5.0 Module 1
Fundamentals of Animation:

18 hours (12 in school and 6 at home) = 18 credits

Design Skills

Design Sensitivity
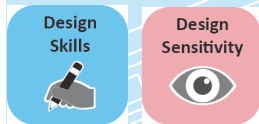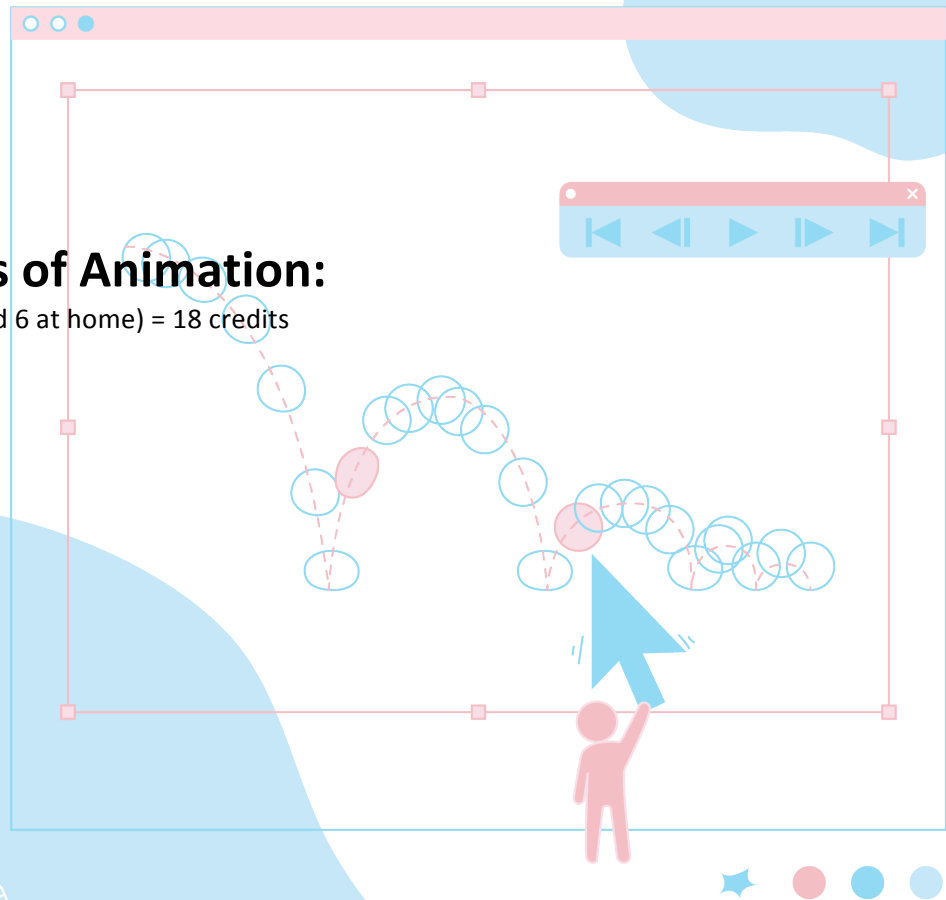
Exposure 1	**Exposure1:** Introduction to Animation
Exposure 2	**Exposure 2:** Animation Mediums
Exposure 3	**Exposure 3:** Character Design and Story Board
Exposure 4	**Exposure 4:** An animation case study project

Overall Task	**Fundamentals of Animation**
Task 1.1 (at School + Home)	- Types of Animation
Task 1.2 (at School + Home)	- Animation Principles
Task 1.3 (at School)	- Animation Mediums
Task 1.4 (at Home)	- Character Design
Final Output	- Make a presentation of all the work to the class
	+ Reflections, Self Assessment and References

5.0 Module 1

Fundamentals of Animation
18 hours (12 in school and 6 at home)

