idea! We will tell this to our other teammates tomorrow."

Raj and Ria start working on their Geography project.

In today's class let us explore the tangram houses.

Learning Objectives:

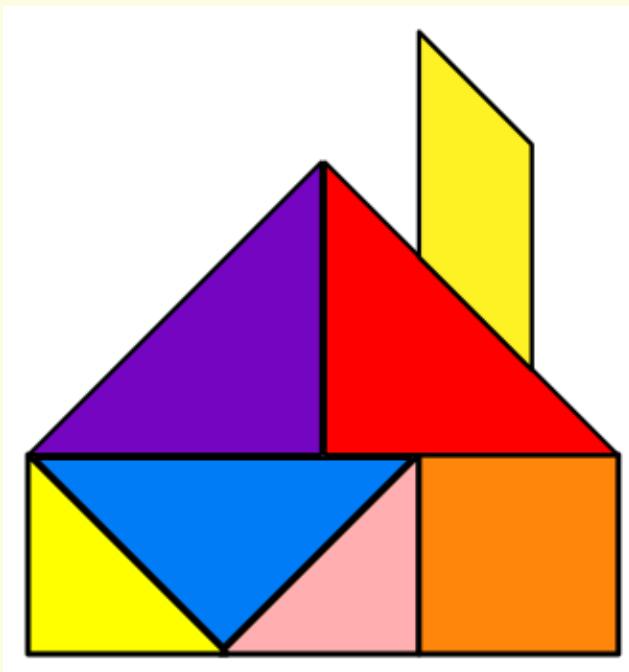
1. Learning to place the shapes using proper rotations and translations to form ‘Tangram’ shapes.
2. Fill each portion of the figure with a different colour.
3. Making proper usage of the shapes to form a particular pattern.
4. Learning that every ‘Tangram’ shape has to be used once and avoid repetitions.

Expected outcome – (3 minutes)

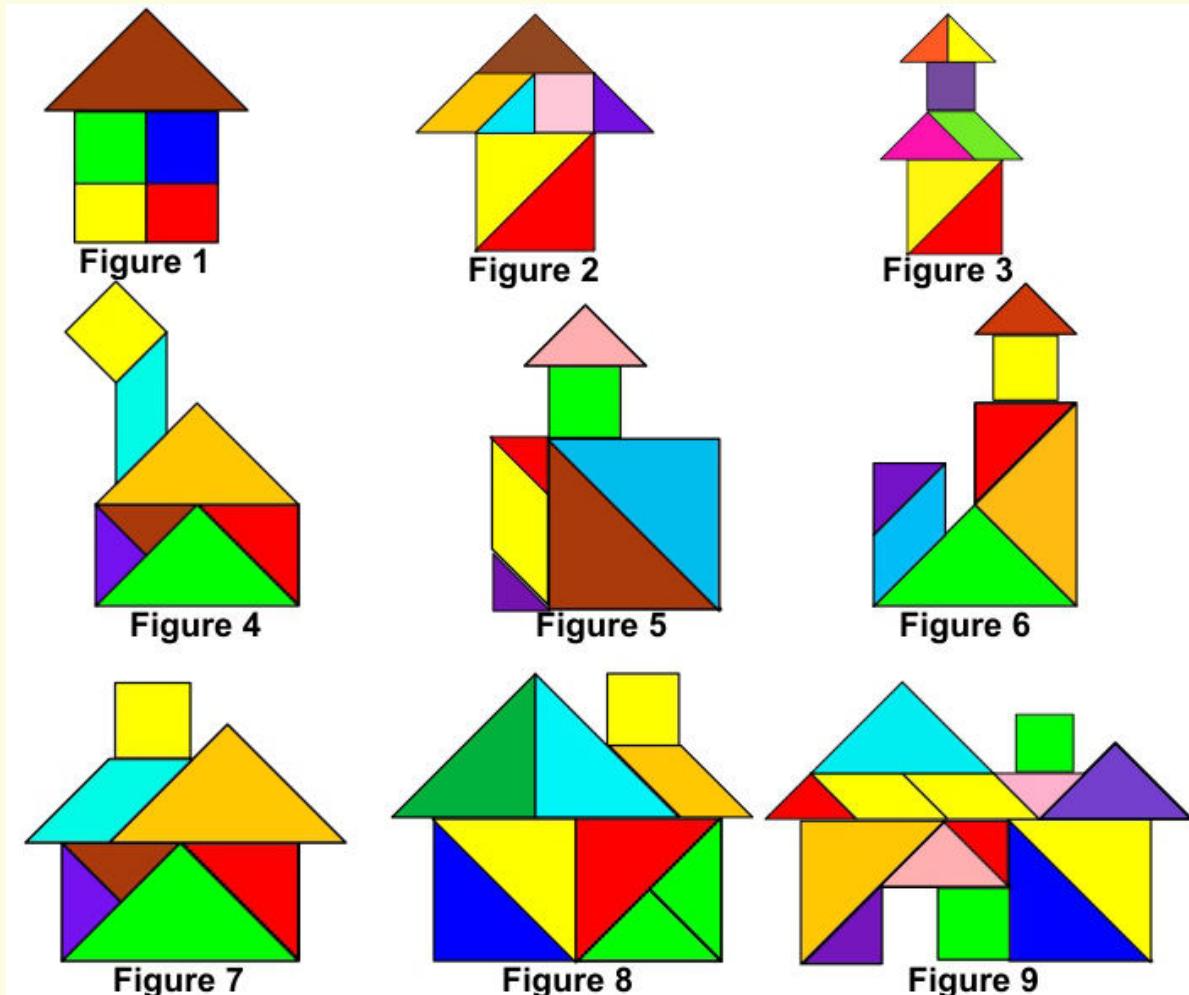
https://youtu.be/l0_8Tla15Og



Design – (5 minutes)



Task – (50 minutes)



Task 1- Above is the chart of houses, try to draw some/all of them.

Task 2- Design different houses as per your choice.

Task 3- Try to use gradients as a background to the chart.

Observations to be done by the teachers - (simultaneous)

1. Is the student performing or discussing with his/her partner?
2. Is the student finding it difficult to explore the commands needed?
3. Is the student struggling to type the commands in the order they are expecting?
4. Is the student trying to type to get the desired result?
5. Are the students happy with the design they get?
6. Is the student interested to find the solution to the given problem?
7. Has the student completed the given task in time?

Evaluation - (10 minutes / simultaneous)

1. Understanding of the problem

- a. Understood clearly the given task and can explain.
- b. Understood the given task but cannot explain/express it clearly.
- c. Partly understood the task and requires help to start.
- d. Did not understand the required outcome.

2. *Execution*

- a. Did not complete the program.
- b. Completed only the first task.
- c. Completed the tasks with help.
- d. Completed all the tasks and also explored new commands/code by themselves.

3. *Understanding of the text-based coding (tick all that applies)*

- a. The significance of a proper turn angle in making closed shape patterns.
- b. Defining the function and calling the function when needed in the program.

4. *Using the computer (tick all that applies)*

- a. Was comfortable with the syntax of the commands.
- b. Was able to use the gradients effectively.
- c. Was able to rectify the mistakes by themselves.

EVALUATION RUBRICS

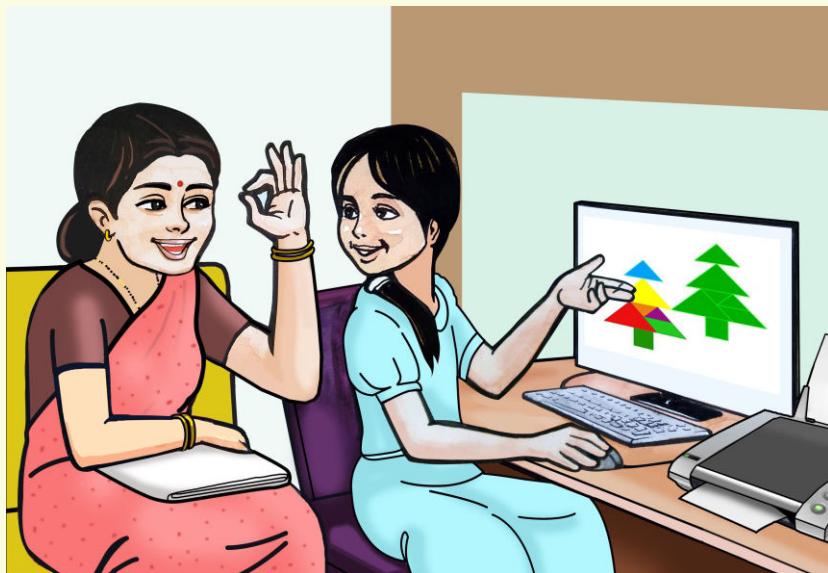
Assessment Skill	Beginner (25%)	Needs Improvement (50%)	Comfortable (75%)	Skilled (100%)
Discovery	The student could not understand the ‘rotation angle’ and the ‘translation’.	The student could understand the ‘rotation angle’ and ‘translation’ after seeking help or understand either of them partially.	The student could easily understand ‘rotation angle’ and ‘translation’ or either of the two and could code with little difficulty.	The student could easily understand ‘rotation angle’ and ‘translation’ and tried the same with different values.
Understanding/ Problem Solving	The student found it a challenge to understand the task.	The student partially understood the task.	The student could produce the output but understand and partially explain the task.	The student was quick to understand the task and could explain the same with clarity.
Completion of tasks and Keyboard Skills	The student could not get a running solution within the given time as the student struggled to type or to find the right keys quickly.	The student struggled to get a running solution for the first task as the student managed to find the keys but was not comfortable with typing.	The student got a running solution for the first task but struggled a bit with further tasks as the student was able to type comfortably but was not quick in finding the new commands from the suggestions.	The student could get the running solution for most of the tasks easily and also tried some tasks on their own as the student was able to type easily and also find the keyboard shortcuts.
Interest/ Motivation	The student showed very little interest in the activity.	The student displayed a fair bit of interest in the activity.	The student participated in the activity with interest.	The student was excited about performing the activity.
Team Work	The student was a passive member of the team.	The student was considering all the opinions of the peer team members.	The student was able to filter and go ahead with the right opinion provided by the teammates.	The student completed his/her work and also helped the other team members by solving their difficulties wherever possible.

Guidelines (if required)

Connect – (2 minutes)

Episode No. 12: Nidhi's mother creates a baby quilt easily using Nidhi's idea of tangrams.

Nidhi's mother asks Nidhi to cut white and brown squares, and green triangles from a cloth to stitch a baby quilt to gift her niece for the naming ceremony of her newborn baby.



Nidhi's Mother: “Nidhi, can you draw a picture of the Christmas tree on a paper and fit it inside a square so that I could make a nice baby quilt accordingly?”

Nidhi: “Mom, can this task be made easier? Instead of drawing it, why not cut actual pieces of squares and triangles and arrange them accordingly to form the tree?”

Nidhi's Mother: “That would be nice, Nidhi. If you could do it I will just arrange the cloth pieces accordingly and go on stitching the quilt else every now and then I will need to sit and open the wrong piece stitched.”

Nidhi: “Oh, that gives me another idea! Mom, instead of cut-outs, now I can show you and give you the print-out of the actual design through coding that we have just learnt.”

Nidhi creates a tangram shape of the tree and shows it to her Mom.

Nidhi's Mother: “Wow Nidhi! Now my task is much easier. I only need to arrange as per this print-out and I'm done with the quilt. You saved my time and energy dear.”

Nidhi: “Thank you, Mom!”

Let us also learn to draw trees using tangram pictures.

Learning Objectives:

1. Learning to place the shapes using proper rotations and translations, to form tangram shapes.
2. Filling each portion of the figure with a different colour.
3. Making proper use of the shapes to form a particular pattern.
4. Learning that every tangram shape has to be used once, and avoid repetitions.

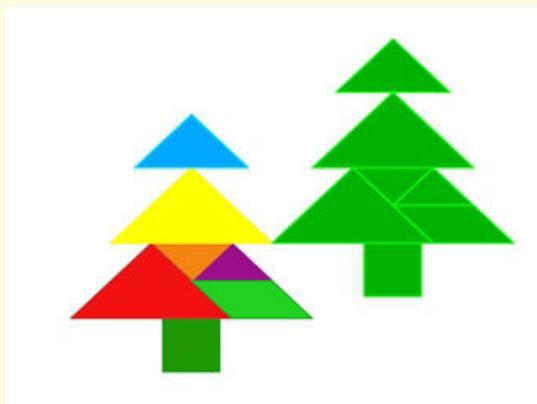
Expected outcome – (3 minutes)

https://youtu.be/f87nCqS_etQ



Design – (5 minutes)

Draw the below given picture of a christmas tree using the tangram shapes.



Can use showAxes(), showGrid() to aid in the process of drawing the pictures and understanding the placement of the picture.

Task – (50 minutes)

- Task 1-** Try to draw trees of various sizes, shapes ,colours and types.
- Task 2-** Draw a forest using the trees drawn.
- Task 3-** Design a tree garden around a school.
- Task 4-** Try to use gradients as a background to the chart.

Observations to be done by the teachers - (*simultaneous*)

1. Is the student performing or discussing with his/her partner?
2. Is the student finding it difficult to explore the commands needed?
3. Is the student struggling to type the commands in the order they are expecting?
4. Is the student trying to type to get the desired result?
5. Are the students happy with the design they get?
6. Is the student interested to find the solution to the given problem?
7. Has the student completed the given task in time?

Evaluation - (*10 minutes/simultaneous*)

1. Understanding of the problem

- a. Understood clearly the given task and can explain.
- b. Understood the given task but cannot explain/express it clearly.
- c. Partly understood the task and requires help to start.
- d. Did not understand the required outcome.

2. Execution

- a. Did not complete the program.
- b. Completed only the first task.
- c. Completed the tasks with help.
- d. Completed all the tasks and also explored new commands/code by themselves.

3. Understanding of the text-based coding (*tick all that applies*)

- a. The significance of proper turn angle in making closed shapes patterns.
- b. Defining the blocks and calling the block when needed in the program.
- c. Set the proper transparency and opacity for the pattern.

4. Using the computer (*tick all that applies*)

- a. Was comfortable with the syntax of the commands.
- b. Was able to use the gradients effectively.
- c. Was able to rectify the mistakes by themselves.

EVALUATION RUBRICS

Assessment Skill	Beginner (25%)	Needs Improvement (50%)	Comfortable (75%)	Skilled (100%)
Discovery	The student could not understand the ‘rotation angle’ and the ‘translation’.	The student could understand the ‘rotation angle’ and ‘translation’ after seeking help or either of them partially.	The student could easily understand ‘rotation angle’ and ‘translation’ or either of the two and could code with little difficulties.	The student could easily understand ‘rotation angle’ and ‘translation’ and tried the same with different values.
Understanding/ Problem Solving	The student found it a challenge to understand the task.	The student partially understood the task.	The student could produce the output but understand and partially explain the task.	The student was quick to understand the task and could explain the same with clarity.
Completion of tasks and Keyboard Skills	The student could not get a running solution within the given time. as the student struggled to type or to find the right keys quickly	The student struggled to get a running solution for the first task as the student managed to find the keys but was not comfortable in typing.	The student got a running solution for the first task but struggled a bit with further tasks as the student was able to type comfortably but was not quick in finding the new commands from the suggestions.	The student could get the running solution for most of the tasks easily and also tried some tasks on their own as The student was able to type easily and also find the keyboard shortcuts.
Interest/ Motivation	The student showed very little interest in the activity	The student displayed a fair bit of interest in the activity.	The student participated in the activity with interest.	The student was excited about performing the activity.
Team Work	The student was a passive member of the team.	The student was considering all the opinions of the peer team members.	The student was able to filter and go ahead with the right opinion provided by the teammates.	The student completed his/her work and also helped the other team members by solving their difficulties wherever possible.

Guidelines (if required)

Connect – (2 minutes)

Episode No. 13: Gift of a patchwork design booklet!

Ria visited Nidhi's house to discuss the History project. Nidhi was inside the bedroom. Nidhi's grandmother was sitting in the hall doing patchwork on pillow covers.



- Ria:** “Wow! That pillow cover looks so beautiful with the patchwork of a flower design. You have done it so clean and neat.”
- Grandmother :** “Thank you Ria. If you liked it so much, I will make one pair for you too.”
- Ria :** “Thanks Grandma. Actually I would love to learn to do it from you.”
- Grandmother :** “Do come during holidays. I will surely teach you.”
- Ria:** “Thanks once again.”

After this conversation, Nidhi came out and took Ria to her room.

- Ria:** “Nidhi, where did your grandma get those patchwork designs from?”
- Nidhi :** “I and Nila didi searched in the magazines or also the internet and took a print out of it for her.”
- Ria:** “But Nidhi, we are also learning to create patterns using tangram shapes. Can we do flower designs and print them on papers ?”
- Nidhi:** “That's a great idea. Let's create one patchwork design booklet, and gift it to my Grandmother. She will be very happy.”

Ria and Nidhi plan to design a patchwork pattern booklet through code.

How nice will it be if we too learn to do patchwork book flowers of tangram shapes.

Learning Objectives:

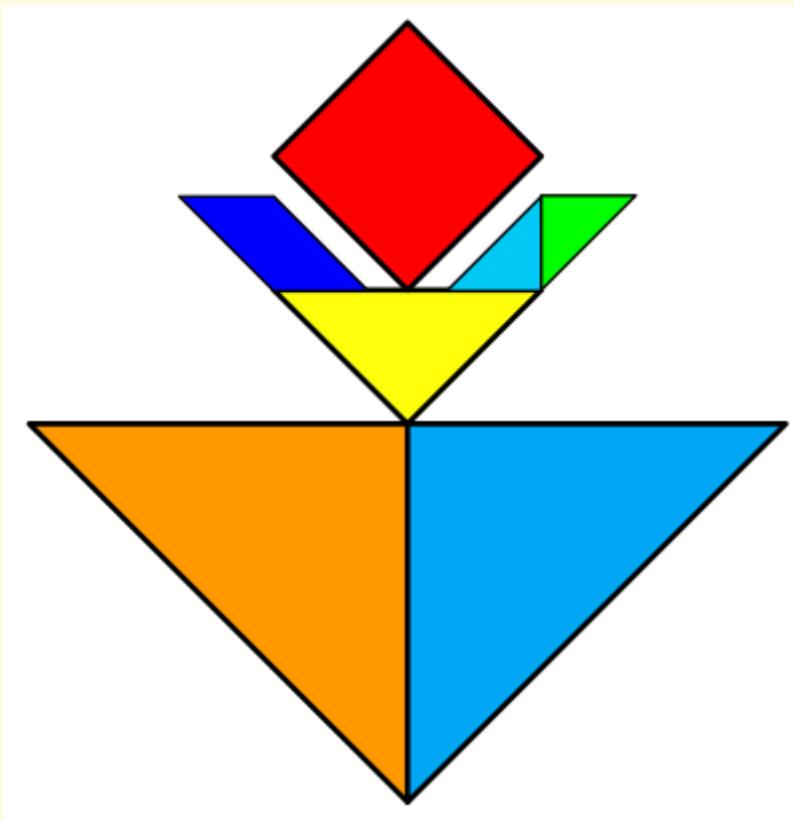
1. Learning to place the shapes using proper rotations, translations to form Tangram shapes.
2. Filling each portion of the figure with a different colour.
3. Making proper usage of the shapes to form a particular pattern.
4. Learning that every tangram shape has to be used once and avoid repetitions.

Expected outcome – (3 minutes)

<https://youtu.be/QVnvWfAtcql>



Design – (5 minutes)



Task – (50 minutes)

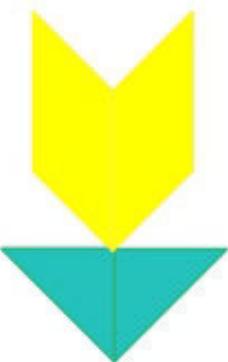


Figure 1



Figure 2

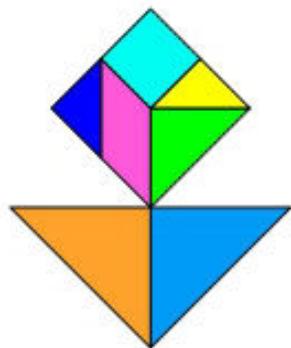


Figure 3



Figure 4



Figure 5



Figure 6



Figure 7

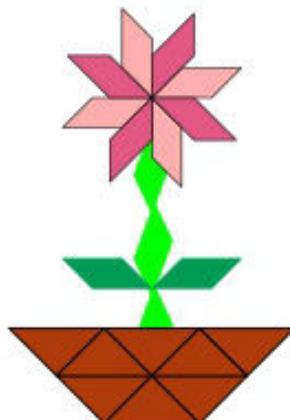


Figure 8

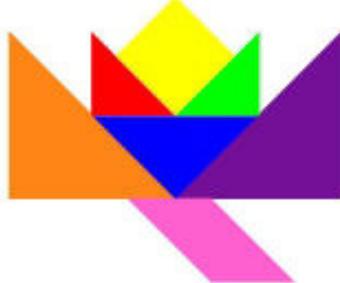


Figure 9

- Task 1-** Above is the chart of flowers, try to draw some/all flowers from the chart.
Task 2- Design different flowers of your choice using the tangrams.

Observations to be done by the teachers - (*simultaneous*)

1. Is the student performing or discussing with his/her partner?
2. Is the student finding it difficult to explore the commands needed?
3. Is the student struggling to type the commands in the order they are expecting?
4. Is the student trying to type to get the desired result?
5. Are the students happy with the design they get?
6. Is the student interested to find a solution to the given problem?
7. Has the student completed the given task in time?

