

REACHING THE AGE OF ADOLESCENCE

**(CLASS –VIII)
PART - I**



A CBSE School Initiative

ACKNOWLEDGEMENT

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PREFACE

This novel is an endeavour to introduce the concept of art integration with science. It advocates innovation for good pedagogical, research-based and impactful learning.

Through this novel we intend to bring to light the various myths and misconceptions related to personal hygiene in boys and girls. The visuals, characters and dialogues will provide an insight into how to deal with these concepts and spread awareness about them.

It will enable the learners to understand the process of menstruation, hygiene and growth and the importance of being sensitive and supportive towards each other.



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To access the comic book and additional interactive digital content, download DIKSHA app from Google Play Store on your Android smartphone or tablet.



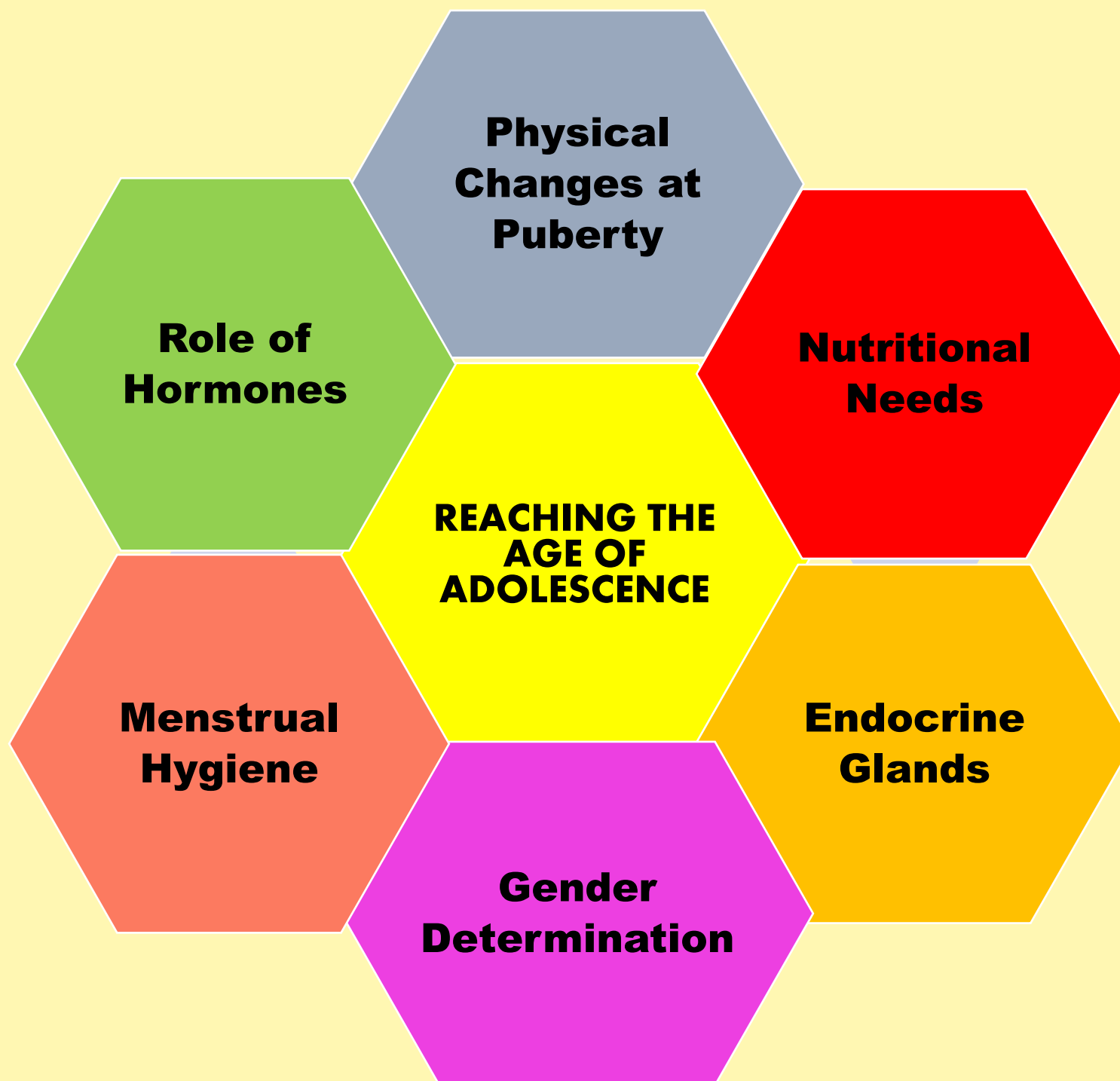
LEARNING OUTCOMES

- Students will understand the concept of puberty.
- Students will be sensitised about various changes in the body during adolescence.
- They will understand menstrual cycle and reproductive phase in females.
- They will learn about different types of endocrine glands, the hormones secreted by each of them and their role in human body.
- They will be aware of their nutritional needs and harmful effects of taking drugs if not prescribed by a doctor.
- They will also learn about chromosomes and determination of gender in human beings.
- They learn the values to be empathetic and considerate.
- Students will understand the importance of personal hygiene.
- They will feel confident about discussion of such matters with their friends, teachers and parents.