Design Skills

Design Sensitivity
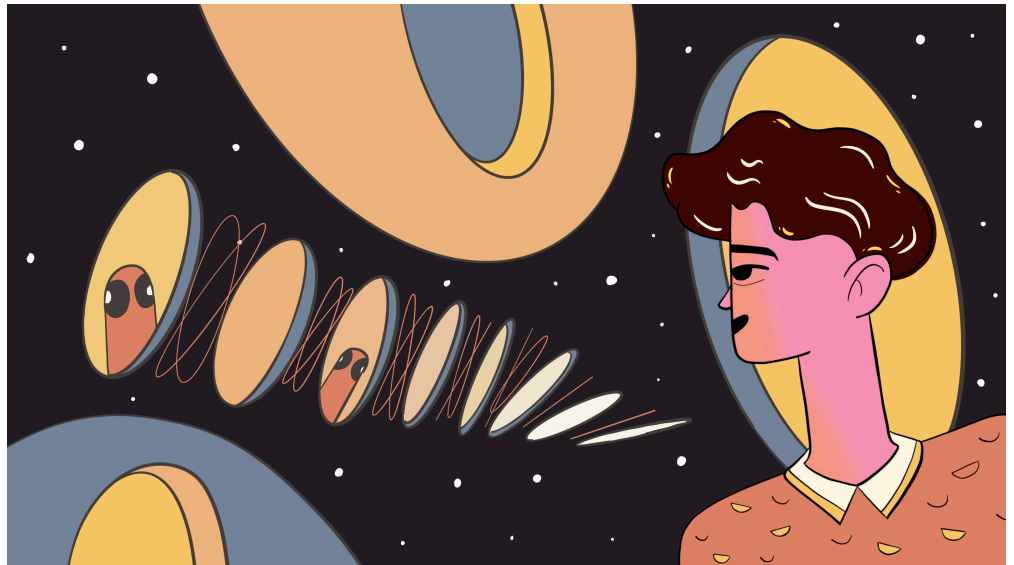
Introduction

When images created by drawing, puppets, models or 3D renderings are displayed successively one after another, it creates an illusion of movement and this technique is called animation.

There are several types of animation – hand drawn tradition animation, cut-out animation, puppet animation, digital animation, etc.

Aim of the Module

To expose school students in Grade 10 to basic fundamentals of animation techniques.

The module will cover the basics of the (a) Types of Animation, (b) Pulse of Animation, (c) Animation Principles , (d) Animation Mediums, (e) Character Design. (f) Creating Story Board and (g) a small animation film project

This should create an interest in this field, nurture their sense of curiosity, motivate them to explore and discover this creative field.

At the end of this module, the students should have an understanding of this creative field.

Place:

Place: Task 1.1a, Task 1.2a, Task 1.3a – done at both school and at home

Grouping:

Grouping: Class tasks are done in groups of 3-4 and Home tasks are individually
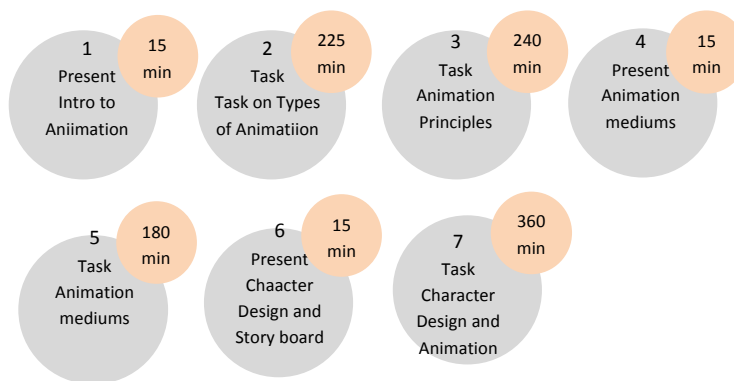
Equipment:	**Equipment:** Smart Mobile phone with Camera, Notebook/Sketchbook for sketching, Stationary (Pencils, Pens, Colours, Tracing paper, Black Ink and brush or brush pen, colour pens), students may use digital devices like computers or tablets (if available, but not necessary).
Exposures:	**Exposure1:** Introduction to Animation **Exposure 2:** Animation Mediums **Exposure 3:** Character Design and Story Board **Exposure 4:** An animation case study project

Task Sequence:

Task 1.1 + Task 1.2 + Task 1.3 + Task 1.4 + Task 1.5

1 Present Intro to Aniimation — 15 min	2 Task Task on Types of Animatiion — 225 min	3 Task Animation Principles — 240 min	4 Present Animation mediums — 15 min
5 Task Animation mediums — 180 min	6 Present Chaacter Design and Story board — 15 min	7 Task Character Design and Animation — 360 min	

Design Thinking & Innovation Process involvement:	This task involves the following phases of the DT&I Process: Phase 1. Observe/Empathise/Research (observation of animation medium Phase 2. Understand/Analyse/Define (what to animate) Phase 3. Ideate/Alternate/Create (explore creative animation alternatives) Phase 4. Build/Prototype/Detail (doing an animation project) Phase 5. Evaluate/Reflect/Implement (feedback from others)
Mapping SDG Goals:	The following SDG goals need to be considered while solving this task. While documenting people and events, do think of gender equality and reduced inequalities and concern for life on our planet.

5 GENDER EQUALITY 10 REDUCED INEQUALITIES 12 RESPONSIBLE CONSUMPTION AND PRODUCTION 14 LIFE BELOW WATER 15 LIFE ON LAND

Task 5:	**Task 1 = 5.1 + 5.2 + Task 5.3 + Task 5.4 + Task 5.5** School Hours: 12, Home hours: 6

Task 5.1

Task 5.1 + Task 5.1a + 5.1b:
School Hours: 2, Home hours: 2
Done individually at School and Home

Topic title:

Ways of Animating

- The students will explore the following ways of animation:
A. Flipbook Animation
B. Pose to Pose Animation

Task 5.1a

Task 5.1a:
Home Hours: 2, Done individually at School

Topic title:

Flipbook Animation

- The students will explore the successive display of images one after another with a bit of change so that it creates an illusion of movement.
- This method of drawing images one after another is also known as **straight ahead animation**.
(Ref: https://www.dsource.in/course/flipbook-animation)

1. Make flipbook of around 20 pages of size 10 cms x 10 cms (you can get 6 sheets of this from one A4 size paper and staple it to one side)
2, Start with a dot on the last page
3. Make incremental changes on every page
4. After you have completed, flip the book from back to front to see the images animate
5. Now turn the book the other way around and do another set – maybe a bit more complex than the first one
Output 5.1a: A Flipbook with an exploration of straight ahead animation

Task 5.1b

Task 5.1b:
Home Hours: 2, Done individually at Home

Topic title:

Pose to Pose Animation

In pose to pose we draw the first key pose and then the extreme key pose and then we come back and do the in between frames. If key poses (key drawings) are strong, then the animation will look rich and believable.
(ref: https://www.dsource.in/course/pose-pose-animation)

1. Make flipbook of around 20 pages of size 10 cms x 10 cms (you can get 6

sheets of this from one A4 size paper and staple it on one side)

2, The key frames are straight face, angry face, smiley face, puzzled face and sad face

3. Draw these key frames on these pages 1, 5, 9, 13, 17 with 3 pages in-between

4. Now complete the in between pages (for example, the straight face incrementally becomes an angry face in 4 steps)

5. After you have completed, flip the book from back to front to see the images animate

Output 5.1b: A Flipbook with an exploration of pose to pose animation

Task 5.2

Task 5.2 + Task 5.2a + 5.2b:
School Hours: 2, Home hours: 2, Done individually at School and Home

Topic title:

Animation Principles

The students will explore the following two principles of animation:

Squash and Stretch: The objects or characters are exaggerated

Timing and Spacing: The number of frames between two poses, and how those individual frames are placed decides the pace or the pulse of the animation.