Evaluation - (*10 minutes / simultaneous*)

1. Understanding of the problem

- a. Understood clearly the given task and can explain.
- b. Understood the given task but cannot explain/express it clearly.
- c. Partly understood the task and requires help to start.
- d. Did not understand the required outcome.

2. Execution

- a. Did not complete the program.
- b. Completed only the first task.
- c. Completed the tasks with help.
- d. Completed all the tasks and also explored new commands/code by themselves.

3. Understanding of the text-based coding (*tick all that applies*)

- a. The significance of proper turn angle in making closed shape patterns.
- b. Defining the function and calling the function when needed in the program.

4. Using the computer (*tick all that applies*)

- a. Was comfortable with the syntax of the commands.
- b. Was able to use the gradients effectively.
- c. Was able to rectify the mistakes by themselves.

EVALUATION RUBRICS

Assessment Skill	Beginner (25%)	Needs Improvement (50%)	Comfortable (75%)	Skilled (100%)
Discovery	The student could not understand the ‘rotation angle’ and the ‘translation’.	The student could understand the ‘rotation angle’ and ‘translation’ after seeking help or either of them partially.	The student could easily understand ‘rotation angle’ and ‘translation’ or either of the two and could code with little difficulties.	The student could easily understand ‘rotation angle’ and ‘translation’ and tried the same with different values.
Understanding/ Problem Solving	The student found it a challenge to understand the task.	The student partially understood the task.	The student could produce the output but understood partially and explained the task.	The student was quick to understand the task and could explain the same with clarity.
Completion of tasks and Keyboard Skills	The student could not get a running solution within the given time as the student struggled to type or to find the right keys quickly.	The student struggled to get a running solution for the first task as the student managed to find the keys but was not comfortable with typing.	The student got a running solution for the first task but struggled a bit with further tasks as the student was able to type comfortably, but was not quick in finding the new commands from the suggestions.	The student could get the running solution for most of the tasks easily and also tried some tasks on their own as the student was able to type easily and also find the keyboard shortcuts.
Interest/ Motivation	The student showed very little interest in the activity.	The student displayed a fair bit of interest in the activity.	The student participated in the activity with interest.	The student was excited about performing the activity.
Team Work	The student was a passive member of the team.	The student was considering all the opinions of the peer team members.	The student was able to filter and go ahead with the right opinion provided by the teammates.	The student completed his/her work and also helped the other team members by solving their difficulties wherever possible.

Guidelines (if required)

Connect – (2 minutes)

Episode No. 14: Super six creates T-shirt designs of scenery for sale on the ‘Bazaar Day’ of the school!

Today during assembly, the headmistress had declared about the bazaar day in the school. Each class division had to install their own stall and sell goods to raise funds for the school. Ved and Nidhi were selected as group leaders from class VII A. They started discussing ideas for making something unique to sell.

As the Super Six team was travelling back home in the school bus, they discuss the following:



Nidhi: “How about selling white coloured T-shirts? Usually students like to keep at least one white t-shirt in their wardrobe.”

Ria: “Very good idea Nidhi. Can I add something more to it?”

Gracy: “Yes sure!”

Nidhi : “How about drawing a scenery by combining all the pictures drawn earlier by us and our team mates? By now we have drawn animals, houses, trees and flowers using tangrams shapes.”

Gracy: “Wow! That's even a better idea than mine. It will be sold as a hot cake. We can also have some tees based on group themes.”

Ved also joined their discussion with more and more ideas for the bazaar day activity.

Don't you think it is very inspiring to make such designs and print them on t-shirts, jerseys, mugs, carry bags, photo frames, etc.?

In today's class let us combine all the pictures drawn using tangram shapes and complete a scenery.

Learning Objectives:

1. Using the knowledge learnt so far, creating an interesting art piece, by combining all the tangram shapes.
2. Learning to place the shapes using proper rotations, translations and scaling to form tangram shapes.
3. Understanding proper usage of the shapes to form different tangram patterns.

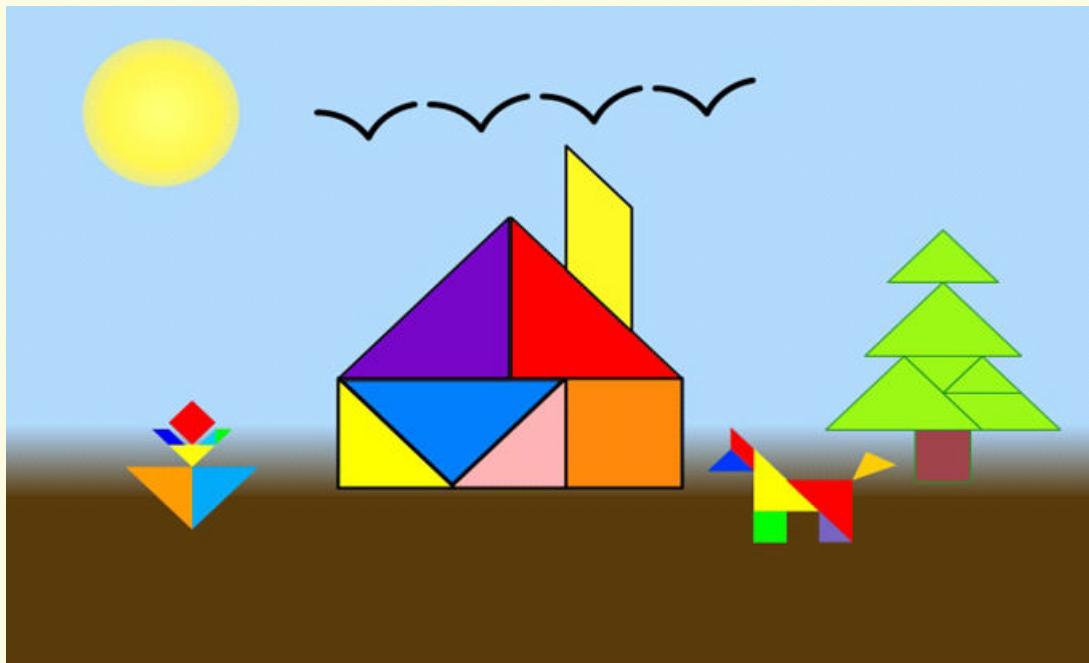
Expected outcome – (3 minutes)

<https://youtu.be/w2cDekdYlIQ>

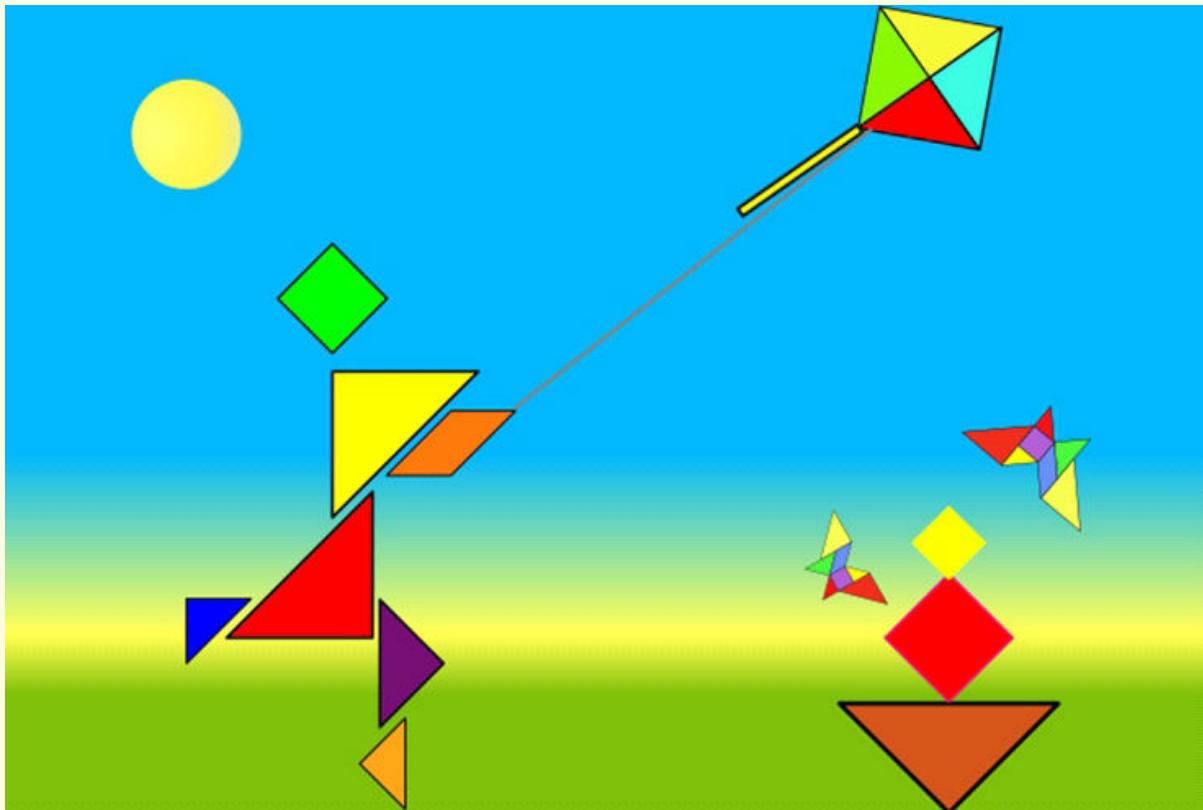


Design – (5 minutes)

Draw the following scenery using tangram shapes designed previously.



Task – (50 minutes)



Task 1- Draw the above scenery.

Task 2- Draw a new scenery of your choice.

Task 3- Change the background colour/gradient colour

Observations to be done by the teachers - (simultaneous)

1. Is the student performing or discussing with his/her partner?
2. Is the student finding it difficult to explore the commands needed?
3. Is the student struggling to type the commands in the order they are expecting?
4. Is the student trying to type to get the desired result?
5. Are the students happy with the design they get?
6. Is the student interested to find the solution to the given problem?
7. Has the student completed the given task in time?

Evaluation - (10 minutes / simultaneous)

1. Understanding of the problem

- a. Understood clearly the given task and can explain.
- b. Understood the given task but cannot explain/express it clearly.
- c. Partly understood the task and requires help to start.
- d. Did not understand the required outcome.

2. Execution

- a. Did not complete the program.
- b. Completed only the first task.
- c. Completed the tasks with help.
- d. Completed all the tasks and also explored new commands/code by themselves.

3. *Understanding of the text-based coding (tick all that applies)*

- a. The significance of proper turn angle in making closed shapes patterns.
- b. Defining the function and calling the function when needed in the program.

4. *Using the computer (tick all that applies)*

- a. Was comfortable with the syntax of the commands.
- b. Was able to use the gradients effectively.
- c. Was able to rectify the mistakes by themselves.

EVALUATION RUBRICS

Assessment Skill	Beginner (25%)	Needs Improvement (50%)	Comfortable (75%)	Skilled (100%)
Discovery	The student could not understand the ‘rotation angle’ and the ‘translation’.	The student could understand the ‘rotation angle’ and ‘translation’ after seeking help or either of them partially.	The student could easily understand ‘rotation angle’ and ‘translation’ or either of the two and could code with little difficulties.	The student could easily understand ‘rotation angle’ and the ‘translation’ and tried the same with different values.
Understanding/ Problem Solving	The student found it a challenge to understand the task.	The student partially understood the task.	The student could produce the output but partially understood and explained the task.	The student was quick to understand the task and could explain the same with clarity.
Completion of tasks and Keyboard Skills	The student could not get a running solution within the given time as the student struggled to type or to find the right keys quickly.	The student struggled to get a running solution for the first task as the student managed to find the keys but was not comfortable with typing.	The student got a running solution for the first task but struggled a bit with further tasks as the student was able to type comfortably but was not quick in finding the new commands from the suggestions.	The student could get the running solution for most of the tasks easily and also tried some tasks on their own as the student was able to type easily and also find the keyboard shortcuts.
Interest/ Motivation	The student showed very little interest in the activity.	The student displayed a fair bit of interest in the activity.	The student participated in the activity with interest.	The student was excited about performing the activity.
Team Work	The student was a passive member of the team.	The student was considering all the opinions of the peer team members.	The student was able to filter and go ahead with the right opinion provided by the teammates.	The student completed his/her work and also helped the other team members by solving their difficulties wherever possible.

Guidelines (if required)

Connect – (2 minutes)

Episode No. 15: Super six designs digital logo for their team!



While going to school the next day, Ria, Raj and Nidhi are chatting inside the school bus.

Ria : “Raj, have you completed the scenery on your T-shirt that you and Nidhi were working on?”

Raj : “Yes. It looks really fantastic. I was thinking of printing the name of our group, ‘Super-Six Champions’ on it.”

Nidhi : “Sure! It's an awesome idea. This way we can finally create a logo of our team too.”

Ria: “Yes. I will also join you, Nidhi, in this project.”

Nidhi: “You can surely join me and Raj. Come to my place in the evening. My Nila didi will also help us in case we are stuck.”

Ria : “Fine, I will come and then let us start the work.”

Isn't it a nice idea to learn to create such t-shirts with pictures ?

Learning Objectives:

1. Understanding the usage of text through coding.
2. Learning to make logical connections and use reasoning skills.
3. Using the knowledge learnt so far, creating an interesting art piece by combining all the different aspects like shapes, polygons, patterns, fill colours, background colours, gradients, etc.

Expected outcome – (3 minutes)

<https://youtu.be/onD3pqETCBs>

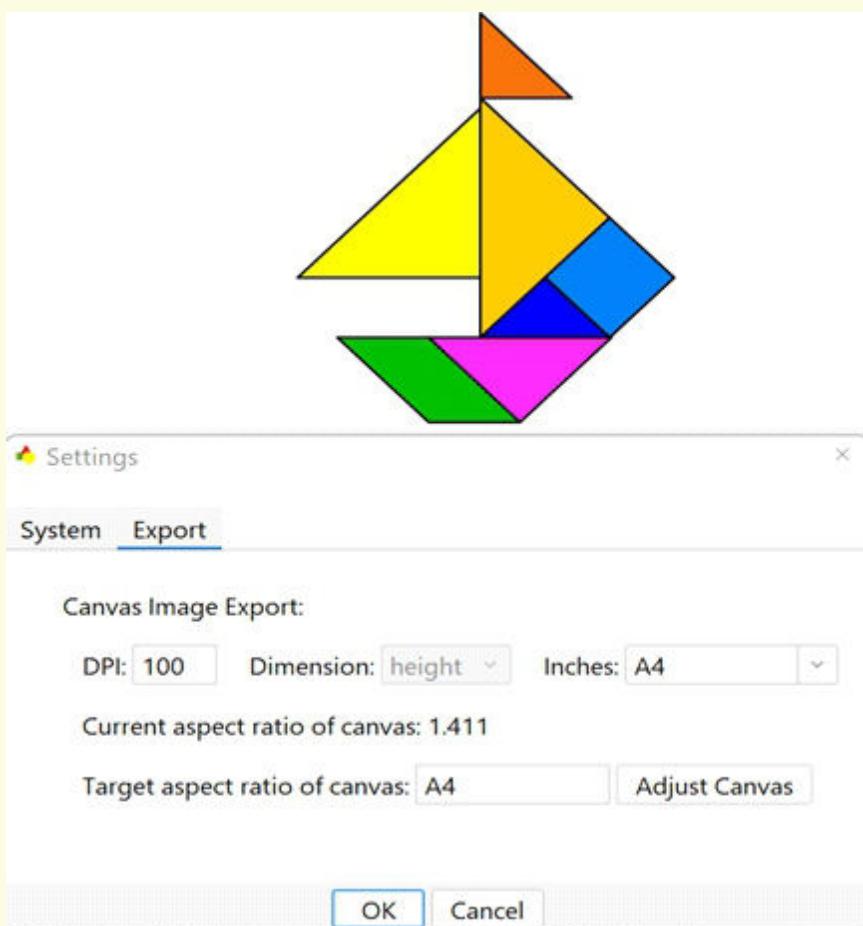


Design – (5 minutes)

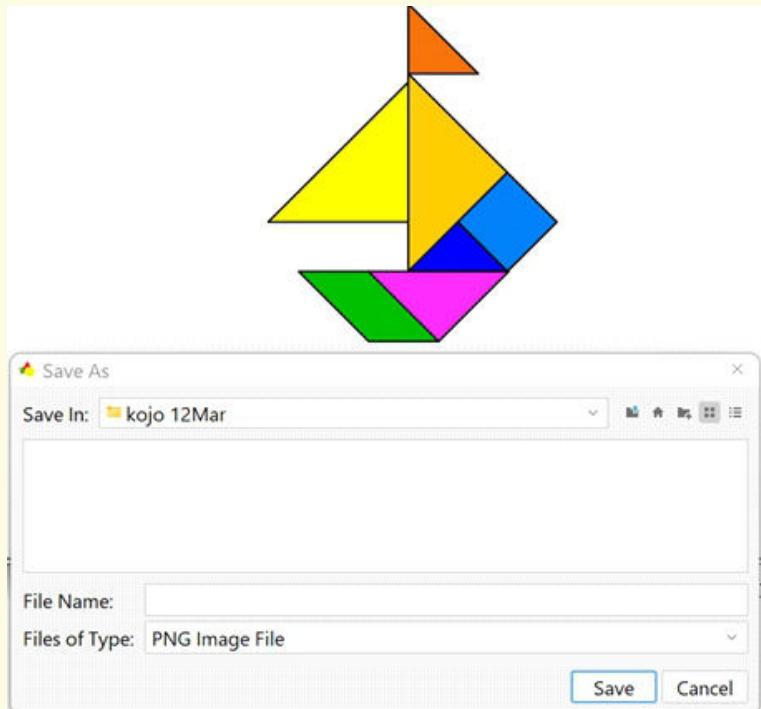


To get a good quality image of your drawing out of Kojo, here is what you need to do:

1. Set the resolution of the exported image (via File > Settings | Export) as shown below:



- a) Set the DPI as per your choice.
- b) Set the height to a standard paper size or just write the desired height in inches in the 'inches' text field.
2. Resize the canvas if you are using a standard paper size – using the ‘adjust canvas’ button shown above. This is because whatever is visible in the canvas is exported – with the same aspect ratio (the ratio of width to height) as the canvas.
3. Now close the ‘settings’ window.
4. Make sure the layout of your drawing (centering in the canvas, etc.) is fine as per the adjusted canvas size.
5. Export your drawing (by right-clicking on the canvas and clicking ‘export as image’).



Tasks – (50 minutes)

Task 1- Create the following design and write the text ‘Super-Six Champions’ or text of your choice on the T-shirt.



Task 1- Change the file/settings to the image on the T-Shirt.

Task 2- Export the File.

Observations to be done by the teachers - (*simultaneous*)

1. Is the student performing or discussing with his/her partner?
2. Is the student finding it difficult to explore the commands needed?
3. Is the student struggling to type the commands in the order they are expecting?
4. Is the student trying to type to get the desired result?
5. Are the students happy with the design they get?
6. Is the student interested to find a solution to the given problem?
7. Has the student completed the given task in time?

Evaluation - (*10 minutes / simultaneous*)

1. Understanding of the problem

- a. Understood clearly the given task and can explain.
- b. Understood the given task but cannot explain/express it clearly.
- c. Partly understood the task and requires help to start.
- d. Did not understand the required outcome.

2. Execution

- a. Did not complete the program.
- b. Completed only the first task.
- c. Completed the tasks with help.
- d. Completed all the tasks and also explored new commands/codes by themselves.

3. Understanding of the coding blocks (*tick all that applies*)

- a. Was comfortable with the syntax of the commands.
- b. Was able to use the gradients effectively.
- c. Was able to rectify the mistakes by themselves.

EVALUATION RUBRICS

Assessment Skill	Beginner (25%)	Needs Improvement (50%)	Comfortable (75%)	Skilled (100%)
Discovery	The student could not understand the ‘rotation angle’ and the ‘translation’.	The student could understand the ‘rotation angle’ and the ‘translation’ after seeking help or either of them partially.	The student could easily understand ‘rotation angle’ and the ‘translation’ or either of the two and could code with little difficulties.	The student could easily understand ‘rotation angle’ and the ‘translation’ and tried the same with different values.
Understanding/ Problem Solving	They did not understand the required outcome	The student partly understood the task and required help to start.	The student understood the given task but could not explain/express it clearly.	The student understood the given task clearly and could explain.
Completion of tasks and Keyboard Skills	The student could not get a running solution within the given time as the student struggled to type or to find the right keys quickly.	The student struggled to get a running solution for the first task as the student managed to find the keys but was not comfortable with typing.	The student got a running solution for the first task but struggled a bit with further tasks as the student was able to type comfortably but was not quick in finding the new commands from the suggestions.	The student could get the running solution for most of the tasks easily and also tried some tasks on their own as the student was able to type easily and also find the keyboard shortcuts.
Interest/ Motivation	The student showed very little interest in the activity.	The student displayed a fair bit of interest in the activity.	The student participated in the activity with interest.	The student was excited about performing the activity.
Team Work	The student was a passive member of the team.	The student was considering all the opinions of the peer team members.	The student was able to filter and go ahead with the right opinion provided by the teammates.	The student completed his/her work and also helped the other team members by solving their difficulties wherever possible.

Guidelines (if required)

Connect – (2 minutes)

Episode No. 16: Designing a photo frame scenery, as a gift to the Chief Guest for the annual gathering.



During recess Nidhi, Ved and Ria were discussing how they were successful in designing and selling the t-shirt on bazaar day for which they received the highest fundraiser award in school. Gracy joins the discussion and appreciates them for doing a wonderful job. ICT teacher Rashmi enters the class.