Understanding the two principles of animation are done through these two tasks:
A. Bouncing Ball
B. Pendulum

Task 5.2a

Task 5.2a:
Home Hours: 2, Done individually at School

Topic title:

Bouncing Ball

A rubber ball tends to flatten if it bounces and hits the ground – A Squash Principle. The ball will 'Stretch' in the direction it's going once it starts bouncing upwards again. Squash and stretch help in bringing flexibility, sense of weight and volume in the animation adding more life and energy in the motion.
(ref: https://www.dsource.in/course/principles-animation/squash-and-stretch/ball-bouncing-example)

1. Take one A4 size paper

2, Start with a rubber ball being dropped from a height slightly at an angle

3. First draw the trajectory of the ball as it bounces two or three times

4. Now draw the shape of the ball at key positions (It would stretch on the top and squash at the bottom)

5. It will also move slowly at the top and bounce faster at the bottom (so one needs to draw more number of frames at the top and less number of frames at the bottom)

6. Now redraw this on a flipbook with 20 pages (as in Task 1.1a)

Output 5.2a: Bouncing ball animation frames shown on a A4 size paper + on Flipbook

Task 5.2b

Task 5.2b:
Home Hours: 2, Done individually at Home

Topic title:

Pendulum

"Timing" refers to the number of frames or drawings in a particular action. So it also determines the speed of the action. When you increase the number of drawings between two extreme drawings, the action will be slow and run for a longer time; and when the number of drawings in between the extremes is fewer, the action will be faster and would take less time.

This way, timing plays a very crucial role in establishing a character's nature, personality, mood and emotion.
(ref: https://www.dsource.in/course/principles-animation/timing)

This principle of timing is understood through the following task of drawing the animation of a pendulum:
1. Take one A4 size paper
2, Draw a pendulum (a ball hung on a string) in the middle
3. Draw its extreme positions - both on the left as well as on the right
4. Now draw the in between positions of the pendulum such that it moves slowly at the ends but would move faster in the middle
5. To achieve this, you'll need to draw more frames at the ends and less frames in the middle
6. 6. Now redraw this on a flipbook with 20 pages (as in Task 1.1a)
Output 5.2b: Pendulum animation frames shown on a A4 size paper + redrawn on flipbook

Task 5.3

Task 5.3 + Task 5.3a + 5.3b:
School Hours: 4 + 4
Done in groups of 3-4 at School

Topic title:

Animation Mediums

These are some of the types of animation:
A. 2D drawn animation (you have been exploring this in the previous tasks)
B. 3D Animation (object animation – usually done digitally using computers)
B. Stop motion (live action shot frame by frame)
C. Claymation or Puppet Animation (clay models are used for animation)
D. Cut outs (paper or cardboard cut-outs are used for animation)
E. Digital drawn (computers are used for animation)
F. Motion Graphics (Graphic Design involving Text and Graphics is animated)
G. Musical Animated Videos (Animated video, text, graphics along with music)

We'll explore three of the above methods:
A. Stop Motion Animation and
B. Motion Graphics
C. Music Animated Video

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Task 5.3a

School Hours: 4, Done in groups of 3-4 at School

Topic title:

Stop-Motion Animation

In Stop Motion Animation objects are manipulated in small increments with a bit of change successively one after another. Each of these successive images are photographed and when played back, the objects will be seen in motion.
Its possible to do Stop Motion Animation with all kinds of objects:
A. Use of Puppet – called Puppet Animation
B. Use of Clay/Plasticine - Claymation or Clay Animation
C. With Paper, Cloth and other 2D Materials – called Cutout Animation
D. With live actors – known as Pixilation

1. Think of a funny or surprising event involving objects and living beings
2. Convert the event into a story board with visuals and text much like the frames in a comic book
3. You need a model of these objects and beings
4. Find a flat surface on a table or on a wall (could be white/black board)
5. Play the event from beginning to end by moving the objects on the surface with small changes. (Remember that if the object has to move fast then its position has to change a lot compared to the object moving slowly + on wall surfaces, the objects need to be stuck with sticking tape)
6. Fix your mobile on a stand or keep it in a fixed position and shoot frame by frame with each successive movement
8. You might want to do a few trials until you get it right
9. Play the images one after another – the objects will animate
10. Adding sound effects is optional
Output 5.3a: Stop Motion animation played back on the mobile or computer

Task 5.3b

Task 5.3b:
School Hours: 4, Done in groups of 3-4 at School

Topic title:

Motion Graphics

Motion Graphics involve animating text, drawings, graphics and photos. These could be done manually frame by frame or by using a digital software application. These are usually seen as
A. as title graphics for tv shows, films, documentaries
B. in advertisements on TV or social media,
C. In educational films
D. In art films/videos