ICT Teacher Rashmi: “Good morning students and congratulations for designing wonderful t-shirts and for the appreciation by the school head and the management.”

Ria: “Thank you teacher. It was possible only because of your support and guidance.”

Ved: “Teacher, now we are very much eager to perform a new task. What will it be?”

ICT Teacher Rashmi: “Why don't you suggest some ideas?”

Ved: “Teacher, we are celebrating our annual gathering in December. We can think of doing something innovative for the annual gathering?”

ICT Teacher Rashmi: “That's a great idea! Why not use the scenery designed for the t-shirts to make a photo frame to be gifted to the Chief Guest for the annual gathering function?”

Ved: “Wow! That's a fantastic idea, teacher. But can we draw a border to the scenery so that it appears like a photo frame?”

ICT Teacher Rashmi: “Yes Ved! Why not? But just think in how many different ways you can design a border around it.”

Nidhi: “It's really a wonderful idea, Teacher. I will also join in to create a photo frame.”

Salim: “I am sure the Chief Guest will be happy to see our creativity.”

All were enthusiastic about the idea of creating a photo frame as a gift to the Chief Guest and started working soon on it.

Why not try such creative art by ourselves too?

Learning Objectives:

1. Learning the usage of different shapes to create innovative patterns/designs.
2. Learning how to create a photo frame on given inputs such as tangram shapes created previously.

Expected outcome – (3 minutes)

<https://youtu.be/Wja4hEj-yMA>



Design – (5 minutes)

Create a photo frame of scenery drawn previously.



Tasks – (50 minutes)

Task 1- Draw the following Photo frame of the scenery .



Task 2- Draw the following photo frame.



Observations to be done by the teachers - (*simultaneous*)

1. Is the student performing or discussing with his/her partner?
2. Is the student finding it difficult to explore the commands needed?
3. Is the student struggling to type the commands in the order they are expecting?
4. Is the student trying to type to get the desired result?
5. Are the students happy with the design they get?
6. Is the student interested to find the solution to the given problem?
7. Has the student completed the given task in time?

Evaluation - (10 minutes / simultaneous)

1. Understanding of the problem

- a. Understood clearly the given task and can explain.
- b. Understood the given task but cannot explain/express it clearly.
- c. Partly understood the task and requires help to start.
- d. Did not understand the required outcome.

2. Execution

- a. Did not complete the program.
- b. Completed only the first task.
- c. Completed the tasks with help.
- d. Completed all the tasks and also explored new commands/code by themselves.

3. Understanding of the text-based coding (tick all that applies)

- a. The significance of proper turn angle in making closed shapes patterns.
- b. Defining the function and calling the function when needed in the program.

4. Using the computer (tick all that applies)

- a. Was comfortable with the syntax of the commands.
- b. Was able to use the gradients effectively.
- c. Was able to rectify the mistakes by themselves.

EVALUATION RUBRICS

Assessment Skill	Beginner (25%)	Needs Improvement (50%)	Comfortable (75%)	Skilled (100%)
Discovery	The student had difficulty in using the commands learnt in combination so far.	The student could use all the commands learnt in combination so far with the help of peers and teachers.	The student was comfortable using all the commands learnt in combination so far on their own but subsequently.	The student was not only comfortable using all the commands learnt so far but also tried out new patterns/designs.
Understanding/ Problem Solving	The student found it a challenge to combine the commands.	The student partially understood how to combine the commands.	The student could understand how to combine the commands and could do it with struggle.	The student was quick to understand the combination of commands and could explain the same.
Completion of tasks and Keyboard Skills	The student could not get a running solution within the given time as the student struggled to type or to find the right keys quickly.	The student struggled to get a running solution for the first task as the student managed to find the keys but was not comfortable with typing.	The student got a running solution for the first task but struggled a bit with further tasks as the student was able to type comfortably but was not quick in finding the new commands from the suggestions.	The student could get the running solution for most of the tasks easily and also tried some tasks on their own as the student was able to type easily and also find the keyboard shortcuts.
Team Work	The student was a passive member of the team.	The student was considering all the opinions of the peer team members.	The student was able to filter and go ahead with the right opinion provided by the teammates.	The student completed his/her work and also helped the other team members by solving their difficulties wherever possible.

Guidelines (if required)

Connect – (2 minutes)

Episode No. 17: Gracy wins the best out of waste prize at the Taluka level for her teddy bear creation.



During the ICT period, Gracy brought a nice teddy bear which was made out of waste material. She shows it to the class.

Raj:

“Teacher, Gracy got the first prize for this teddy bear which she made for the taluka level for the best out of Waste competition.”

ICT Teacher Rashmi:

“What material did you use to make this?”

Gracy:

“Teacher, I made it out of scrapped balls, of different sizes. I used volleyball, tennis ball, table tennis balls etc. joined them together to make a bear shape and then covered it with brown velvet cloth.”

ICT Teacher Rashmi:

“Wow! It is looking really cute and beautiful. Students, have you noticed that she has used only one type of shape?”

Salim:

“Yes teacher, only circular shapes are used which are of different sizes and at different places.”

Salim:

“That's so nice. I would surely like to learn to draw a picture of a teddy bear using coding.”

ICT Teacher Rashmi:

“Now that you know, to create patterns using tangram shapes, such as triangles, square, parallelogram, can we now try to create this teddy bear with a circle shape?”

Gracy:

“I feel it should be possible teacher.”

ICT Teacher Rashmi:

“Yes Gracy. In text based coding it is very easy to create a circular shape. We can just do it by typing one command line.”

Salim:

“Is it? Then I would really like to know that command and soon start with the project.”

Gracy:

“Yes, teacher. I will also join Salim in this task.”

In today's class let us create a teddy bear shape using circles.

Learning Objectives:

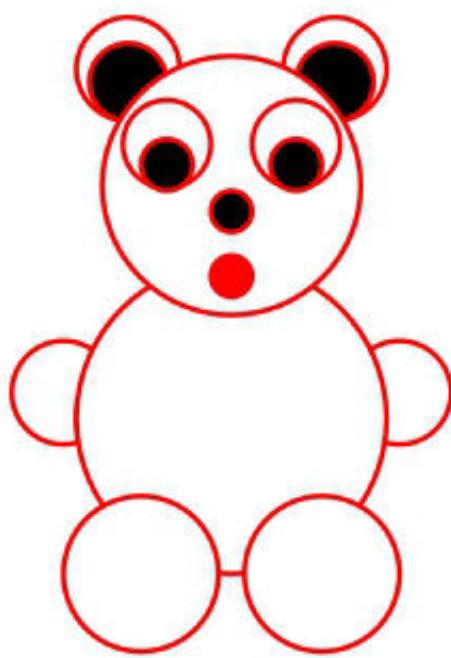
1. Learning to draw circular shapes of fixed size using simple commands.
2. Learning to name, group and form a picstack for a particular picture.
3. Applying translation and scaling to that pickstack and forming a particular pattern.
4. Learning to make a duplicate copy of the picture using the flipped command.
5. Creating an interesting art piece by combining all the different aspects like shapes, polygons, patterns, fill colour, background colour, gradients etc. by using the knowledge learnt.
6. Learning to form the picture and reuse it at other instances by reducing its size, thus avoiding the need to recreate the same picture again.

Expected outcome – (3 minutes)

<https://youtu.be/NNyJct-ePJM>

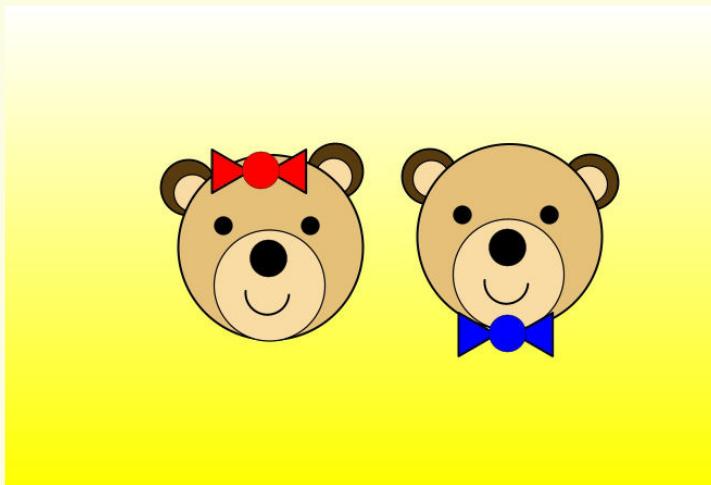


Design – (5 minutes)

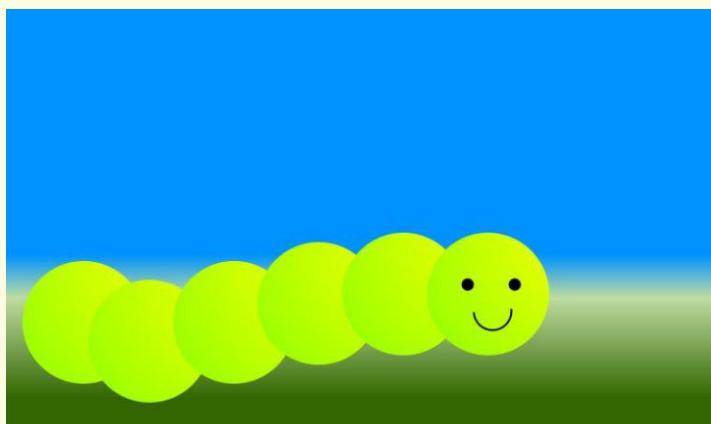


Tasks – (50 minutes)

Task 1



Task 2



Observations to be done by the teachers - (simultaneous)

1. Is the student performing or discussing with his/her partner?
2. Is the student finding it difficult to explore the commands needed?
3. Is the student struggling to type the commands in the order they are expecting?
4. Is the student trying to type to get the desired result?
5. Are the students happy with the design they get?
6. Is the student interested to find the solution to the given problem?
7. Has the student completed the given task in time?

Evaluation - (10 minutes / simultaneous)

1. Understanding of the problem

- a. Understood clearly the given task and can explain.
- b. Understood the given task but cannot explain/express it clearly.
- c. Partly understood the task and requires help to start.
- d. Did not understand the required outcome.

2. Execution

- a. Did not complete the program.
- b. Completed only the first task.
- c. Completed the tasks with help.
- d. Completed all the tasks and also explored new commands/code by themselves.

3. *Understanding of the text-based coding (tick all that applies)*

- a. What lines in the code above make the base shape of the pattern?
- b. What lines in the code above make the full pattern?
- c. The significance of proper turn angle in making closed shape patterns.
- d. Defining the functions and calling them when needed in the program.

4. *Using the computer (tick all that applies)*

- a. Was comfortable with the syntax of the commands.
- b. Was able to indent the code properly.
- c. Was able to write the code by picking the ‘auto complete’ options.
- d. Was able to rectify the mistakes by themselves.

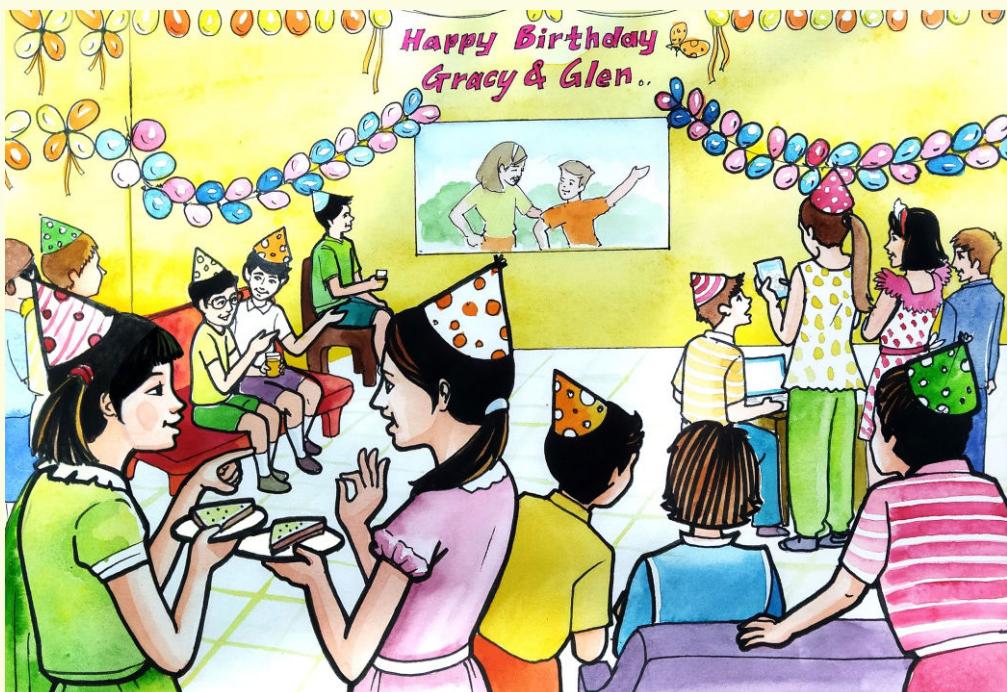
EVALUATION RUBRICS

Assessment Skill	Beginner (25%)	Needs Improvement (50%)	Comfortable (75%)	Skilled (100%)
Discovery	The student had difficulty in using the commands learnt so far.	The student could use the commands learnt with the help of peers and teachers.	The student was comfortable using the commands learnt, after practising.	The student was not only comfortable using the commands learnt so far but also tried out new patterns using it.
Understanding/ Problem solving	The student found it a challenge to use the command.	The student partially understood how to use the commands.	The student could understand how to use the commands and could do it after a bit of struggle.	The student was quick to understand the use of commands and could explain the same with clarity.
Completion of tasks & Keyboard Skills	The student could not get a running solution within the given time as the student struggled to type or to find the right keys quickly.	The student struggled to get a running solution for the first task as the student managed to find the keys but was not comfortable with typing.	The student got a running solution for the first task but struggled a bit with further tasks as the student was able to type comfortably but was not quick in finding the new commands from the suggestions.	The student could get the running solution for most of the tasks easily and also tried some tasks on their own as the student was able to type easily and also find the keyboard shortcuts.
Interest/ Motivation	The student showed very little interest in the activity.	The student displayed a fair bit of interest in the activity.	The student participated in the activity with interest.	The student was excited about performing the activity.
Team Work	The student was a passive member of the team.	The student was considering all the opinions of the peer team members.	The student was able to filter and go ahead with the right opinion provided by the teammates.	The student completed his/her work and also helped other team members by solving their difficulties wherever possible.

Guidelines (if required)

Connect – (2 minutes)

Episode No. 18: Fun at Gracy and Glen's Birthday party!



The Super Six team is attending Gracy and her younger brother Glen's birthday party.

- Nidhi:** “Ria, the party is going really well.”
Ria: “Yes, nice to know that Gracy and Glen share the same birth date.”
Nidhi: “I really enjoyed the musical chair game we played.”
Raj: “And I also liked the animated movie they showed before the game. Wish we too could do such animations in text coding.”
Ved: “Of Course! We can also do animations there. Pravin uncle has showed me one such animation done by him.”
Nidhi: “Why not explore animation on the teddy bear project we will be doing during the next class?”
Salim: “We can make an animation to make our teddy smile. So let us try to achieve that output.”
Ria: “Done! During the next class we will try to make our teddy smile.”

All are excited about making the animation project next!!

Learning Objectives:

1. Learning to animate a picture that is already created.
2. Learning to give different conditions to animate.
3. Learning to name, group and form a picstack for a particular picture.
4. Using the knowledge learnt so far, creating an interesting art piece by combining all the different aspects like shapes, polygons, patterns, fill colour, background colour, gradients etc.
5. Learning to form the picture and reuse it at other instances by reducing its size, thus avoiding the need to recreate the same picture again.

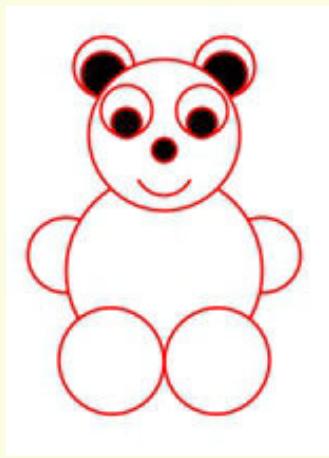
Expected outcome – (3 minutes)

<https://youtu.be/7xLYLZC4NH4>



Design – (5 minutes)

Create an animation on the teddy bear created in the previous class to make the teddy smile.



Tasks – (50 minutes)

Create the following animation.

<https://youtu.be/2rExdK3NLYo>

Observations to be done by the teachers - (*simultaneous*)

1. Is the student performing or discussing with his/her partner?
2. Is the student finding it difficult to explore the elements needed?
3. Is the student struggling to arrange the elements in the order they are expecting the output?
4. Is the student changing the lines of code and observing the output?
5. Is the student interested to find the solution to the given task?
6. Has the student completed the given task in time?

Evaluation - (10 minutes/*simultaneous*)

1. Understanding of the problem

- a. Understood clearly the given task and can explain.
- b. Understood the given task but cannot explain/express it clearly.
- c. Partly understood the task and requires help to start.
- d. Did not understand the required outcome.

2. Execution

- a. Did not complete the program.
- b. Completed only the first task.
- c. Completed the tasks with help.
- d. Completed all the tasks and also explored new commands/code by themselves.

3. Understanding of the text-based coding (tick all that applies)

- a. What lines in the code above make the base shape of the pattern?
- b. What lines in the code above make the full pattern?
- c. The significance of proper turn angle in making closed shape patterns.
- d. Defining the functions and calling them when needed in the program.

4. Using the computer (tick all that applies)

- a. Was comfortable with the syntax of the commands.
- b. Was able to indent the code properly.
- c. Was able to write the code by picking the auto complete options.
- d. Was able to rectify the mistakes by themselves.

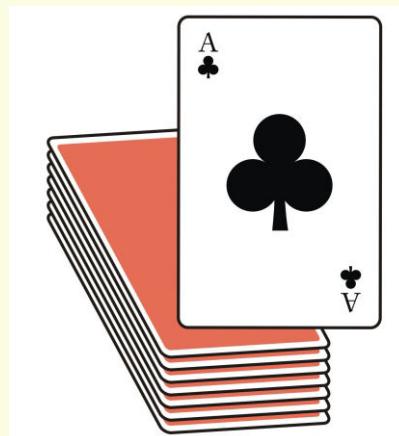
EVALUATION RUBRICS

Assessment Skill	Beginner (25%)	Needs Improvement (50%)	Comfortable (75%)	Skilled (100%)
Discovery	The student had difficulty in using the commands learnt so far and animating them.	The student could use the commands learnt with the help of peers and teachers and also animate them with help.	The student was comfortable using the commands learnt, after practising for sometime and could animate them as well.	The student was not only comfortable using the commands learnt so far but also tried out new patterns using them and animated the patterns created.
Understanding/ Problem Solving	The student found it a challenge to use the animation command.	The student partially understood how to use the animation command.	The student could understand how to use the animation command and could do it after a bit of struggle.	The student was quick to understand the use of animation command and could explain the same with clarity.
Completion of tasks & Keyboard Skills	The student could not get a running solution within the given time as the student struggled to type or to find the right keys quickly.	The student struggled to get a running solution for the first task as the student managed to find the keys but was not comfortable with typing.	The student got a running solution for the first task but struggled a bit with the further tasks as the student was able to type comfortably but was not quick in finding the new commands from the suggestions.	The student could get the running solution for most of the tasks easily and also tried some tasks on their own as the student was able to type easily and also find the keyboard shortcuts.
Interest/ Motivation	The student showed very little interest in the activity.	The student displayed a fair bit of interest in the activity.	The student participated in the activity with interest.	The student was excited about performing the activity.
Team Work	The student was a passive member of the team.	The student was considering all the opinions of the peer team members.	The student was able to filter and go ahead with the right opinion provided by the teammates.	The student completed his/her work and also helped other team members by solving their difficulties wherever possible.

Guidelines (if required)

Connect – (2 minutes)

Episode No. 19: Creating an illusion based pattern - Create a club from the deck of cards



Learning Objectives:

1. Learning to draw pictures using the circles.
2. Defining only one circle and reusing it with the use of ‘PicStack’.
3. Creating illusions of a shape by using various transforms involving translation, scaling, filling colour and stroke colour.

Expected outcome – (3 minutes)

<https://youtu.be/YoWMHv5-Gkc>



Design – (5 minutes)

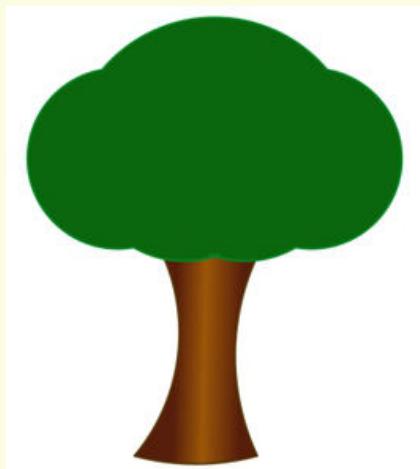
Create the following picture.



Tasks – (50 minutes)

Task 1- *Draw the following tree using pictures and picstack.*

Task 2- *Apply colour gradients to it.*



Observations to be done by the teachers - (simultaneous)

1. Is the student performing or discussing with his/her partner?
2. Is the student finding it difficult to explore the elements needed?
3. Is the student struggling to arrange the opening elements and closing elements in the order they are expected?
4. Is the student interested to find a solution to the given problem?
5. Has the student completed the given task in time?

Evaluation - (10 minutes / simultaneous)

1. Understanding of the problem

- a. Understood clearly the given task and can explain.
- b. Understood the given task but cannot explain/express it clearly.
- c. Partly understood the task and requires help to start.
- d. Did not understand the required outcome.

2. Execution

- a. Did not complete the program.
- b. Completed only the first task.
- c. Completed the tasks with help.
- d. Completed all the tasks and also explored new commands/codes by themselves.

3. Understanding of the text-based coding (tick all that applies)

- a. What lines in the code above make the base shape of the pattern?
- b. What lines in the code above make the full pattern?
- c. The significance of proper turn angle in making closed shape patterns.
- d. Defining the functions and calling them when needed in the program.

4. Using the computer (tick all that applies)

- a. Was comfortable with the syntax of the commands.
- b. Was able to indent the code properly.
- c. Was able to write the code by picking the auto complete options.
- d. Was able to rectify the mistakes by themselves.

EVALUATION RUBRICS

Assessment Skill	Beginner (25%)	Needs Improvement (50%)	Comfortable (75%)	Skilled (100%)
Discovery	The student had difficulty in understanding the patterns and using the shapes in combination so far.	The student could use all the commands learnt in combination so far with the help of peers and teachers.	The student was comfortable using all the commands learnt in combination so far on their own but subsequently.	The student was not only comfortable using all the commands learnt so far but also tried out new patterns that looks like an illusion.
Understanding/ Problem Solving	The student found it a challenge to understand the task.	The student partially understood the task.	The student could produce the output but understand and partially explain the task.	The student was quick to understand the task and could explain the same with clarity.
Completion of tasks and Keyboard Skills	The student could not get a running solution within the given time. As the student struggled to type or to find the right keys quickly	The student struggled to get a running solution for the first task as the student managed to find the keys but was not comfortable with typing.	The student got a running solution for the first task but struggled a bit with further tasks as the student was able to type comfortably but was not quick in finding the new commands from the suggestions.	The student could get the running solution for most of the tasks easily and also tried some tasks on their own as the student was able to type easily and also find the keyboard shortcuts.
Interest/ Motivation	The student showed very little interest in the activity.	The student displayed a fair bit of interest in the activity.	The student participated in the activity with interest.	The student was excited about performing the activity.
Team Work	The student was a passive member of the team.	The student was considering all the opinions of the peer team members.	The student was able to filter and go ahead with the right opinion provided by the teammates.	The student completed his/her work and also helped other team members by solving their difficulties wherever possible.

Guidelines (if required)

Connect – (2 minutes)

Episode No. 20: The game of Tennikoit strikes an ellipse drawing idea to Gracy.



Gracy's Cousin Belinda visits Gracy on a weekend. In the evening, Gracy, Glen and Belinda are playing tennikoit in the garden.

Belinda: "Gracy, pass tennikoit slowly to Glen. He is still not good enough at catching it."

Gracy: "Yes Belinda. I am throwing it slowly at him. But watch what he does. Every time he catches it, he tries to pull it apart by stretching it."

Belinda: "Thank god it's made of rubber so it's easily getting back to its original shape or else by now our tennikoit would have become an ellipse."

Gracy: "Hurray! Now I have got it. I have been trying to draw elliptical shapes like an egg, orbit, dragonfly, but the idea was somehow not clicking my mind. Today, with Glen's play, I realised that if we stretch a circle, we can get an elliptical shape ,and with that I can easily complete my pictures now."

Belinda: "Yes Gracy. So now, you can draw elliptical shapes."

Gracy: "Yes . I shall start it with a picture of a dragonfly. That would be an interesting project to do."

Gracy immediately starts working on the dragonfly project after the play.

In todays' class let us learn the same.

Learning Objective:

1. Learning to draw ellipses using pictures.
2. Learning to use transforms like translation, rotation, fill colour, stroke colour, scale or shear.
3. Learning to use different shades of colours and transparency.

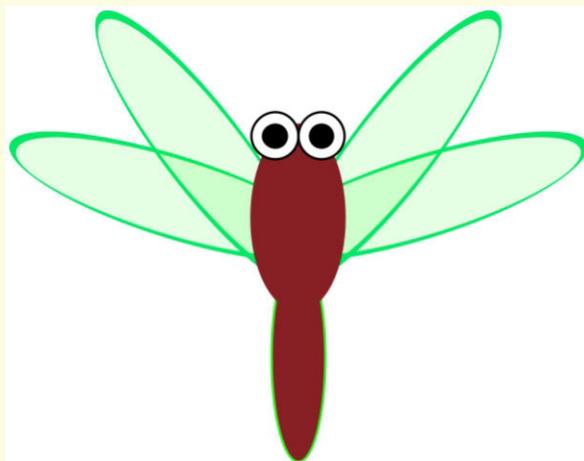
Expected outcome – (3 minutes)

<https://youtu.be/f53ilBBEiSA>



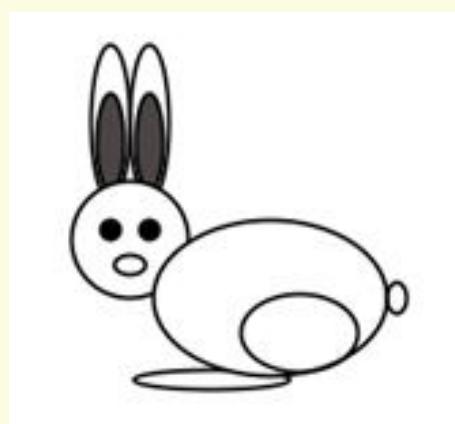
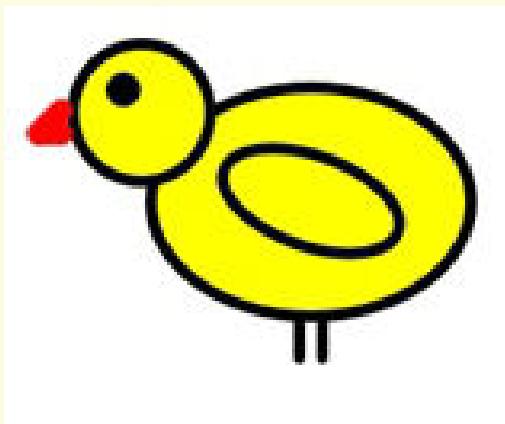
Design – (5 minutes)

Create the following Dragonfly picture using an ellipse command.
Use the command “Picture.ellipse”



Tasks – (50 minutes)

Create the following pictures using an ellipse command.



Observations to be done by the teachers - (*simultaneous*)

1. Is the student performing or discussing with his/her partner?
2. Is the student finding it difficult to explore the elements needed?
3. Is the student struggling to arrange the elements in the order they are expecting the output?
4. Is the student changing the lines of code and observing the output?
5. Is the student interested to find the solution to the given task?
6. Has the student completed the given task in time?

Evaluation - (10 minutes / simultaneous)

1. Understanding of the problem

- a. Understood clearly the given task and can explain.
- b. Understood the given task but cannot explain/express it clearly.
- c. Partly understood the task and requires help to start.
- d. Did not understand the required outcome.

2. Execution

- a. Did not complete the program.
- b. Completed only the first task.
- c. Completed the tasks with help.
- d. Completed all the tasks and also explored new commands/code by themselves.

3. Understanding of the text-based coding (tick all that applies)

- a. What lines in the code above make the base shape of the pattern?
- b. What lines in the code above make the full pattern?
- c. The significance of proper turn angle in making closed shape patterns.
- d. Defining the functions and calling them when needed in the program.

4. Using the computer (tick all that applies)

- a. Was comfortable with the syntax of the commands.
- b. Was able to indent the code properly.
- c. Was able to write the code by picking the auto complete options.
- d. Was able to rectify the mistakes by themselves.

EVALUATION RUBRICS

Assessment Skill	Beginner (25%)	Needs Improvement (50%)	Comfortable (75%)	Skilled (100%)
Discovery	The student had difficulty in using the commands learnt.	The student could use the commands learnt with the help of peers and teachers.	The student was comfortable using the commands learnt, after practising.	The student was not only comfortable using the commands learnt so far but also tried out new patterns.
Understanding/ Problem Solving	The student found it a challenge to combine the commands.	The student partially understood how to combine the commands.	The student could understand how to combine the commands and could do it after a bit of struggle.	The student was quick to understand the combination of commands and could explain the same with clarity.
Completion of tasks and Keyboard Skills	The student could not get a running solution within the given time as the student struggled to type or to find the right keys quickly	The student struggled to get a running solution for the first task as the student managed to find the keys but was not comfortable with typing.	The student got a running solution for the first task but struggled a bit with further tasks as the student was able to type comfortably but was not quick in finding the new commands from the suggestions.	The student could get the running solution for most of the tasks easily and also tried some tasks on their own as The student was able to type easily and also find the keyboard shortcuts.
Interest/ Motivation	The student showed very little interest in the activity.	The student displayed a fair bit of interest in the activity.	The student participated in the activity with interest.	The student was excited about performing the activity.
Team Work	The student was a passive member of the team.	The student was considering all the opinions of the peer team members.	The student was able to filter and go ahead with the right opinion provided by the teammates.	The student completed his/her work and also helped other team members by solving their difficulties wherever possible.

Guidelines (if required)

Connect – (2 minutes)

Episode No. 21: Salim learns an innovative way of sharing his file

During assembly the headmistress shared great news to the class. The PTA has decided to put up all the creative work of the students on their official website as a separate blog. So interested students had to upload their project on the blog page.

Next day during recess they all met to discuss this topic.



Salim :

“I tried uploading my animation file of the teddy on the website but it is not showing as an animation but just as an image.”

Gracy:

“I tried the same and faced the same problem so I recorded the animation and uploaded it. But the movie file took time to run as it was a large file.”

Ria:

“Let us solve these issues with the help of our ICT teacher.” During the ICT class, they approach the ICT teacher and explained the problem to her.

ICT Teacher Rashmi:

“Oh! Let me see how I can help you with it. Why don't you try to convert your code files into HTML and see if it works?”

Gracy, Salim and Ria tried uploading with a changed format of html and they could get the desired output on their school official website blog.

Let us learn this new method of converting the files to html format today.

Learning Objectives:

1. Understanding the need to export the file.
2. Learning the difference between sharing an image file and sharing an HTML file.

Expected outcome – (3 minutes)

<https://youtu.be/lswVL6LtaU>



Design – (5 minutes)

Steps to export Kojo file to HTML

1. Load the script you want to export in the script editor in desktop-Kojo.
2. Click on File -> Export Script as Web-App.
3. This will compile the script via iKojo and create a Web-App based on the script under ~/kojo-expert folder created under your default drive.

Steps to run the Web-App file

1. Go to ~/kojo-expert -> webapp and open index.html file. This will open your system browser and start running the exported Web-App file.

Tasks – (50 minutes)

Task 1- Export the project files in kojo to HTML.

Observations to be done by the teachers - (simultaneous)

1. Is the student performing or discussing with his/her partner?
2. Is the student finding it difficult to explore the elements needed?
3. Is the student struggling to arrange the elements in the order they are expecting the output?
4. Is the student changing the lines of code and observing the output?
5. Is the student interested to find the solution to the given task?
6. Has the student completed the given task in time?

Evaluation - (10 minutes / simultaneous)

1. Understanding of the problem

- a. Understood clearly the given task and can explain.
- b. Understood the given task but cannot explain/express it clearly.
- c. Partly understood the task and requires help to start.
- d. Did not understand the required outcome.

2. Execution

- a. Did not complete the program.
- b. Completed only the first task.
- c. Completed the tasks with help.
- d. Completed all the tasks and also explored new commands/code by themselves.

- 3. *Understanding of the text-based coding (tick all that applies)***
 - a. What lines in the code above make the base shape of the pattern?
 - b. What lines in the code above make the full pattern?
 - c. The significance of proper turn angle in making closed shape patterns.
 - d. Defining the functions and calling them when needed in the program.
- 4. *Using the computer (tick all that applies)***
 - a. Was comfortable with the syntax of the commands.
 - b. Was able to indent the code properly.
 - c. Was able to write the code by picking the auto complete options.
 - d. Was able to rectify the mistakes by themselves.

EVALUATION RUBRICS

Assessment Skill	Beginner (25%)	Needs Improvement (50%)	Comfortable (75%)	Skilled (100%)
Discovery	The student had difficulty in finding the commands to export the script in web(HTML)	The student found the commands to export the script in web(HTML) with the help of peers and teachers.	The student found the commands to export the script in web(HTML) but after some time.	The student not only exported the script on the web(HTML) but also sent the file online to the others.
Understanding/ Problem Solving	The student found it a challenge to combine the commands.	The student partially understood how to combine the commands.	The student could understand how to combine the commands and could do it after a bit of struggle.	The student was quick to understand the combination of commands and could explain the same with clarity.
Completion of tasks and Keyboard Skills	The student could not get a running solution within the given time as the student struggled to type or to find the right keys quickly	The student struggled to get a running solution for the first task as the student managed to find the keys but was not comfortable with typing.	The student got a running solution for the first task but struggled a bit with further tasks as the student was able to type comfortably but was not quick in finding the new commands from the suggestions.	The student could get the running solution for most of the tasks easily and also tried some tasks on their own as the student was able to type easily and also find the keyboard shortcuts.
Interest/ Motivation	The student showed very little interest in the activity.	The student displayed a fair bit of interest in the activity.	The student participated in the activity with interest.	The student was excited about performing the activity.
Team Work	The student was a passive member of the team.	The student was considering all the opinions of the peer team members.	The student was able to filter and go ahead with the right opinion provided by the teammates.	The student completed his/her work and also helped the other team members by solving their difficulties wherever possible.

Guidelines (if required)

Connect – (2 minutes)

Episode No. 22: Fun with 3D graphics



During recess Raj and Salim are chatting.

Raj: “Salim, do you remember the minetest we played in 5th standard?”

Salim: “Yes! It was a fun filled problem solving journey, but how come you suddenly remembered about the games?”

Raj : “I was wondering that through pictures, we could simulate how we build art and objects in real life. That is, by putting smaller parts together. But in the real world, I can build objects with boxes too, not just the plain pictures.”

Salim : “Ah ha! I think that's why we are going to learn 3D now, in our ICT class after learning coding. Teacher Rashmi had mentioned it.”

Raj: “Yes Salim. I remember, and it would be really nice to explore and go beyond the two dimensional pictures.”

Salim : “I have seen many 3D graphic movies done by Disney and Pixar. So now we will get an idea of how they created those characters.”

Raj : “That's true. Even I like 3D graphics and I can't wait to learn it.”

During the next session Raj and Salim are very happy to start with 3D graphic software.

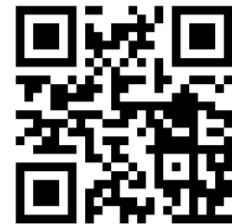
How interesting it is to learn 3D software to create graphics. Isn't it?

Learning Objectives:

1. Learning to create 3D objects with the use of default objects/meshes.
2. Learning the 3D computer graphic software interface.
3. Learning the concept of 3D,vertices,edges,faces,basic transformation and lights.
4. Learning to identify 'X', 'Y', 'Z' axis.
5. Use of different shortcut keys.
6. Learning the placement of objects in space.
7. Learning translation,scale, rotation with objects.
8. Learning to zoom in, zoom out, pan up, pan down.

Expected outcome – (3 minutes)

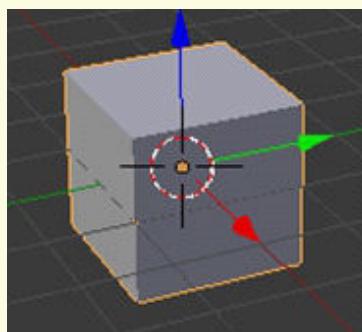
<https://youtu.be/iIE6JGEmbF8>



Design – (4 minutes)

1. Mesh used:

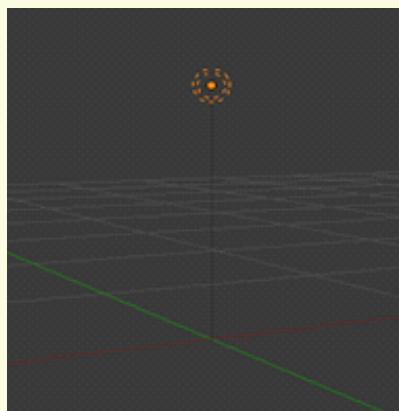
Cube



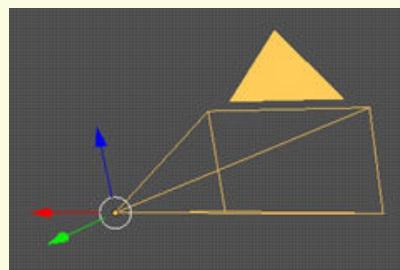
2. Shortcut keys:

- | | | |
|---------------------|---------------|-----------|
| a. Translate(move) | on X,Y,Z axes | Ctrl + G |
| b. Rotate | on X,Y,Z axes | Ctrl + R |
| c. Scale (Resizing) | on X,Y,Z axes | Ctrl + S |
| d. Delete | | X |
| e. Add an object | | Shift + a |

3. Light



4. Camera



Tasks – (50 minutes)

Task 1- Add and play with the following models.



Task 2- Use the G command to move the models at the ‘X’, ‘Y’, ‘Z’ axis.

Task 3- Use the S command to increase / decrease the size of the image.

Task 4- Use R to rotate the image through the ‘X’, ‘Y’, ‘Z’ axis.

Task 5- Try to adjust the camera and light.

Observations to be done by the teachers - (simultaneous)

1. Is the student able to understand the concept of the ‘X’, ‘Y’ and ‘Z’ axis?
2. Is the student able to use the shortcut keys in the proper manner?
3. How did the student finish the objective?(struggling,finished with/without help).
4. Did the student try to explore any other tools other than the one's explained to them?
5. Did the student try to create any other model than the one explained to him?
6. Is the student interested in performing the activity? (Lack of interest/interested/excited)
7. The student completed the given activity and also managed to apply the same concept on the previous objects created.
8. Does the student try to innovate something new into the existing task and also share it with the other classmates?

Evaluation - (10 minutes/simultaneous)

1. Understanding the concept

- a. Understood clearly the given task and can explain.
- b. Understood the given task .
- c. Partly understood the concepts and required help.
- d. Did not understand the concept.

2. Execution

- a. Did not complete the task.
- b. Completed only the first task.
- c. Completed the task with help.
- d. Completed and also explored the other components.

3. Understanding of the shortcut keys (tick all that applies)

- a. Can explain the function of various keys and tools.
- b. Can explain the function of only a few keys and tools.
- c. Did not understand the function of any of the keys and tools.
- d. Was able to use all the keys correctly and also tried to explore the interface.

4. Using the blender software(tick all that applies)

- a. Was able to start 3D manipulation software on its own.
- b. Was comfortable with the keyboard and the mouse.
- c. Was able to save the file properly .

EVALUATION RUBRICS

Assessment Skill	Beginner (25%)	Needs Improvement (50%)	Comfortable (75%)	Skilled (100%)
Discovery	It was a challenge for the student to create the models and move, rotate and scale the object.	The student was able to create the models and move, rotate and scale the object with the help of peers/teachers.	The student was able to create the models and partially move, rotate and scale the object.	The student was not only able to create the models but also move, rotate and scale the objects, with ease.
Understanding/ Problem Solving	The student found it a challenge to understand the concept.	The student partially understood the concept.	The student could understand the concept partially.	The student was quick to understand the concept and could explain the same with clarity.
Completion of tasks and Keyboard Skills	The student could not get a running solution within the given time as the student struggled to find the right keys quickly.	The student struggled to get a running solution for the first task as the student managed to find the keys but was not comfortable in finding the combination of right keys	The student got a running solution for the first task but struggled a bit with further tasks as the student was able to comfortably find the keys with help of the peers.	The student could get the running solution for most of the tasks easily and also tried some tasks on their own as the student was able to easily find the keyboard shortcuts.
Team Work	The student was a passive member of the team.	The student was considering all the opinions of the peer team members.	The student was able to filter and go ahead with the right opinion provided by the teammates.	The student completed his/her work and also helped other team members by solving their difficulties wherever possible.

Guidelines (if required)

Connect – (2 minutes)

Episode No. 23: Nidhi and Ria building MineTest Game trees



Nidhi is visiting Ria's place for completing Maths practice question bank. Ria was playing a game on her mobile when Nidhi reached her home.

- Nidhi:** “Ria, which game are you playing?”
Ria: “I really enjoy playing mobile games. I was playing a car racing 3D game.”
Nidhi: “Wow! You know, Salim told me that they created 3D objects, inspired by the 3D Minetest game. I was thinking if we too shall try to create some 3D objects. But we will start it with simple objects.”
Ria: “How about creating trees as shown in the Minetest game?”
Nidhi: “But, will we be able to see around the tree, like we see here?”
Ria: “Let us try it. Only then will we know.”

Ria and Nidhi are on the mission to create a similar looking tree like in Mine test, which can be viewed with 360 degree view i.e. view from all round on their computer.

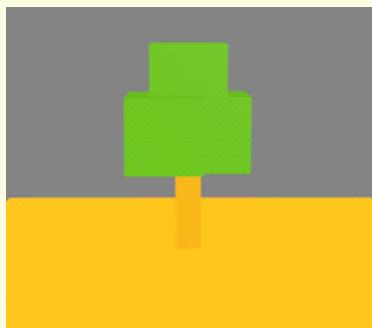
Let us also learn to create a trees using 3D software

Learning Objectives:

1. Learning to create an object using shapes.
2. Learning to create duplicate shapes from one shape.
3. Learning to apply colour to the objects.
4. Learning to switch between different modes.
5. Learning to save the files.
6. Use of light and camera in a scene.