1. Think of a title graphics for your school/classroom/your project/an event that needs to be posted on social media
2. The title graphics are made of text + graphics
3. Figure out how the text is going to be displayed along with its entrance and exit

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options as well as its movement. Figure out how the graphics and how its going to be displayed with movement

4. Convert the event into a story board with the frames made of graphics and text

5. You could do this either manually or digitally

If its manual, you'll need to have printout of text, cut it and move it as you need on a surface. The same with the graphics. The background will need to be planned. If it is digital, then both text and graphics are moved using a software application.

6. You might want to do a few trials until you get it right

7. You could add music to the animation

Output 5.3b: Motion Graphics animation played back on the mobile or computer

Task 5.4a

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Task 5.4a:
Home Hours: 3, Done individually at Home

Topic title:

Character Design

Characters are the most important part of a story. They are the key elements in a animated film and the audience identifies themselves with them.

So the character will have the following:

1. Attributes - their characteristics

2. Proportion – exaggerating some of the features

3. Expressions- their personality

4. Poses and Gestures – the poses and gestures of the characters behaviour

5. Colours and shades – these add life to the character

(**Reference:** https://www.dsource.in/course/character-design-animation)

You could draw characters from your family, from your textbook or from your imagination – it needs to be your own original creation

The character could be based on observation- People at a bus stop/ street markets/ school sports

1. Write a 5-7 sentences about your character to elaborate on the character's unique qualities

2. Draw your character in as many poses (with body), gestures (with hands, head and feet) and with as many expressions (with face)

3. Draw at least 5 variations for each of them

4. Use 3 numbers of A4 size sheets to draw your character

Output 5.4a: Drawing of the character with different poses and expressions on 3 A4 size sheets

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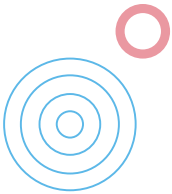
Reflection:

Questions to ponder:
- Have you like the techniques of animation and share them with others?
- Would you like to tell stories about your experiences through animation?
- Can you make a music video with interesting animations?

Assessment:

Assessment Criteria (Task 1a + 1b + 1c) – Assess yourself:
- The Flipbook with exploration of straight ahead animation was done very well. (Individual Assessment, Task 5.1a)

☐ *Beginning*   ☐ *Developing*   ☐ *Promising*   ☐ *Proficient*   ☐ *Excellent*

- The Flipbook with exploration of pose to pose animation was done very well. (Individual Assessment, Task 5.1b)

☐ *Beginning*   ☐ *Developing*   ☐ *Promising*   ☐ *Proficient*   ☐ *Excellent*

- The Bouncing ball animation frames shown on paper + Flipbook was done very well. (Individual Assessment, Task 5.2a)

☐ *Beginning*   ☐ *Developing*   ☐ *Promising*   ☐ *Proficient*   ☐ *Excellent*

- - The Pendulum animation frames shown on paper + Flipbook was done very well. (Individual Assessment, Task 5.2a)

☐ *Beginning*   ☐ *Developing*   ☐ *Promising*   ☐ *Proficient*   ☐ *Excellent*

- The Stop Motion animation played back on the mobile/computer was done very well. (group Assessment, Task 5.3a)

☐ *Beginning*   ☐ *Developing*   ☐ *Promising*   ☐ *Proficient*   ☐ *Excellent*

- The Motion Graphics animation played back on the mobile/computer was done very well. (group Assessment, Task 5.3b)

☐ *Beginning*   ☐ *Developing*   ☐ *Promising*   ☐ *Proficient*   ☐ *Excellent*

- The Stop Character design was done very well. (Individual Assessment, Task 5.4a)

☐ *Beginning*   ☐ *Developing*   ☐ *Promising*   ☐ *Proficient*   ☐ *Excellent*

Other References:

Other suggested References:
1. Introduction to Animation and its fundamentals
https://www.dsource.in/animation-design

2. Case Study – The spider and the Fly
https://www.dsource.in/case-study/spider-and-fly