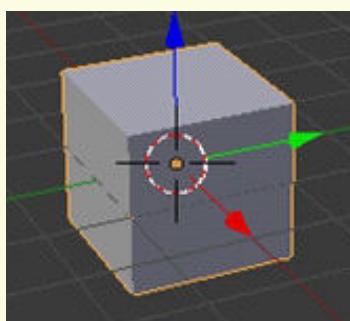
Expected outcome – (3 minutes)

<https://youtu.be/y2dVW8dypa8>



Design – (5 minutes)

1. Mesh used:



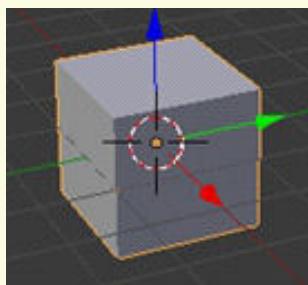
2. Keyboard shortcuts needed

- a. To Add Object: Shift + A,
- b. Numpad
 - i. Switch between User Persp and Camera Persp.: 0 key
 - ii. To see different views: 1,2,3,4,5,6 keys
- iii. Object Mode:
 - a. Mouse
 - i. To Move Object: Right Click
 - ii. Scroll button: Zoom in, Zoom Out

- iii. 3D view of Workspace
- 1. Top View: Press + Move downward,
- 2. Bottom View: Press + Move upward,
- 3. Left View: Press + Move rightward,
- 4. Right View: Press + Move leftward
- b. Keyboard
- i. To Move Object: G+X, G+Y, G+Z
- ii. To Scale Object: S+X, S+Y, S+Z
- iii. To Rotate Object: R+X, R+Y, R+Z
- iv. To Duplicate: Shift + D
- v. Delete Object: Shift + X

Tasks – (50 minutes)

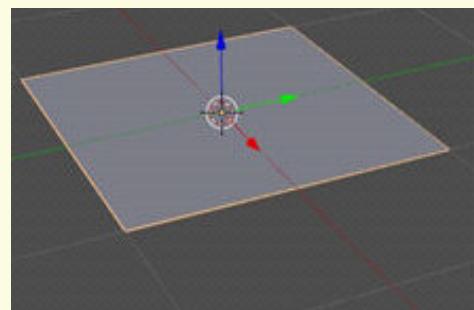
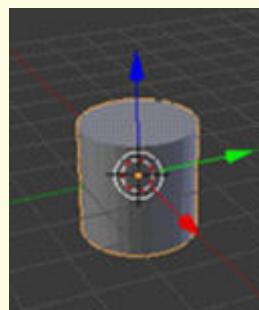
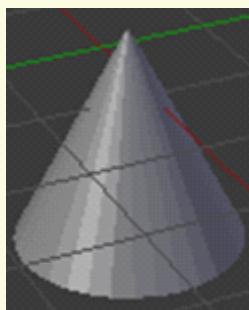
Task 1- Create a Forest Scene using a cube.



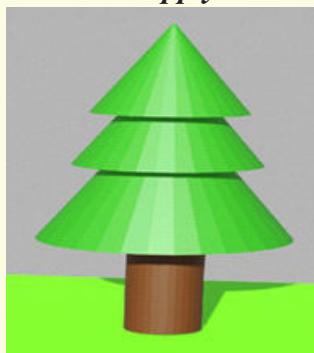
Task 2- Apply colour to the trees.

Task 3- Now try to use the following objects and create new trees like a conical tree.

Mesh:



Task 4- Apply colour to the tree.



Task 4- Adjust Light and Camera.

Observations to be done by the teachers - (*simultaneous*)

1. How did the student finish the objective?(struggling, finished with help, finished without help)
2. The interest of the student in performing the activity(lacked interest, interested, excited)
3. Was the student able to create a forest scene and a conical tree?
4. Was the student able to apply colour to the model?
5. Was the student able to adjust the camera and light?
6. Was the student able to use the shortcut keys with ease?
7. Is the student facing difficulty in handling the mouse and the keyboard related operations?
8. Is the student comfortable in switching between object and edit mode wherever required.
9. The student completed the given activity and also managed to apply the same concept on the previous objects created.
10. Does the student try to innovate something new into the existing task and also share it with the other classmates?

Evaluation - (*10 minutes / simultaneous*)

- 1. Understanding of creating duplicates of shapes from a model**
 - a. Understood clearly and can explain
 - b. Understood the concept.
 - c. Partly understood the concept and requires help.
 - d. Did not understand the concept.
- 2. Execution**
 - a. Did not complete the task.
 - b. Completed only the first task.
 - c. Completed the other tasks with help.
 - d. Completed all the tasks and also created new models.
- 3. Understanding of the tools and function of the keys (*tick all that applies*)**
 - a. Is able to explain the function of various tools and keys.
 - b. Is able to explain the function of some of the tools and keys.
 - c. Did not understand the function of tools and keys.
 - d. Able to create a part of the model.
- 4. Using the computer (*tick all that applies*)**
 - a. Was able to start blender on its own.
 - b. Was able to use the keyboard and the mouse comfortably.
 - c. Was able to save the file.

EVALUATION RUBRICS

Assessment Skill	Beginner (25%)	Needs Improvement (50%)	Comfortable (75%)	Skilled (100%)
Discovery	The student faced difficulty in finding the mesh and using the shortcut keys.	The student was able to find the mesh however required help in using them.	The student found the mesh and shortcut keys but were able to use it only after struggling.	The student could easily find the mesh and shortcut keys.
Understanding/ Problem solving	The student found it a challenge to create the tree and apply colour for the objects.	The student partially created the tree and applied colour to the objects	The student could apply colour to the object, but partially complete the tree.	The student was quick to apply colour and also complete the tree and also tried to create different scenes and patterns.
Completion of tasks & Keyboard Skills	The student could not get a running solution within the given time as the student struggled to find the right keys quickly.	The student struggled to get a running solution for the first task as the student managed to find the keys but was not comfortable in finding the combination of the right keys	The student got a running solution for the first task but struggled a bit with further tasks as the student was able to comfortably find the keys with the help of peers.	The student could get the running solution for most of the tasks easily and also tried some tasks on their own as the student was able to easily find the keyboard shortcuts.
Team Work	The student was a passive member of the team.	The student was considering all the opinions of the peer team members.	The student was able to filter and go ahead with the right opinion provided by the teammates.	The student completed his/her work and also helped other team members by solving their difficulties wherever possible.

Guidelines (if required)

Connect – (2 minutes)

Episode No. 24: Ved and Gracy build a sweet 3D home on the computer!!



The School just got over. Super Six team is heading to the school bus. Gracy and Ved are discussing on their way back home.

Gracy: “Ved, have you noticed that beautiful newly constructed house opposite to our school?”

Ved : “Yes, it is very beautiful.”

Gracy: “Have you noticed, we can only see the front portion of that house. But our senior, Annie told me that the backside of the house also has a beautiful gallery view.”

Ved: “That means if you want to see the back view of the house, you need to go around the house?”

Gracy: “Yes! But it is not possible, as the owner of the house will not allow us to enter inside.”

Ved: “Ask your friend Annie to describe the back view and I will recreate it for you in 3D graphics.”

Gracy: “Wow! Is that really possible?”

Ved: “Of course! Bring me the description of the house tomorrow and we will soon start working on it.”

Gracy brings the description the next day and Ved starts working on recreating the 3D model of the house.

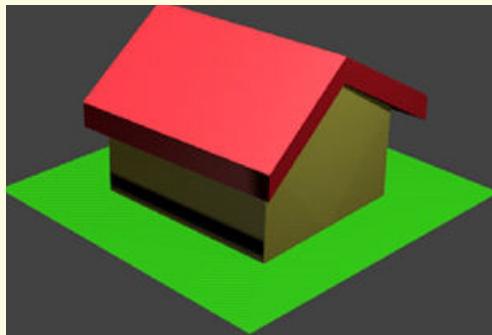
In today's class , let us create a 3D model of our dream house.

Learning Objective:

1. Students should be able to use ‘Vertex Select’, ‘Edge Select’ and ‘Face Select’ to reconstruct the new shape or modify the existing shape.
2. Learning to apply new knowledge at every step.
3. Understanding the concept of ‘Real World’.
4. Learning how to insert new shapes in the world.
5. Learning the fundamentals of ‘Compositing’.
6. Learning the fundamentals of ‘Material’ and then applying colour.
7. Learning to save rendered 3D House Model to .png Image.
8. Learning to be able to draw a shape by subdividing the original shapes.
9. Learning to stretch the edges, surfaces and vertices to form a new shape.

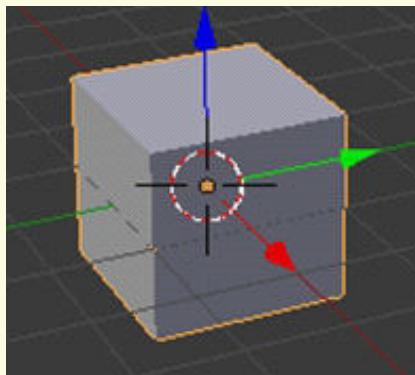
Expected outcome – (3 minutes)

<https://youtu.be/0xF6WwRw9X4>

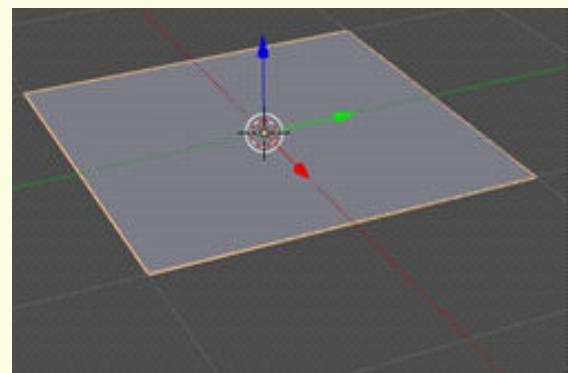


Design – (5 minutes)

1. 1. Mesh used:
Cube



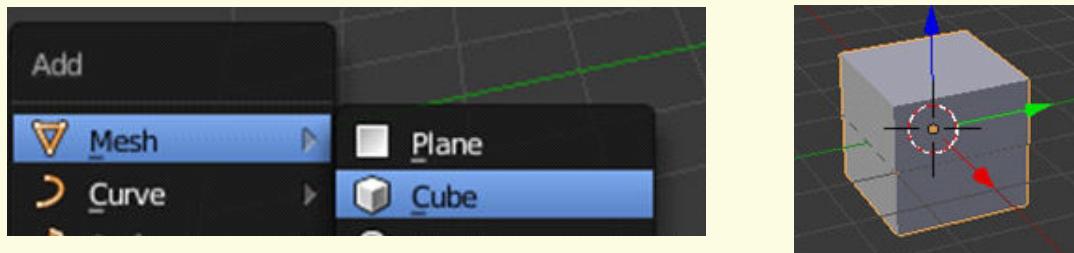
Plane



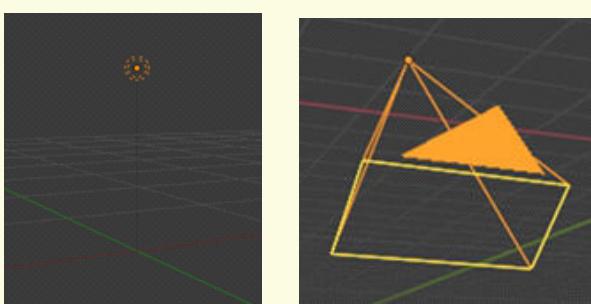
2. Keyboard shortcuts needed
 - a. To Add Object: Shift + A,
 - b. Numpad
 - i. Switch between User Persp: 0 key
 - and Camera Persp.
 - ii. To see different views: 1,2,3,4,5,6 keys
 - c. Switch between Edit and Object Mode : Tab key
 - i. Object Mode:
 - a. Mouse
 - i. To Move Object: Right Click
 - ii. To Lock Position: Left Click
 - iii. Scroll button: Zoom in, Zoom Out
 - iv. 3D view of Workspace
 1. Top View: Press + Move downward,
 2. Bottom View: Press + Move upward,
 3. Left View: Press + Move rightward,
 4. Right View: Press + Move leftward
 - b. Keyboard
 - i. To Move Object: G+X, G+Y, G+Z
 - ii. To Scale Object: S+X, S+Y, S+Z
 - iii. To Rotate Object: R+X, R+Y, R+Z
 - iv. To Duplicate: Shift + D
 - v. Delete Object: Shift + X
 - ii. Edit Mode (Vertex, Edge, Face)
 1. To Scale: Right Click
 2. To Lock Scaling: Left Click
 3. To Subdivide: Ctrl+E - Subdivide
 4. Split the 3D View into four views: Ctrl+Alt+Q

Objects type needed

1. Mesh (Square)



2. Light and Camera



Changing Modes



Matting needed relevant to inserted objects



Tasks – (50 minutes)

- Task 1- Create a door.
- Task 2- Create a window.
- Task 3- Create a new different style roof for the house.
- Task 4- Change the house colour of your choice.
- Task 5- Create a bungalow with a terrace.

Observations to be done by the teachers - (simultaneous)

1. Is the student performing or discussing with his/her partner?
2. Is the student finding it difficult to explore the options needed?
3. Is the student struggling to arrange the roof top of the house?
4. Is the student moving, scaling the roof and house to get the desired result?
5. Is the student happy with the design they have created?
6. Is the student interested in making doors and windows of the house?
7. Is the student facing difficulty in handling the mouse and the keyboard related operations?
8. Is the student comfortable in switching between object and edit mode wherever required?
9. Has the student completed the given task in time?
10. Has the student completed the given activity and also managed to apply the same concept on the previous objects created?
11. Does the student try to innovate something new into the existing task and also share it with the other classmates?

Evaluation - (10 minutes / simultaneous)

1. *Understanding of the problem*
 - a. Understood clearly and can explain.
 - b. Understood given tasks and also other tasks.
 - c. Partly understood the problem and requires help.
 - d. Did not understand the required outcome.

2. Execution

- a. Did not complete building using 3D house model.
- b. Completed only the first task.
- c. Completed the other tasks.
- d. Completed and also explored the other components.

3. Understanding of the object manipulating application options (tick all that applies)

- a. Can explain the function of each required option .
- b. Can explain the need for the scaling, moving and rotating object.
- c. Did not understand the function of options used.
- d. Was able to use the right keyboard shortcuts easily.

EVALUATION RUBRICS

Assessment Skill	Beginner (25%)	Needs Improvement (50%)	Comfortable (75%)	Skilled (100%)
Discovery	The student faced difficulty in searching for the required option to create a house model.	The student was able to find the required option to create house model however required help for discovering it	The student found the required option to create the house model option after searching for some time.	The student could easily find the required option to create a house model option and made use of it.
Understanding/ Problem solving	The student found it a challenge to understand the task.	The student partially understood the task.	The student could understand and partially explain the task.	The student was quick to understand the task and could explain the same with clarity
Completion of tasks	The student could not get a running solution within the given time as the student struggled to find the right keys quickly.	The student struggled to get a running solution for the first task as the student managed to find the keys but was not comfortable in finding the combination of the right keys	The student got a running solution for the first task but struggled a bit with further tasks as the student was able to comfortably find the keys with the help of peers.	The student could get the running solution for most of the tasks easily and also tried some tasks on their own as the student was able to easily find the keyboard shortcuts.
Team Work	The student was a passive member of the team.	The student was considering all the opinions of the peer team members.	The student was able to filter and go ahead with the right opinion provided by the teammates.	The student completed his/her work and also helped the other team members by solving their difficulties wherever possible.

Guidelines (if required)

Connect – (2 minutes)

Episode No. 25: Let us learn to build a Snowman with Gracy and Ria.



During the Christmas vacations Gracy had been to Germany to her Uncle's place. Gracy meets the Super Six team on the reopening day of the school after the vacations. As they are heading to the ICT laboratory, Ria and Gracy discuss:

Ria : “Hello Gracy! How did you enjoy your Christmas vacation?”

Gracy : “Yes, I enjoyed it a lot.”

Ria : “We all saw your pictures of Christmas celebrations. Tell us something more about the celebration of Christmas over there.”

Gracy : “In Germany they celebrate Christmas with great joy and happiness. They make lovely snowman.”

Ria : “Snowman?”

Gracy : “Yes, it is made up of snow blobs by keeping them one over the other. The topmost blob is the face and decorated with sticks, leaves, buttons, vegetables etc.”

Ria : “Oh really! How does it look?”

Gracy : “It looks very beautiful and lovely. Children love to make a snowman. I also made one snowman. It looked very cute.”

Ria : “Yes we have seen it in your pictures. We also want to make a snowman.”

Gracy : “Sure, we can't make it here with the real snow, but we can make it in our ICT laboratory with the software that we are using to draw the objects.”

Ria : “So let us go to the lab and learn how to build a snowman.”

Let us learn to create a snowman today which we can use for creating a digital christmas card.

Learning Objectives:

1. Learning the basic shapes required to create a Snowman.
2. Learning how to move the object along the axis.
3. Learning how to re-resize an object.
4. Learning how to duplicate the object.
5. Learning how to add a floor to the scene.
6. Learning how to apply different colours to different portions of the object.

Expected outcome – (3 minutes)

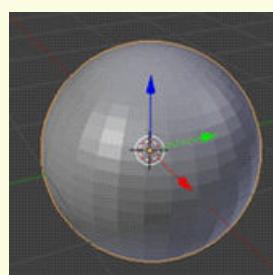
<https://youtu.be/iT6nh5r4rDQ>



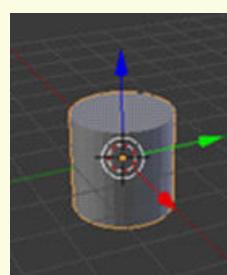
Design – (5 minutes)

1. Mesh used :

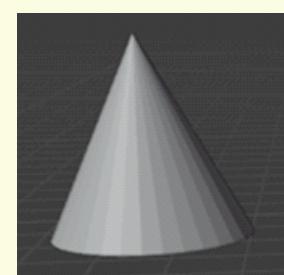
UV Sphere



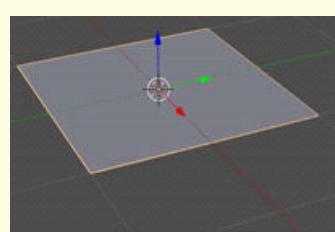
Cylinder



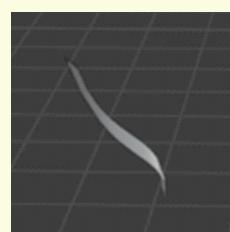
Cone



Plane



Curve



2. Keyboard shortcuts needed		
a. To Add Object:	Shift + A,	
b. Numpad	0 key	
i. Switch between User Persp: and Camera Persp.	1,2,3,4,5,6 keys	
ii. To see different views:	Ctrl+Alt+Q	
c. Split the 3D View into four views:	Tab key	
d. Switch between Edit and Object Mode:		
i. Object Mode:		
a. Mouse		
i. To Move Object:	Right Click	
ii. To Lock Position:	Left Click	
iii. Scroll button:	Zoom in, Zoom Out	
iv. To join objects:	Ctrl+J	
v. 3D view of Workspace		
1. Top View:	Press + Move downward,	
2. Bottom View:	Press + Move upward,	
3. Left View:	Press + Move rightward,	
4. Right View:	Press + Move leftward	
b. Keyboard		
i. To Move Object:	G+X, G+Y, G+Z	
ii. To Scale Object:	S+X, S+Y, S+Z	
iii. To Rotate Object:	R+X, R+Y, R+Z	
iv. To Duplicate:	Shift + D	
v. Delete Object:	Shift + X	
vi. To Extrude :	E+X, E+Y, E+Z	
vii. To Fill Colour:	Material property	
ii. Edit Mode (Vertice, Edge, Face)		
1. To Scale:	Right Click	
2. To Lock Scaling:	Left Click	

Previous Knowledge:

Students learnt to create 3D objects using multiple shapes and colour them.

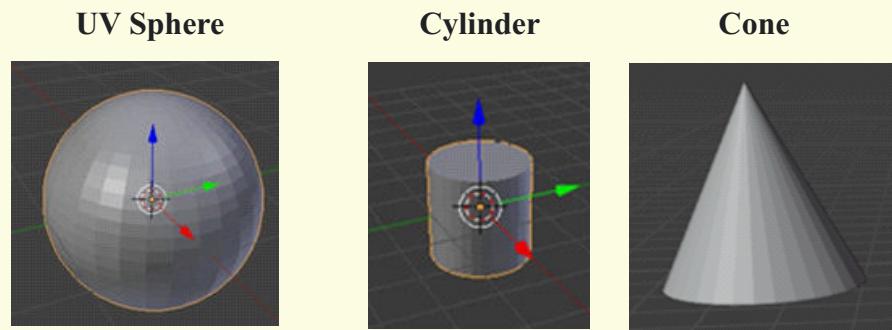
Tasks – (50 minutes)

Task 1- Create a snowman with the two blobs and a conical hat.



Task 2- Create a snowman with cylindrical nose, 2 blobs for ears, and a cap with a bow over it.

Mesh to be used :



Observations to be done by the teachers - (*simultaneous*)

1. Is the student able to insert the required shapes (object)?
2. Is the student able to move the object along the axis?
3. Is the student able to use the tools like scale, rotate, move effectively?
4. Did the student use additional tools other than the tool explained?
5. Did the student apply material (colour) without much struggle?
6. Is the student facing difficulty in handling mouse and keyboard related operations?
7. Is the student comfortable in switching between object and edit mode wherever required?
8. How did the student finished the task?
 - By struggling
 - With group discussion
 - Without group discussion
9. Did the student show interest in completing the given task?

Evaluation - (10 minutes/*simultaneous*)

- 1. Understanding of the problem**
 - a. Understood clearly and can explain
 - b. Understood the given task and also other tasks.
 - c. Partly understood the problem and requires help.
 - d. Did not understand the required outcome.
- 2. Execution**
 - a. Did not complete the 3D object.
 - b. Completed only the first task.
 - c. Completed the other tasks.
 - d. Completed and also explored the other components.
- 3. Understanding of the Blender options (tick all that applies)**
 - a. Can explain the use of each shape (object) used.
 - b. Can explain how to move the object along the axis.
 - c. Can explain how to resize the object.
 - d. Can explain how to duplicate the object.
 - e. Can explain how to add floor to the scene.
 - f. Can explain how to apply colour to an object.
- 4. Using the computer (tick all that applies)**
 - a. Was comfortable with the keyboard and the mouse.
 - b. Was able to save the file.

EVALUATION RUBRICS

Assessment Skill	Beginner (25%)	Needs Improvement (50%)	Comfortable (75%)	Skilled (100%)
Discovery	The student faced difficulty in searching the object/mesh.	The student was able to find the shapes however required help for discovering it.	The student found the shapes after searching for some time.	The student could easily find the shapes and also used them.
Understanding/ Problem Solving	The student found it a challenge to understand the task.	The student partially understood the task.	The student could understand and partially explain the task.	The student was quick to understand the task and could explain the same with clarity.
Completion of tasks and Keyboard Skills	The student could not get a running solution within the given time as the student struggled to find the right keys quickly.	The student struggled to get a running solution for the first task as the student managed to find the keys but was not comfortable in finding the combination of right keys	The student got a running solution for the first task but struggled a bit with further tasks as the student was able to comfortably find the keys with the help of peers.	The student could get the running solution for most of the tasks easily and also tried some tasks on their own as the student was able to easily find the keyboard shortcuts.
Team Work	The student was a passive member of the team.	The student was considering all the opinions of the peer team members	The student was able to filter and go ahead with the right opinion provided by the teammates.	The student completed his/her work and also helped other team members by solving their difficulties wherever possible.

Guidelines (if required)

Connect – (2 minutes)

Episode No. 26: Nidhis visit to her uncle's farmhouse

Gracy, Ved, Nidhi and Salim were on their way to the school. Nidhi had visited her uncle's farmhouse on Sunday. She started sharing her experience with her friends.



Nidhi: "Yesterday I visited my uncle's farmhouse at Guleli. It's lovely. There is one spring near the farmhouse."

Gracy: "Spring? How nice! I have never seen a spring."

Nidhi: "I saw one deer drinking the water from the spring and I also saw the peacock dancing in the field."

Gracy: "Wow! It's wonderful. I love animals."

Nidhi: "My uncle was telling me that there is a tiger in the forest near the farmhouse and he also comes to drink the water from the spring."

Salim: "Oh! Is that true? Are there any other animals near the farmhouse?"

Nidhi: "Yes there are bisons, fox, wild pigs etc."

Salim: "I wish I could see those animals!"

Ved: "Why not? If Gracy can show snowman from Germany, why can't I show you those animals from the farm?"

Nidhi: "You mean you'll show them by creating them in 3D graphics?"

Ved: "There you are. We can draw various animals and create a scene of a farm using 3D graphics."

Nidhi: "That's a very creative idea. Let's quickly start."

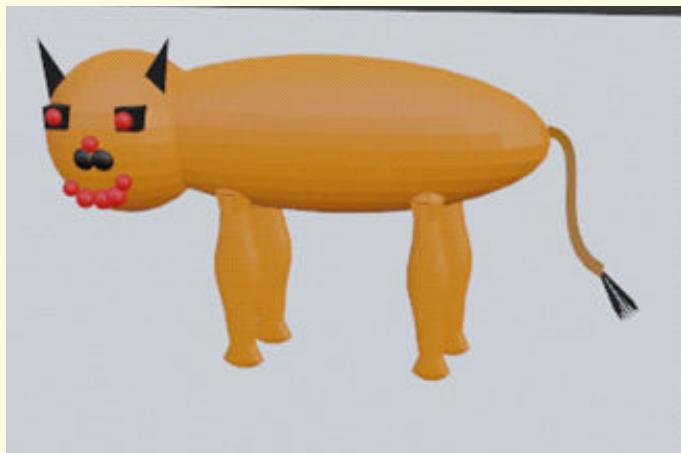
In today's class let us study how to create animals using 3D graphics.

Learning Objectives:

1. Identifying and inserting the basic shapes required to build low poly animals.
2. Learning how to move the object along the axis and place them in an order.
3. Learning how to resize an object according to the need.
4. Learning how to duplicate the object.
5. Learning how to apply colour to an object.

Expected outcome – (3 minutes)

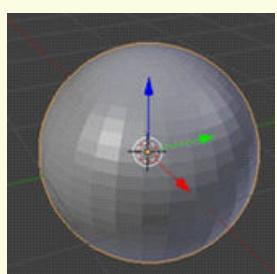
<https://youtu.be/97T0KU8r8n8>



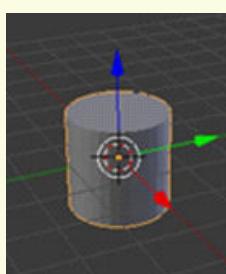
Design – (5 minutes)

1. Mesh used :

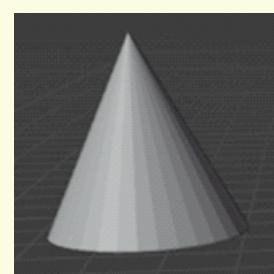
UV Sphere



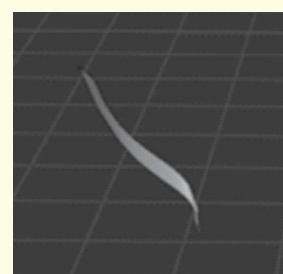
Cylinder



Cone



Curve

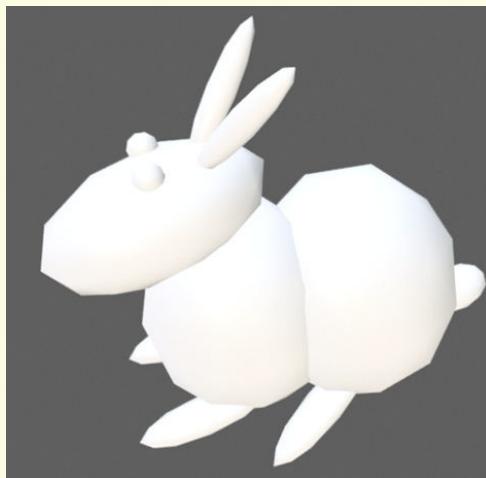


2. Keyboard shortcuts needed

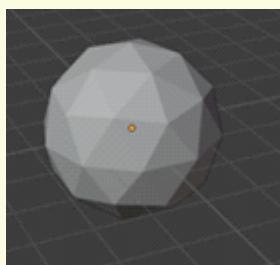
- a. To Add Object: Shift + A,
- b. Numpad
 - i. Switch between User Persp: 0 key and Camera Persp.
 - ii. To see different views: 1,2,3,4,5,6 keys
- c. Switch between Edit and Object Mode: Tab key
- d. Split the 3D view into four views: Ctrl+Alt+Q
 - i. **Object Mode:**
 - a. Mouse
 - i. To Move Object: Right Click
 - ii. To Lock Position: Left Click
 - iii. Scroll button: Zoom in, Zoom Out
 - iv. To join objects: Ctrl+J
 - v. 3D view of Workspace
 - 1. Top View: Press + Move downward,
 - 2. Bottom View: Press + Move upward,
 - 3. Left View: Press + Move rightward,
 - 4. Right View: Press + Move leftward
 - b. Keyboard
 - i. To Move Object: G+X, G+Y, G+Z
 - ii. To Scale Object: S+X, S+Y, S+Z
 - iii. To Rotate Object: R+X, R+Y, R+Z
 - iv. To Duplicate: Shift + D
 - v. Delete Object :Shift + X
 - vi. To Extrude: E+X, E+Y, E+Z
 - vii. To Fill Colour: Material property
 - ii. **Edit Mode (Vertice, Edge, Face)**
 - 1. To Scale: Right Click
 - 2. To Lock Scaling : Left Click
 - 3. To Subdivide: Ctrl+E

Tasks – (50 minutes)

Task 1- Build a model of a rabbit in a similar way.



Mesh to be used: Ico Sphere



Observations to be done by the teachers - (*simultaneous*)

1. Is the student able to insert the required shapes (object)?
2. Is the student able to move the object along the axis?
3. Is the student able to use the tools like scale, rotate, move effectively?
4. Did the student use additional tools other than the tools explained?
5. Did the student apply material without much struggle?
6. Is the student facing difficulty in handling the mouse and the keyboard related operations?
7. Is the student comfortable in switching between object and edit mode wherever required?
8. How did the student finished the task
 - By struggling
 - With group discussion
 - Without group discussion
9. Did the student show interest in completing the given task?

Evaluation - (*10 minutes/simultaneous*)

- 1. Understanding of the problem**
 - a. Understood clearly and can explain
 - b. Understood the given task and also the other tasks
 - c. Partly understood the problem and requires help
 - d. Did not understand the required outcome
- 2. Execution**
 - a. Did not complete the given 3D object.
 - b. Completed only the first task
 - c. Completed other tasks
 - d. Completed and also explored the other components
- 3. Understanding of the Image Manipulation Software Blender options (tick all that applies)**
 - a. Can explain the use of each shape (object) used.
 - b. Can explain how to move the object along the axis.
 - c. Can explain how to place the objects in a required order.
 - d. Can explain how to resize the object.
 - e. Can use keyboard shortcuts effectively.
 - f. Can explain how to duplicate and what is the use of the duplicate option.
 - g. Can explain how to apply colour to an object.
- 4. Using the computer (tick all that applies)**
 - a. Was able to start the required program on its own.
 - b. Was comfortable with the keyboard and the mouse.
 - c. Was able to save the file properly on their system online.

EVALUATION RUBRICS

Assessment Skill	Beginner (25%)	Needs Improvement (50%)	Comfortable (75%)	Skilled (100%)
Discovery	The student faced difficulty in finding and sizing the objects/shapes.	The student was able to find the objects/shapes but however required help in re-sizing them.	The student found the shapes easily and after trying for some time could resize the shapes.	The student could easily find and resize the shapes as per the needs.
Understanding/ Problem Solving	The student found it a challenge to understand the task.	The student partially understood the task.	The student partially understood the task.	The student was quick to understand the task and could explain the same with clarity.
Completion of tasks and Keyboard Skills	The student could not get a running solution within the given time as the student struggled to find the right keys quickly.	The student struggled to get a running solution for the first task as the student managed to find the keys but was not comfortable in finding the combination of the right keys.	The student got a running solution for the first task but struggled a bit with further tasks as the student was able to comfortably find the keys with the help of peers.	The student could get the running solution for most of the tasks easily and also tried some tasks on their own as the student was able to easily find the keyboard shortcuts.
Team Work	The student was a passive member of the team.	The student was considering all the opinions of the peer team members.	The student was able to filter and go ahead with the right opinion provided by the teammates.	The student completed his/her work and also helped the other team members by solving their difficulties wherever possible.

Guidelines (if required)

Connect – (2 minutes)

Episode No. 27: Let us fly a Rocket – Low poly rocket



It was Salim's birthday. Just before ICT period while going to the ICT lab, Salim tells his friends that his Abbu has gifted him a rocket with a remote control as a birthday gift.
ICT teacher Rashmi was waiting for students to arrive in the lab.

ICT Teacher Rashmi: “Good morning students.”

Students: “Good morning Teacher.”

Nidhi: “Teacher, today is Salim's birthday.”

ICT Teacher Rashmi: “Wish you many happy returns of the day, Salim.”

Salim: “Thank you teacher.”

ICT Teacher Rashmi: “So how do you plan to celebrate your birthday?”

Salim: “This year I am going to celebrate my birthday with my Abbu, who came from abroad just a few days back. And almost after three years we will be celebrating my birthday together, along with friends and other family members.”

Nidhi : “Teacher Salim's Abbu has gifted him a remote control rocket.”

Salim : “Yes! It is the best gift I have received so far.”

ICT Teacher Rashmi : “Very nice! So students you all must be liking the rocket, and aspire to have one for yourself too. Isn't it?”

All Students : “Yes, teacher.”

ICT Teacher Rashmi : “So how about creating a 3D rocket in today's class?”

Nidhi : “Wow! Our own 3D rocket? Is it possible?”

ICT Teacher Rashmi : “Why not? Everything is possible in our ICT Lab. So let us try to build a rocket.”

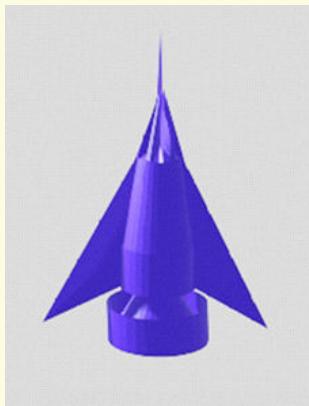
Would you also like to create a 3D Rocket in today's class?

Learning Objective:

1. Learning to build a rocket using a single shape (circle).
2. Learning how to switch to ‘edit’ mode.
3. Learning how to size an object by pulling it out using E (X/Y/Z)
4. Learning how to divide the object into parts using Ctrl+R.
5. Learning how to select faces or edges.
6. Learning to close the tip of any shape using the ‘F’ key in the edit mode.
7. Learning to set camera and light.

Expected outcome – (3 minutes)

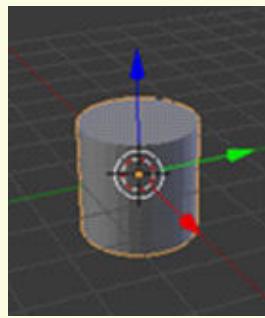
<https://youtu.be/M2mKNyxYtik>



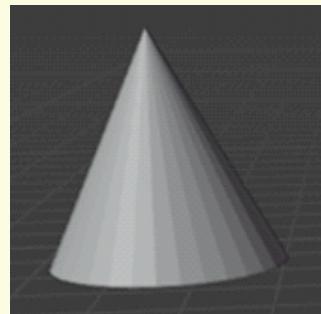
Design – (4 minutes)

1. Mesh used :

Cylinder



Cone

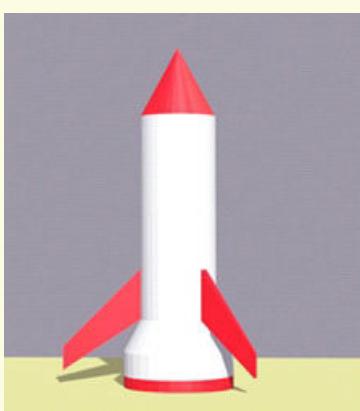


2. Keyboard shortcuts needed

- a. To Add Object: Shift + A,
- b. Numpad
 - i. Switch between User Persp and Camera Persp. 0 key
 - ii. To see different views: 1,2,3,4,5,6 keys
- c. Switch between Edit and Object Mode: Tab key
- d. Split the 3D View into four views: Ctrl+Alt+Q
 - i. **Object Mode:**
 - a. Mouse
 - i. To Move Object: Right Click
 - ii. To Lock Position: Left Click
 - iii. Scroll button: Zoom in, Zoom Out
 - iv. 3D view of Workspace
 - 1. Top View: Press + Move downward,
 - 2. Bottom View: Press + Move upward,
 - 3. Left View: Press + Move rightward,
 - 4. Right View: Press + Move leftward
 - b. Keyboard
 - i. To Move Object: G+X, G+Y, G+Z
 - ii. To Scale Object: S+X, S+Y, S+Z
 - iii. To Rotate Object: R+X, R+Y, R+Z
 - iv. To Duplicate: Shift + D
 - v. Delete Object :Shift + X
 - vi. To Extrude: E+X, E+Y, E+Z
 - vii. To Fill Colour: Material property
 - ii. **Edit Mode (Vertice, Edge, Face)**
 - 1. To Scale: Right Click
 - 2. To Lock Scaling: Left Click
 - 3. To close the open tip: F
 - 4. To create a Loop: Ctrl+R

Tasks – (50 minutes)

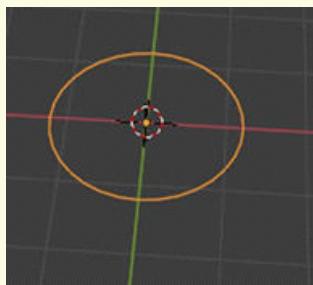
Build a rocket with red wings, base and closed tip using a single shape (circle).



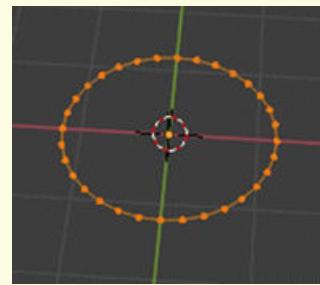
Mesh to be used:

Circle

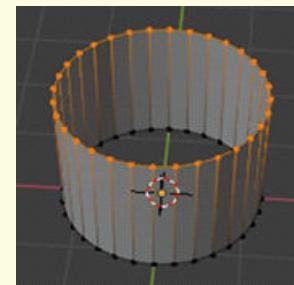
1. Object Mode



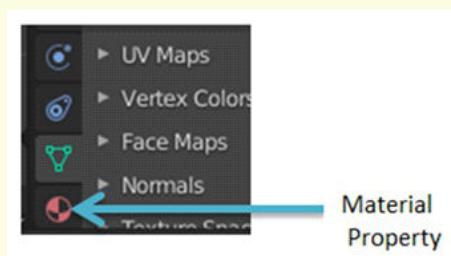
2. Edit Mode



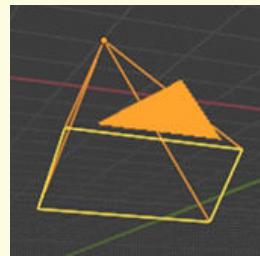
3. Extrude



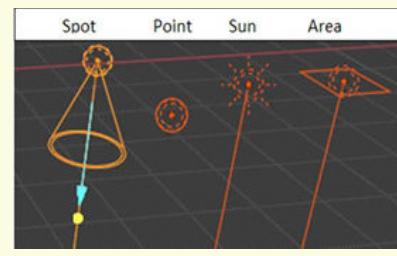
1. To Colour



2. Camera



3. Light



Observations to be done by the teachers - (*simultaneous*)

1. Is the student able to insert the required object?
2. Is the student able to move the object along the axis?
3. Is the student able to use the tools like scale, rotate, move, effectively?
4. Is the student able to use the Ctrl+R option to divide the object into parts?
5. Did the student use additional tools other than the tools explained?
6. Is the student facing difficulty in handling mouse and keyboard related operations?
7. Is the student comfortable in switching between object and edit mode wherever required?
8. Did the student apply colour without much struggle?
9. How did the student finish the task?
 - By struggling.
 - With group discussion.
 - Without group discussion.
10. Did the student show interest in completing the given task?
11. Is the student facing difficulty in handling the mouse and the keyboard related operations?
12. Is the student comfortable in switching between object and edit mode wherever required?
13. Has the student completed the given activity and also managed to apply the same concept on the previous objects created?
14. Did the student try to innovate something new into the existing task and also share it with the other classmates?

Evaluation - (10 minutes / simultaneous)

1. Understanding of the problem

- a. Understood clearly and can explain.
- b. Understood the given tasks and also other tasks.
- c. Partly understood the problem and requires help.
- d. Did not understand the required outcome.

2. Execution

- a. Did not complete the given task of 3D design.
- b. Completed only the first task.
- c. Completed the other tasks.
- d. Completed and also explored the other components

3. Understanding of the Blender options (tick all that applies)

- a. Can explain the use of each object used.
- b. Can explain the modes and how to switch between the modes.
- c. Can explain how to select faces or edges.
- d. Can explain how to extrude.
- e. Can explain how to divide the object into parts using Ctrl+R.
- f. Can use keyboard shortcuts effectively.
- g. Can explain how to apply colour to an object.
- h. Can explain how to adjust camera and light.

4. Using the computer (tick all that applies)

- a. Was comfortable with the keyboard and the mouse
- b. Was able to save the file.

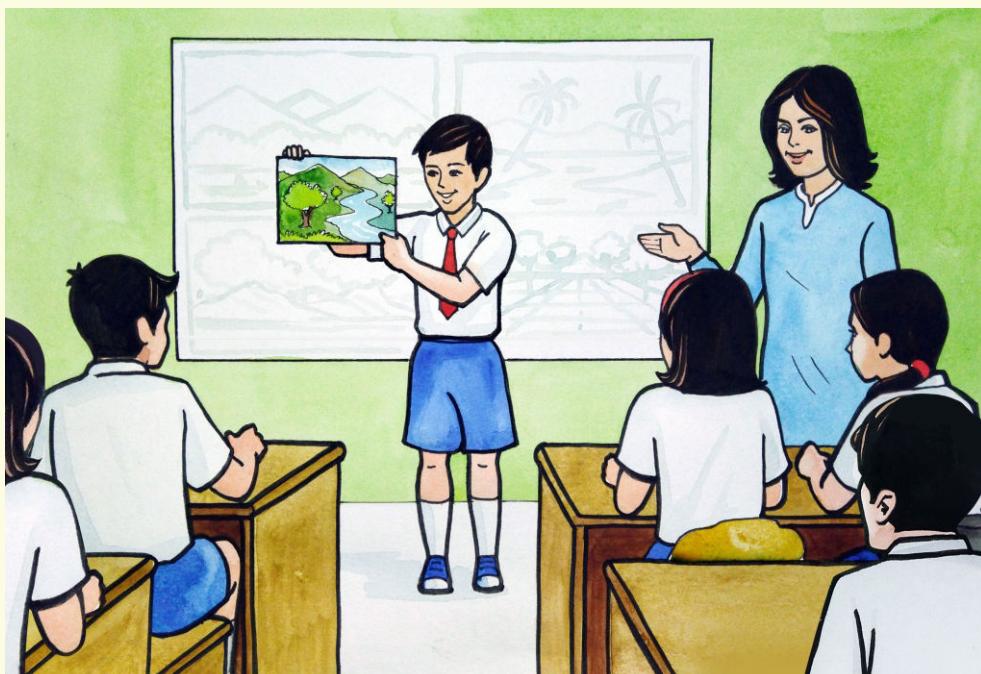
EVALUATION RUBRICS

Assessment Skill	Beginner (25%)	Needs Improvement (50%)	Comfortable (75%)	Skilled (100%)
Discovery	The student found it difficult to resize and to extruding the object/shape.	The student was able to resize and extrude the object but however required help in resizing it.	The student after trying for some time could resize and extrude the object.	The student could easily resize and extrude the shapes as per the need.
Understanding/ Problem Solving	The student found it a challenge to Understand the resizing and extruding the concept.	The student partially understood the concept of resizing and extruding the objects.	The student could understand the concept of resize (extruding) objects and partially explaining the task.	The student was quick to understand the concept of resize (extruding) and could explain the same with clarity.
Completion of tasks and Keyboard Skills	The student could not get a running solution within the given time as the student struggled to find the right keys quickly.	The student struggled to get a running solution for the first task as the student managed to find the keys but was not comfortable in finding the combination of right keys.	The student got a running solution for the first task but struggled a bit with further tasks as the student was able to comfortably find the keys with help of peers.	The student could get the running solution for most of the tasks easily and also tried some tasks on their own as the student was able to easily find the keyboard shortcuts.
Team Work	The student was a passive member of the team.	The student was considering all the opinions of the peer team members.	The student was able to filter and go ahead with the right opinion provided by the teammates.	The student completed his/her work and also helped other team members by solving their difficulties wherever possible.

Guidelines (if required)

Connect – (2 minutes)

Episode No. 28: Ved creating a 3D scene



During the Art period, Ved shows a beautiful hand painted landscape with mountains, river, trees to the Art teacher and his classmates, and shares his experience of drawing it.

Ved: “Last Sunday , I went for a picnic with my family at Sanguem taluka to see the Budbude Tali (lake), Savari waterfall and Mainapi waterfall.”

Raj: “Wow, I went to Sanguem taluka with my family, to see the Strawberry farm last year.”

Ved: “I was mesmerised by the scenic beauty of Sanguem taluka. After coming home, I felt like portraying it on paper and painted this.”

Art Teacher Lata: “Excellent Salim! The painting looks awesome.”

Ved: “Thank you teacher. I was also thinking of creating a 3-D scene of the same during the ICT class.”

Art Teacher Lata: “Once you do, show it to me as well.”

Ved: “Sure thing to do teacher.”

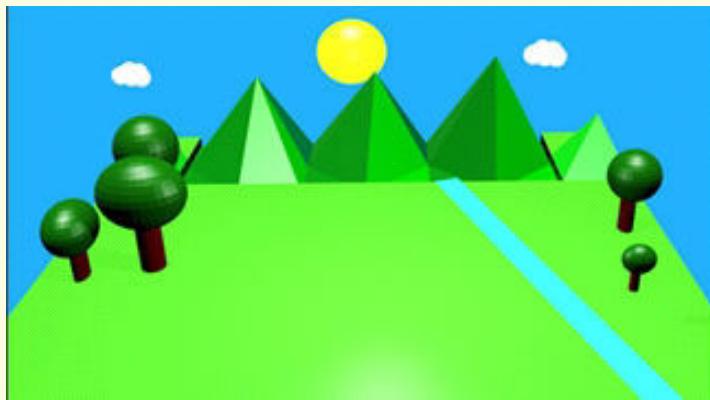
So, during the ICT class, we will draw a 3D scene similar to what Ved has created.

Learning Objective:

1. Learning to insert real-world objects required to do the task.
2. Learning to manipulate the objects.
3. Learning to convert the scene file to a .png image.
4. Learning how to group the objects and then place them by moving the group.
5. Learning to create a real world.

Expected outcome – (3 minutes)

<https://youtu.be/miKuQRy1iic>



Design – (5 minutes)

Keyboard shortcuts needed

- | | |
|--|------------------------|
| a. To Add Object: | Shift + A, |
| b. Numpad | |
| i. Switch between User Persp:
And Camera Persp. | 0 key |
| ii. To see different views: | 1,2,3,4,5,6 keys |
| c. Switch between Edit and Object Mode: | Tab key |
| i. Object Mode: | |
| a. Mouse | |
| i. To Move Object: | Right Click |
| ii. To Lock Position: | Left Click |
| iii. To select Many Objects: | Shift + Right Click |
| iv. To Group Many Object : | Tools —> Edit —> Join |
| v. Scroll button: | Zoom in, Zoom Out |
| vi. 3D view of Workspace | |
| 1. Top View: | Press + Move downward, |

2. Bottom View:
3. Left View:
4. Right View:

Press + Move upward,
Press + Move rightward,
Press + Move leftward

b. **Keyboard**

- i. To Move Object:
- ii. To Scale Object:
- iii. To Rotate Object:
- iv. To Duplicate:
- v. Delete Object:
- vi. To Group Many Object:

G+X, G+Y, G+Z
S+X, S+Y, S+Z
R+X, R+Y, R+Z
Shift + D
Shift + X
Ctrl + J

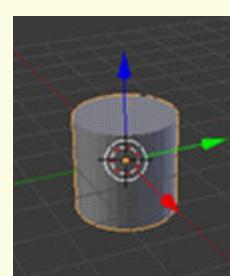
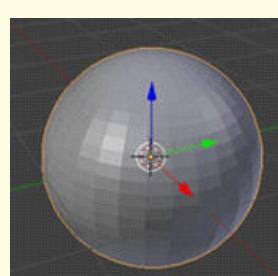
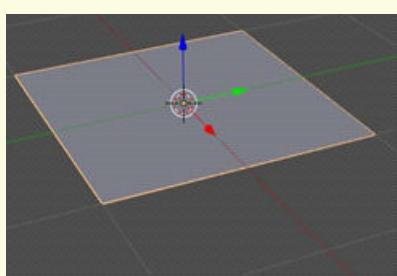
ii. **Edit Mode (Vertice, Edge, Face)**

- a. To Scale:
- b. To Lock Scaling:

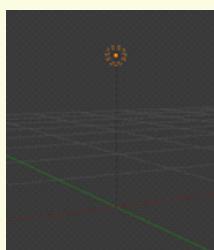
Right Click
Left Click

1. Objects type needed

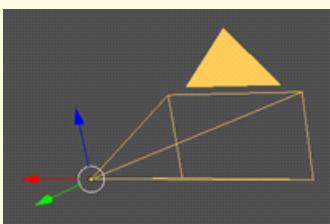
a. **Mesh (Plane, Sphere, Cylinder)**



b. **Light**



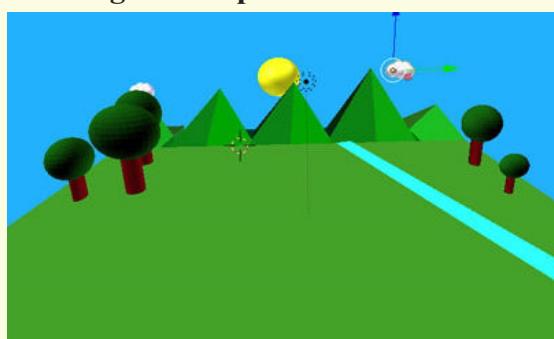
c. **Camera**



2. Changing Modes



3. Creating landscape relevant to 3D Scene



Tasks – (50 minutes)

Task 1- Create flocks(birds).

Task 2- Create a sunset environment.

Task 3- Create hills.

Task 4- Create forest below the mountains.

Task 5- Create different types of trees like conical, spherical and include in the scene.

Observations to be done by the teachers - (simultaneous)

1. Is the student performing or discussing with his/her partner?
2. Is the student finding it difficult to explore the options needed?
3. Is the student facing difficulty in handling mouse and keyboard related operations?
4. Is the student comfortable in switching between object and edit mode wherever required?
5. Is the student struggling to extrude mountains?
6. Is the student moving, scaling the trees to get the desired result; or are they happy with the design they have created?
7. Is the student interested in creating the sun?
8. Is the student very curious to create clouds and river?
9. Has the student completed the given task in time?
10. Has the student completed the given activity and also managed to apply the same concept on the previous objects created?
11. Does the student try to innovate something new into the existing task and also share it with the other classmates?

Evaluation - (10 minutes/simultaneous)

1. Understanding of the problem

- a. Understood clearly and can explain.
- b. Understood the given tasks and also other tasks.
- c. Partly understood the problem and requires help.
- d. Did not understand the required outcome.

2. Execution

- a. Did not complete the 3D Scene.
- b. Completed only the first task.
- c. Completed the other tasks.
- d. Completed and also explored the other components.

3. Understanding of the blender options (tick all that applies)

- a. Can explain the function of each required option .
- b. Can explain the need for the extrude mountains, matting, etc.
- c. Did not understand the function of options used.
- d. Was able to remember keyboard shortcuts easily.

EVALUATION RUBRICS

Assessment Skill	Beginner (25%)	Needs Improvement (50%)	Comfortable (75%)	Skilled (100%)
Discovery	The student faced difficulty in searching the required option to create a 3D world scene	The student was able to find the required option to create a 3D world scene However required help for discovering it.	The student found the required option to create a 3D world scene after searching for some time.	The student could easily find the required option to create a 3D world scene and made use of it.
Understanding/ Problem Solving	The student found it a challenge to understand the task.	The student partially understood the task.	The student could understand and partially explain the task.	The student was quick to understand the task and could explain the same with clarity
Completion of tasks and Keyboard Skills	The student could not get a running solution within the given time as the student struggled to find the right keys quickly.	The student struggled to get a running solution for the first task as the student managed to find the keys but was not comfortable in finding the combination of right keys	The student got a running solution for the first task but struggled a bit with further tasks as the student was able to comfortably find the keys with the help of peers.	The student could get the running solution for most of the tasks easily and also tried some tasks on their own as the student was able to easily find the keyboard shortcuts.
Team Work	The student was a passive member of the team.	The student was considering all the opinions of the peer team members.	The student was able to filter and go ahead with the right opinion provided by the teammates.	The student completed his/her work and also helped other team members by solving their difficulties wherever possible.

Guidelines (if required)

Connect – (2 minutes)

Episode No. 29: Super Six team trip to Big Foot



Super Six team are on a drive to visit the Big Foot at Loutolim in Ria's fathers new car.

Ria: "Nidhi, look at the greenery around. It's such a pleasant drive early in the morning."

Nidhi: "Yes, this landscape looks very beautiful during early morning hours."

Ved: "Yes, and as we move ahead in the car, all the surroundings seems to move backward."

Nidhi: "Ved, can we make a car move forward through 3D graphic software?"

Ved: "I don't know. we can ask my Pravin Uncle about it. He will surely guide us into it."

All of them enjoyed the trip to Big Foot. Upon reaching home Ved spoke to his Pravin uncle about the animation of the car movement. Pravin Uncle guided him to achieve such an output. All are set on their new mission.

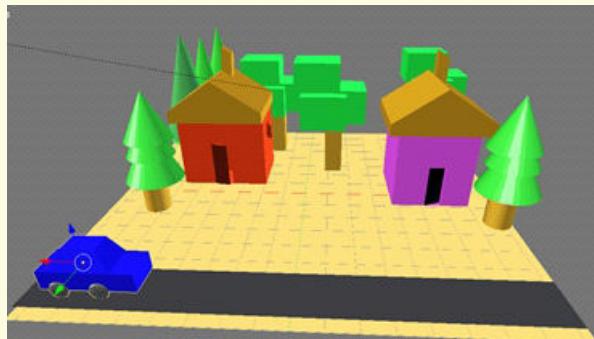
Shall we also join them in this mission?

Learning Objectives:

1. Learning to animate the objects.
2. Learning to add frames at major points and noticing that in-between frames are auto complete.
3. Learning to create a real life scene using the objects.

Expected outcome – (3 minutes)

<https://youtu.be/LB8NFUQoWTI>



Design – (4 minutes)

1. Keyboard shortcuts needed

- a. To Add Object: Shift + A,
- b. Numpad
 - i. Switch between User Persp: and Camera Persp.
 - ii. To see different views:
- iii. **Object Mode:**
 - a. Mouse
 - i. To Move Object:
 - ii. To Lock Position:
 - iii. Scroll button:
 - iv. 3D view of Workspace
 1. Top View:
 2. Bottom View:
 3. Left View:
 4. Right View:
 - b. Keyboard
 - i. To Move Object:
 - ii. To Scale Object:
 - iii. To Rotate Object:

0 key

1,2,3,4,5,6 keys

Right Click
Left Click
Zoom in, Zoom Out

Press + Move downward,
Press + Move upward,
Press + Move rightward,
Press + Move leftward

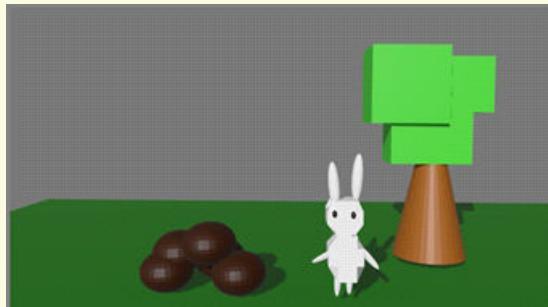
G+X, G+Y, G+Z
S+X, S+Y, S+Z
R+X, R+Y, R+Z

iv. To Duplicate:	Shift + D
v. Delete Object:	Shift + X
iv. Edit Mode (Vertice, Edge, Face)	
i. To Scale:	Right Click
ii. To Lock Scaling:	Left Click
2. To insert keyframes:	I - key
3. To delete Keyframes:	Alt + I

New aspects to learn: Adding key frames and animating objects for the scene.

Tasks – (50 minutes)

Task 1- *Create a model of the below image and animate it further.*



Task 2- *Give key frames to animate the bunny*

Task 3- *Try changing the translation(position of bunny)in the animation.*

Observations to be done by the teachers - (simultaneous)

1. Is the student able to complete the task ?
2. Is the student able to animate the model?
3. How did the student complete the objective?(struggling, completed with help, completed without help)
4. Did the student animate any other object other than given in the expected outcome?
5. Did the student try to create a different scene on his own?
6. Is the student interested in performing the activity(lack of interest, interested , excited).
7. Is the student facing difficulty in handling the mouse and the keyboard related operations?
8. Is the student comfortable in switching between object and edit mode wherever required?
9. Has the student completed the given activity and also managed to apply the same concept on the previous objects created?
10. Does the student try to innovate something new into the existing task and also share it with the other classmates?

Evaluation - (10 minutes/simultaneous)

- 1. Ease of using animation.**
 - a. Able to open Blender and understand its features.
 - b. Able to complete the task.
 - c. Struggling in completing the task.
 - d. Could not complete the task.

2. Could understand the use of various tools and keys in blender

- a. Completely
- b. Partially
- c. None

3. Ease of animating the objects (tick all that applies)

- a. Is able to complete the task.
- b. Struggled in completing the task.
- c. Could not complete the task.
- d. Partially completed the task.

4. Exploring animation in blender

- a. The student tried different animations other than what was explained by the teacher.
- b. The student did the animation with the help of the partner.
- c. The student did the animation with the help of the teacher.
- d. Struggled to create the animation.

EVALUATION RUBRICS

Assessment Skill	Beginner (25%)	Needs Improvement (50%)	Comfortable (75%)	Skilled (100%)
Discovery	It was challenging for the student to insert the keyframes and animate the models.	The student was able to insert the keyframes but struggled to animate the models.	The student could do the given activity and also explained the use of the keyframes and working of animation.	The student could finish the task with complete understanding and explore the other ways of using this learning.
Understanding/ Problem Solving	The student found it a challenge to understand the tasks and animate the models.	The student could understand the task, however was not interested in animating the models.	The student could understand the task and was inquisitive to animate the models.	The student could understand the task and also asked appropriate questions, to understand the rationale behind the task and animation.
Completion of tasks and Keyboard Skills	The student could not get a running solution within the given time as the student struggled to find the right keys quickly.	The student struggled to get a running solution for the first task as the student managed to find the keys but was not comfortable in finding the combination of the right keys.	The student got a running solution for the first task but struggled a bit with further tasks as the student was able to comfortably find the keys with the help of peers.	The student could get the running solution for most of the tasks easily and also tried some tasks on their own as the student was able to easily find the keyboard shortcuts.
Team Work	The student was a passive member of the team.	The student was considering all the opinions of the peer team members.	The student was able to filter and go ahead with the right opinion provided by the teammates.	The student completed his/her work and also helped the other team members by solving their difficulties wherever possible.

Guidelines (if required)

Connect – (2 minutes)

Episode No. 30: Salim, Raj and Ved creating animation of launching rocket video



Salim and Ved are on their way to school. Salim shows his remote control rocket to all.

Salim: “Hey! I have brought the rocket which my Abbu gifted me on my birthday.”

Ved: “Wow! It looks so good!”

Raj: “Yes, and I remember you saying that it can be controlled by a remote.”

Salim: “Right, it moves upwards.”

Raj: “Really! That's very exciting.”

Ved: “Hey Salim and Raj, do you remember the rocket that we created for our ICT class? We will try to animate it and see if we can make it move upward.”

Raj: “Yes, we could try, but you know something, the file that you sent us in our last ICT class did not work on my mobile.”

Salim: “Oh! what was the problem? I did send you the correct file.”

Ved: “Why don't we ask our ICT teacher what the problem is?”

Salim, Raj and Ved reach the school. Salim shows the working of the rocket that his Abbu brought and also tells the teacher the animation file is not opening on his mobile.

ICT teacher: “The animation file created using the 3D graphics software will not directly open on your mobile. You need to convert it into a video format. Let me help you to do it.

The ICT teacher explains to them the process to save the file in a video format which can run on a mobile too.

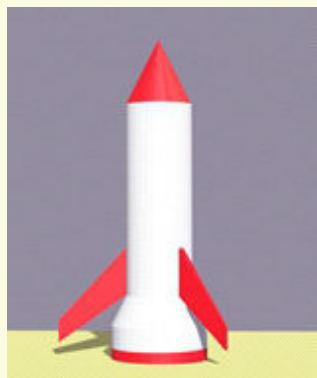
In today's class let us see how to convert an animation file in a video format.

Learning Objectives:

1. Learning to animate a model to move upwards.
2. To change the size of the model while it is animated.
3. To export/convert an animation to a video format.

Expected outcome – (3 minutes)

<https://youtu.be/QxMrl3JxY4E>



Design – (4 minutes)

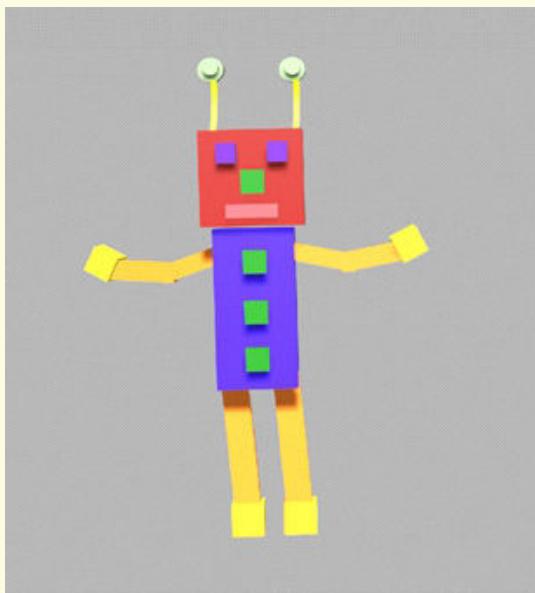
1. Keyboard shortcuts needed

- | | |
|---|-------------------------|
| a. To Add Object: | Shift + A, |
| b. Numpad | 0 key |
| i. Switch between User Persp: and Camera Persp. | 1,2,3,4,5,6 keys |
| ii. To see different views: | |
| iii. Object Mode: | |
| a. Mouse | |
| i. To Move Object: | Right Click |
| ii. To Lock Position: | Left Click |
| iii. Scroll button: | Zoom in, Zoom Out |
| iv. 3D view of Workspace | |
| 1. Top View: | Press + Move downward, |
| 2. Bottom View: | Press + Move upward, |
| 3. Left View: | Press + Move rightward, |
| 4. Right View: | Press + Move leftward |
| b. Keyboard | |
| i. To Move Object: | G+X, G+Y, G+Z |
| ii. To Scale Object: | S+X, S+Y, S+Z |

- iii. To Rotate Object: R+X, R+Y, R+Z
 - iv. To Duplicate: Shift + D
 - v. Delete Object: Shift + X
- iv. Edit Mode (Vertice, Edge, Face)**
- i. To Scale: Right Click
 - ii. To Lock Scaling: Left Click
2. To insert keyframes I - key
 3. To delete Keyframes Alt + I
 4. New aspects to learn: Animating objects for the scene.
 5. Use of animation/converting to Mp4.

Tasks – (50 minutes)

Task 1- *Create the following model and further animate it to move up and down and finally render the file.*



Task 2- Give keyframes to animate the model.

Task 3- Increase or decrease the size of the model while animating.

Task 4- Can try to animate the camera as it moves along the object with a delay.

Task 5- Try to export the animation into a video format.

Observations to be done by the teachers - (*simultaneous*)

1. Did the student give a rotation effect to the object ?
2. Is the student able to resize the model?
3. How did the student finish the object(struggled, finished with help, finished without help).
4. Was the student able to render the animation?
5. Is the student facing difficulty in handling the mouse and the keyboard related operations?
6. Is the student comfortable in switching between object and edit mode wherever required.
7. Is the student interested in performing the activity (lack of interest, interested, excited).
8. Has the student completed the given activity and also managed to apply the same concept on the previous objects created?
9. Does the student try to innovate something new into the existing task and also share it with the other classmates?

Evaluation - (10 minutes / simultaneous)

- 1. Ease of using image manipulation software**
 - a. Able to open the relevant software and understand the basic features.
 - b. Able to complete the task.
 - c. Struggled in completing the task.
 - d. Could not complete the task.
- 2. Could understand the creation of Keyframes**
 - a. Completely.
 - b. Partially.
 - c. None.
- 3. Use of tools like move, scale, rotate;**
 - a. Could use the tools to the fullest.
 - b. Could use the tools with the help of a partner.
 - c. Could use the tools with the help of a teacher.
 - d. Struggled to use the tools.
- 4. Exploration of other tools in blender, creating their own animation.**
 - a. The student could explore beyond the tools and create animation to the fullest.
 - b. Could use the tool with the help of a teacher.
 - c. Struggled to use the tools.

EVALUATION RUBRICS

Assessment Skill	Beginner (25%)	Needs Improvement (50%)	Comfortable (75%)	Skilled (100%)
Discovery	It was challenging for the student to render the animation	The student could find the options to render the animation but was not able to render the same.	The student could render the animation	The student could render the animation with complete understanding and explore other ways of using the learning.
Understanding/ Problem Solving	The student found it a challenge to understand rendering.	The student partially understood the rendering.	The student could understand and partially explain the rendering.	The student was quick to understand rendering and could explain the same with clarity.
Completion of tasks and Keyboard Skills	The student could not get a running solution within the given time as the student struggled to find the right keys quickly.	The student struggled to get a running solution for the first task as the student managed to find the keys but was not comfortable in finding the combination of the right keys.	The student got a running solution for the first task but struggled a bit with further tasks as the student was able to comfortably find the keys with the help of peers.	The student could get the running solution for most of the tasks easily and also tried some tasks on their own as the student was able to easily find the keyboard shortcuts.
Team Work	The student was a passive member of the team.	The student was considering all the opinions of the peer team members.	The student was able to filter and go ahead with the right opinion provided by the teammates.	The student completed his/her work and also helped the other team members by solving their difficulties wherever possible.

Guidelines (if required)

Connect – (2 minutes)

Episode No. 31: Easy way to store and retrieve data!!



During ICT period students are discussing with their ICT teacher

Raj :

“Teacher during the first period, the class teacher arranged us in two rows of boys and girls, counted us and noted the total count in her notebook.”

Salim:

“She also made us stand according to our school houses, blue, green, yellow and red, counted us again and noted it.”

Raj:

“Teacher, why do the class teachers collect such information from us?”

ICT Teacher Rashmi:

“She does it to keep a record of her class's students' details so that whenever the headmaster or any other official asks, it can be given”

Salim

“Teacher, what if she loses her notebook? Then those records will also be lost.”

Raj:

“Can we keep a record of such information of students on a computer?”

ICT Teacher Rashmi :

“Of course! On a computer there are applications that can help us to keep a record of such information and also work on it. I will show it to you in today's session.”

Let us learn in today's class how to organise our data on the computer.

Learning Objective:

1. Students should be able to arrange information in a table form, by placing related columns together.
2. Learning to collect information, feed it into the computer and analyse it.
3. Learning grouping of related data, and applying colours to the respective related columns.
4. Learning that the calculated columns must always be marked with a colour, is a good practice to follow.
5. Learning to arrange information in a table form by placing related columns together.
6. Learning to maintain the data and work on it for future use.

Expected outcome – (3 minutes)

<https://youtu.be/Gq8yqOGQqA8>



Design – (4 minutes)



<https://docs.google.com/spreadsheets/d/1nKBKvDtYsrD-3pXu0zGTyenjar4FfLWH/edit?usp=sharing&ouid=116606599523733045448&rtpof=true&sd=true>

(This files are to be downloaded and retained with the ICT teacher's throughout)

1. Create a table of data.
2. Keep the data as granular as possible. For example full name to be saved in 3 columns as first name, middle name, last name.
3. Make sure the date format is acceptable.(example: dd/mm/yyyy)
4. ID columns should be to the left.
5. Keep only a single value in each column.
6. Create formulas to combine columns.
7. A named range can be used in various data validations and formulas.
8. The column headers will always remain visible when there are lots of rows. The main properties of records will remain visible as you scroll to the right.
9. Create filters for all columns.
10. Columns that can have fixed values should be visible as dropdowns.

Tasks – (50 minutes)

1. Create a table of data for a company.
2. Save data of their employees, department, date of joining, designation, gender, salary, date of birth, current age, etc.
3. Make use of formulae to work on the data .

Observations to be done by the teachers - (simultaneous)

1. Is the student performing or discussing with his/her partner?
2. Is the student finding it difficult to organise the collection related data?
3. Is the student using the mouse effectively and properly to select certain ranges?
4. Is the student struggling to organise collected data in the order they are expecting?
5. Is the student moving columns to get the desired result, or are they happy with the design that matches with tables made manually?
6. Is the student interested in reorganising the data?
7. Has the student completed the given task in time?

Evaluation - (10 minutes / simultaneous)

- 1. Understanding of the problem**
 - a. Understood clearly and can explain.
 - b. Understood the given task and also other tasks.
 - c. Partly understood the problem and requires help.
 - d. Did not understand the required outcome.
- 2. Execution**
 - a. Did not complete the task.
 - b. Completed only the first task.
 - c. Completed the other tasks.
 - d. Completed and also explored the other components.
- 3. Understanding of the data organisation (tick all that applies)**
 - a. Can explain the importance of data collection.
 - b. Can explain the arrangement of collected data.
 - c. Did not understand the importance of data organisation.
 - d. Was able to arrange data at the initial stage and also move columns to rearrange in a particular order.
 - e. Was able to create named ranges separately.
 - f. Was able to find the options required to create a pivot table from the menu bar and performed the tasks related to it.
 - g. Was able to find the options required to create charts from the menu bar and performed tasks related to it.
- 4. Using the computer (tick all that applies)**
 - a. Was able to start the required application on its own.
 - b. Was comfortable with the application environment.
 - c. Was able to save the file properly.

EVALUATION RUBRICS

Assessment Skill	Beginner (25%)	Needs Improvement (50%)	Comfortable (75%)	Skilled (100%)
Discovery	The student found difficulty in organising the collected relative data.	The student was able to organise collected relative data however required help for discovering it.	The student organised relative data after observing for some time.	The student could easily organise the relative data.
Understanding/ Problem Solving	The student found it a challenge to understand the task.	The student partially understood the task.	The student could understand and partially explain the task.	The student was quick to understand the task and could explain the same with clarity.
Completion of Tasks	The student could not get a data organisation within the given time.	The student struggled to get a running solution for the first task.	The student got a running solution for the first task but struggled a bit with further tasks.	The student could get the running solution for most of the tasks easily and also tried some tasks on their own.
Interest/ Motivation	The student showed very little interest in the activity.	The student displayed a fair bit of interest in the activity.	The student participated in the activity with interest.	The student was excited about performing the activity.
Team Work	The student was a passive member of the team.	The student was considering all the opinions of the peer team members.	The student was able to filter and go ahead with the right opinion provided by the teammates.	The student completed his/her work and also helped other team members by solving their difficulties wherever possible.

Guidelines (if required)

Connect – (2 minutes)

Episode No. 32: Nidhi's Curiosity in the examination hall



(During the first terminal examination, Nidhi is sitting beside the IX standard student. She shares her observation with Ria after the exam gets over)

- Nidhi:** “During the English paper, I saw, my bench mate drew a circular pizza and he was writing numbers on it by reading a paragraph.”
- Ria:** “English paper and Pizza drawing? I so far know only pizza that we eat.”
- Nidhi:** “I also noticed during the Mathematics paper, that using some numbers in the table, he marked points on a graph paper and drew a line joining the points.”
- Ria:** “My sister studying in standard X also uses it to plot a graph. But I have seen her inserting it directly by selecting some numbers in a tabular form on the computer.”
- Nidhi:** “During the last ICT class we had also arranged information in similar tabular form. So, there must be a way to insert such a graph directly.”
- Ria:** “Let's try to do it in the ICT class with the help of our teacher.”

In today's class let us study how to insert charts directly from the available data.

Learning Objectives:

1. Learn to compare the data in a picture form and derive conclusions based upon it.
2. Learning to arrange the information collected to solve problems.
3. Using the data to create colourful images.

Expected outcome – (3 minutes)

https://youtu.be/muHNT_2VCIQ



Design – (4 minutes)



https://docs.google.com/spreadsheets/d/1UTkLiOwztZMy_hHiImCy5NWn48WraG1P/edit?usp=sharing&ouid=116606599523733045448&rtpof=true&sd=true

(These files are to be downloaded and retained with the ICT teacher's throughout)

1. Organise the data in a tabular form.
2. Functions to be used
 - a. Mean
 - b. Mode
 - c. Median
 - d. Average
 - e. Min
 - f. Max
3. Chart study.
4. Changing different chart layouts with the same data.

Task:

Task 1- Create a small table of a data having 100 records.

Task 2- Create a pie chart to represent the data.

Task 3- Try to change the chart type and chart layout.

Observations to be done by the teachers - (simultaneous)

1. Is the student performing or discussing with his/her partner?
2. Is the student finding it difficult to visualise the data?

3. Is the student struggling to remember functions/options needed to automate data they are expecting?
4. Is the student manipulating data correctly to get the desired result; or are they happy with the arrangement they get during data manipulation?
5. Is the student interested to find a solution to the given problem?
6. Has the student completed the given task in time?

Evaluation - (10 minutes / simultaneous)

1. Understanding of the problem

- a. Understood clearly and can explain.
- b. Understood the given tasks and also other tasks.
- c. Partly understood the problem and requires help.
- d. Did not understand the required outcome.

2. Execution

- a. Did not complete the given tasks.
- b. Completed only the first task.
- c. Completed other tasks.
- d. Completed and also explored other components.

3. Understanding of the data visualisation (tick all that applies)

- a. Was able to understand the need of each function used.
- b. Can understand the automation performed by each function.
- c. Was able to find the options required to create a pivot table from the menu bar and performed tasks related to it.
- d. Was able to find the options required to create charts from the menu bar and performed tasks related to it.

Using the computer (tick all that applies)

- a. Was able to start the required application on its own.
- b. Was comfortable with the application environment.
- c. Was able to save the file properly.

Notes:

1. Activities to be done in pair.
2. Pair needs to be rotated for every session.
3. Evaluation to be done individually.
4. Competitions at multiple levels will be held to evaluate the students.
5. Time limits are to be strictly observed.

EVALUATION RUBRICS

Assessment Skill	Beginner (25%)	Needs Improvement (50%)	Comfortable (75%)	Skilled (100%)
Discovery	The student faced difficulty in creating the charts	The student was able to find the option needed to create a chart however required help for discovering it.	The student found the option needed to create a chart after searching for some time.	The student could easily find the option for creating charts and also used it.
Understanding/ Problem Solving	The student found it a challenge to understand the task.	The student partially understood the task.	The student could understand and partially explain the task.	The student was quick to understand the task and could explain the same with clarity.
Completion of Tasks	The student could not get a running solution within the given time.	The student struggled to get a running solution for the first task.	The student got a running solution for the first task but struggled a bit with further tasks.	The student could get the running solution for most of the tasks easily and also tried some tasks on their own.
Interest/ Motivation	The student showed very little interest in the activity.	The student displayed a fair bit of interest in the activity.	The student participated in the activity with interest.	The student was excited about performing the activity.
Team Work	The student was a passive member of the team.	The student focussed only on his/her work and completed it	The student was doing all the tasks of the team on his/her own.	The student completed his/her work and also helped others in the team to complete their work.

Guidelines (if required)

Appendix

Notes:

1. Activities to be done in pairs.
2. Pair needs to be rotated for every session.
3. Evaluation to be done individually.
4. Competitions at multiple levels will be used to evaluate the students.
5. Time limit is to be strictly followed.

CONTRIBUTING RESOURCE PERSONS

YASH GANTHE



Software Professional The CARES project provides an opportunity for children of all sections of the society to acquire skills that were available only to the rich. The use of low-cost computers and free open source software has made this possible. The curriculum will cultivate skills in computational thinking which are essential in the future. The topics focuses on common phenomena we see in everyday life and show how they can be demonstrated on a computer. This curriculum will strengthen the understanding of various subjects, as the children will be motivated to experiment with coding. No matter which field a child takes when he/she grows up, the ability to utilize computers efficiently, will be vital.

ANAY KAMAT



Software Professional Education is about training our mind to observe the world from different perspectives and thus, be able to ask the right questions. We expand our perspectives from the books that we read, the subjects that we study, the games that we play with friends, the things that we observe in nature around us, the risks that we take, the mistakes that happen and attempts that either go successful or fail too. I consider myself fortunate to be a part of the amazing team that developed this curriculum and lesson plans. This is a book that is made by teachers for the teachers. The structure of every lesson plan tries to focus on the most important aspect of any problem solving process, "the right questions". This book is not about answers or the solutions to the given problems. It tells the stories of six students, who creatively use the school environment and their own observations to learn and solve various challenges. Here, they either seek new concepts to model solutions (like tangrams) or experience "Eureka" moments when they find answers through creative observations (like making an ellipse by stretching a circle on two sides). Just like "Super-Six", our students are free to build their own solutions and write their own code. I hope our students will relate to the

scenarios in the book, enjoy reading it and make it a part of their learning journey.

LALIT PANT



Software Professional, Teacher, Writer Lalit is the creator and lead developer of Kojo. He conducted the initial Kojo workshop for Master Teachers in Goa - to get the ball rolling for the development of this book under the Goa CARES program. Interestingly, during the writing of the book, some nice enhancements were made to Kojo. The method based picture transformation feature in Kojo was (finally!) developed - with crucial contributions from Anay Kamat from the CARES team. This feature is heavily used in the second half of the book. The timeline-based animations API was also developed during this period, in close collaboration with Anay, and will hopefully find usage in a future set of lesson plans.

Lalit's feedback on the book:

"This book builds very nicely on the ideas learned by the children using Scratch during the previous year. The first half introduces kids to text mode coding in the context of command-oriented turtle graphics. It rapidly moves forward, in a fun and engaging manner, to expose kids to many of the important ideas in coding, creative thinking, computational thinking, and problem solving. The second half of the book builds on this solid foundation to take kids deeper into the world of coding with pictures, drawings as data, and functions, while nicely maintaining the overall fun and engaging approach. I look forward to kids doing some very interesting things with the material in this book, and in the process also learning essential skills for the coming age. My best wishes to the CARES program - for this important educational initiative to be a big success".

VENKATESH PRABHU



गच्छन् पपिलिको याति योजनानां
शतान्ययपा
अगच्छन् वैनतेयः पदमेकं न गच्छती ।

An ant walking can cover hundreds of miles... but, an eagle not wanting to move will not cover any distance. This book is just another tiny step towards a goal we set for ourselves.

Software Professional I am indeed fortunate to be a part of this amazing journey with a team that is so positive and filled with enthusiasm. This book is a reflection of the shared experiences of the team. It does not attempt to present the right solution or an optimised one. In fact, it attempts to trigger a thought process of curiosity. The “super-six” collectively try to creatively seek their solutions, similarly, our students are encouraged to build their own. Sometimes they will succeed and sometimes fail. In either case, they will learn.

I hope that our students and teachers will enjoy the content of the book adding a flavour to their individual experiences.

CONTRIBUTING TEACHERS

Mrs. Maya Kamat

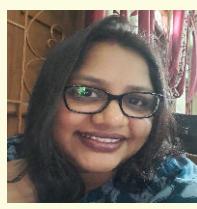


The Progress H/S,

Panaji

This book is the result of multiple iterations where every iteration was focused on continuously developing the characters, their stories, the flow of stories, the objectives of each and every lesson and the rubrics. We used the feedback from our mentors, resource persons, teachers, and students as well as feedback from the ground level execution of the Standard VI curriculum. I hope the stories of "Super-Six" would help our students to learn problem-solving through creative methods, critical thinking and design thinking process. The syllabus includes text based coding platform, 3D graphics creation and software and data handling with the use of spreadsheets.

**Mrs. Anupama
Naik Pawar**



**St. Joseph H/S,
Margao Goa**

This book consists of various concepts which would allow a child to think computationally and work towards achieving a goal through problem-solving methods and collaboration.

Every story in the book brings up a problem for which a solution can be found through proper steps and methods.

**Mrs. Arya Vinod
Dhavalikar**



**GVMs' A. J. De
Almeida H/S,
Ponda Goa.**

lessons will help students to develop creativity.

This book will provide a great opportunity for teamwork and collaboration.

A textbook plays an important role in educating the students, as textbooks are the backbone of classroom instruction. Working on the book was a wonderful experience. "Coding is today's language of creativity and all these

lessons will help students to develop creativity.

Mrs. Ruyita Matos



Don Bosco H/S,

Panjim

This book introduces gradients, linear as well as radial creates visual interest and helps move users through a design, playing around with colors and their distribution, makes the lessons more vibrant. The tangram lessons introduced in this book helps the child to develop problem-solving and logical thinking skills, perceptual reasoning, visual-spatial awareness and creativity. The lessons in the book have a good connect, and transition which will surely keep the learner focused and motivated.

**Mrs. Pallavi
Rajesh Naik**



**The New Educational
Institute,
Curchorem-Goa**

As a part of the team, I realised that PMU's motto is to design quality content, keeping the full focus on our Goan students. This book provides ingredient needed for students to express their creativity, untapped talents and dormant skills.

With the introduction of Blender, students will be allowed to combine both art and technological skills into a unique medium.

Class VII students will learn how crucial it is for them to learn to manage and organise related data and turn that data into meaningful information.

**Mrs. Sampada
Sandesh Dhupkar**



**Holy Family H/S,
Porvorim Goa**

This is a great resource for schools as well as individuals. It talks to you like a friend holding your hand on a journey to learn and explore, and in the process, makes you self-sufficient to gain further expertise and know-how by providing practical tips and links.

The focus throughout is practical, with opportunities and challenges of the classroom. This book is full of fun exercises with step-by-step guidance, making them the perfect introductory tools for building vital skills in computer programming. In short 'EASY, BREEZY AND INTERACTIVE'.

**Manjusha Sinai
Talauliker**



**Mahila And Nutan
English H/S,
Margao Goa**

Most of the lesson plans are in a logical flow of taking forward the already learnt concepts during class VI, so that students can build up further, on the previous knowledge. In class VII, we have moved from class VI block-based coding to text-based coding, 2D graphic images to 3D images. To sum up, this handbook, takes into consideration the smooth implementation of the lesson plans in rural as well as urban school setups.

**Mrs. Archana
Shashank Hudekar**



**Government H/S,
Dhaushire - Tisk,
Usgao**

Today's rapid changing domain of science and technology demands moving out from the stereotype model and engage the minds of the students towards logical thinking and computational thinking, to solve the challenges they face while learning, to work as a team (peer learning) and to develop their creativity.

This book aims to develop natural environments where the student can experiment with learning by doing through projects and teachers can develop students' creativity and cognitive ability. The storyline comes up with a problem that can be solved through experiments.

Ishwari Ajit Bacal



**Shantadurga H/S,
Sancoale Goa**

It was totally our mentor's credibility to make us work and complete our desired goal. It was a great experience working with the team members. When we work as a team we tend to learn more and upgrade ourselves.

Sonal Vaze



**Dona Leonor
Memorial H/S,
Alto-Betim**

Teamwork divides the task and multiplies the success. Everything new is a challenge but when mentored by dedicated resource persons, journey becomes easy. That is what I have experienced while contributing to VII's regular handbook development.

Nazea Bashir Shaikh



M. E. F's Fatima H/S

A picture is a visual element in Kojo. Students can create a picture, transform it, scale it, rotate it or animate it. This enables students' capabilities to functional and generative art.

**Yogesh S. Naik
Patekar**



**Drawing Teacher
Illustrator**

I think this book will help the students to learn coding in a playful manner.

Sr. Sunita Barreto HC.



**St. Joseph H/S,
Margao**

The framework of a book is the art of creating a book's outline. The new ICT Curriculum for Std. VII (Regular), will surely influence the students' competency and proficiency on Coding and Robotics through its systematic content. While I was offered an opportunity to contribute my creative works for the design and layout of the book, I experience immense joy and satisfaction. I wish all the students to make the best use of this new venture.

**Mrs. Vrushali V.
Metha**



Drawing Teacher

Magic of coding, with all subjects incorporated in one.

Ms. Anar Sangodkar



**Lecturer
Govt. Polytechnic
Bicholim**

Contributed towards proof reading of the manuscript.