CONTENTS

S. NO	TOPIC	PAGE No.
1	STORYBOARD	1
2	CHARACTERS	2
3	REACHING THE AGE OF ADOLESCENCE – PART I	3-30
4	REACHING THE AGE OF ADOLESCENCE – PART II	31-47
5	LET'S DISCUSS	48-50
6	WORD SEARCH	51
7	CROSSWORD PUZZLE	52
8	GLOSSARY	53-56
9	DISCLAIMER	57
10	SUMMARY	58

STORY BOARD



CHARACTERS



RADHIKA



ANANYA



SUHANA



TANYA



TEACHER

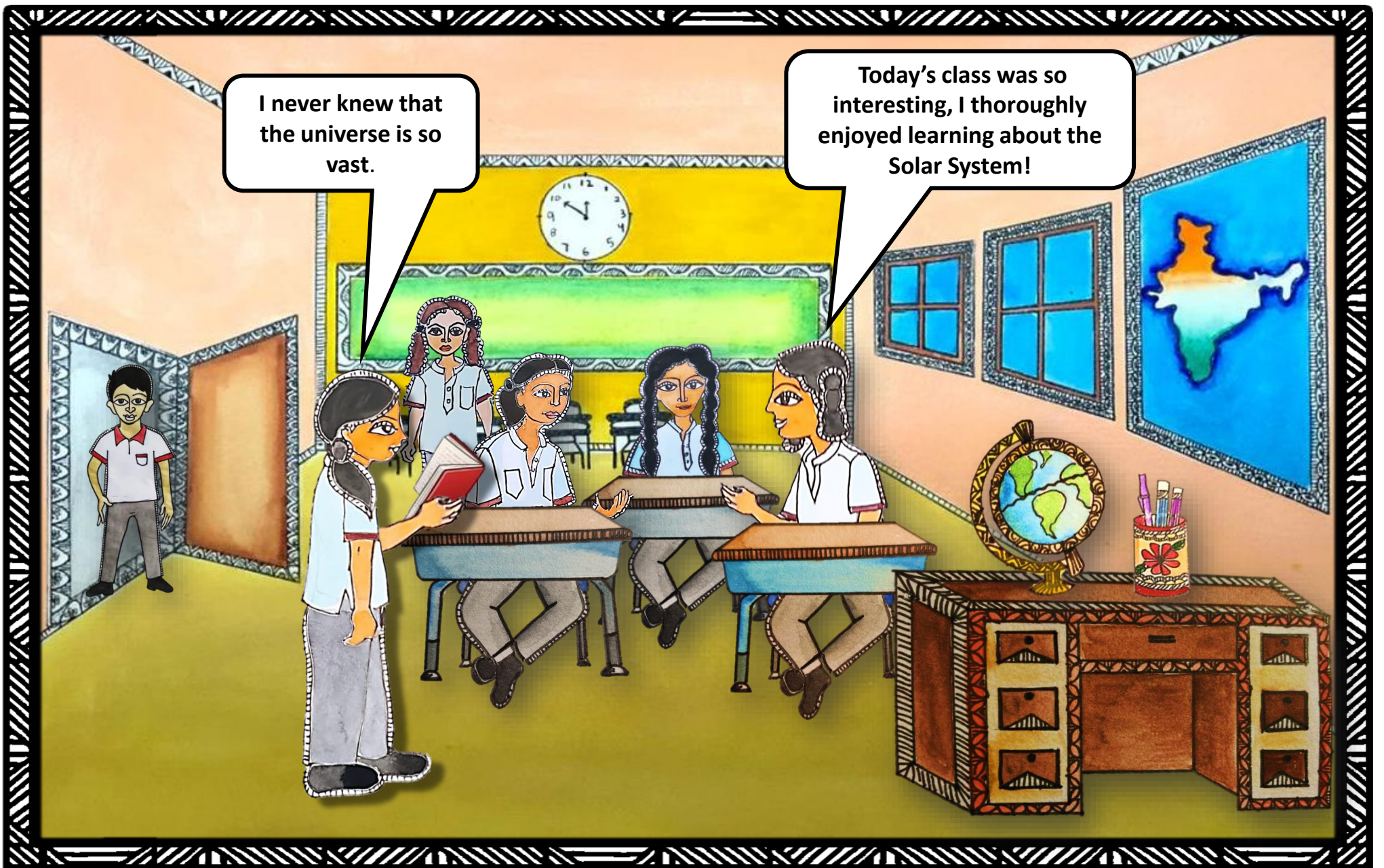


NURSE

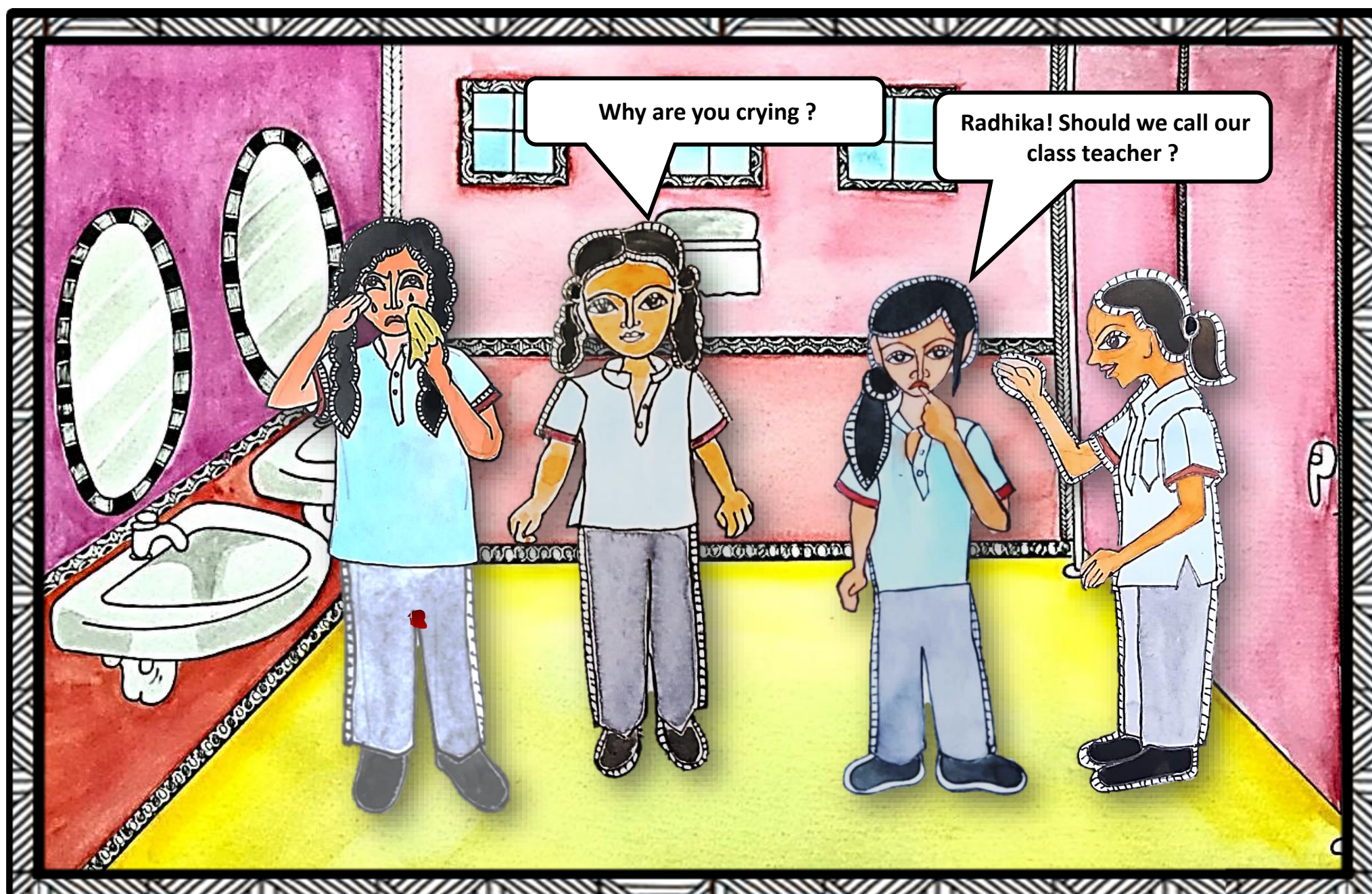


DR. CHATTERJEE

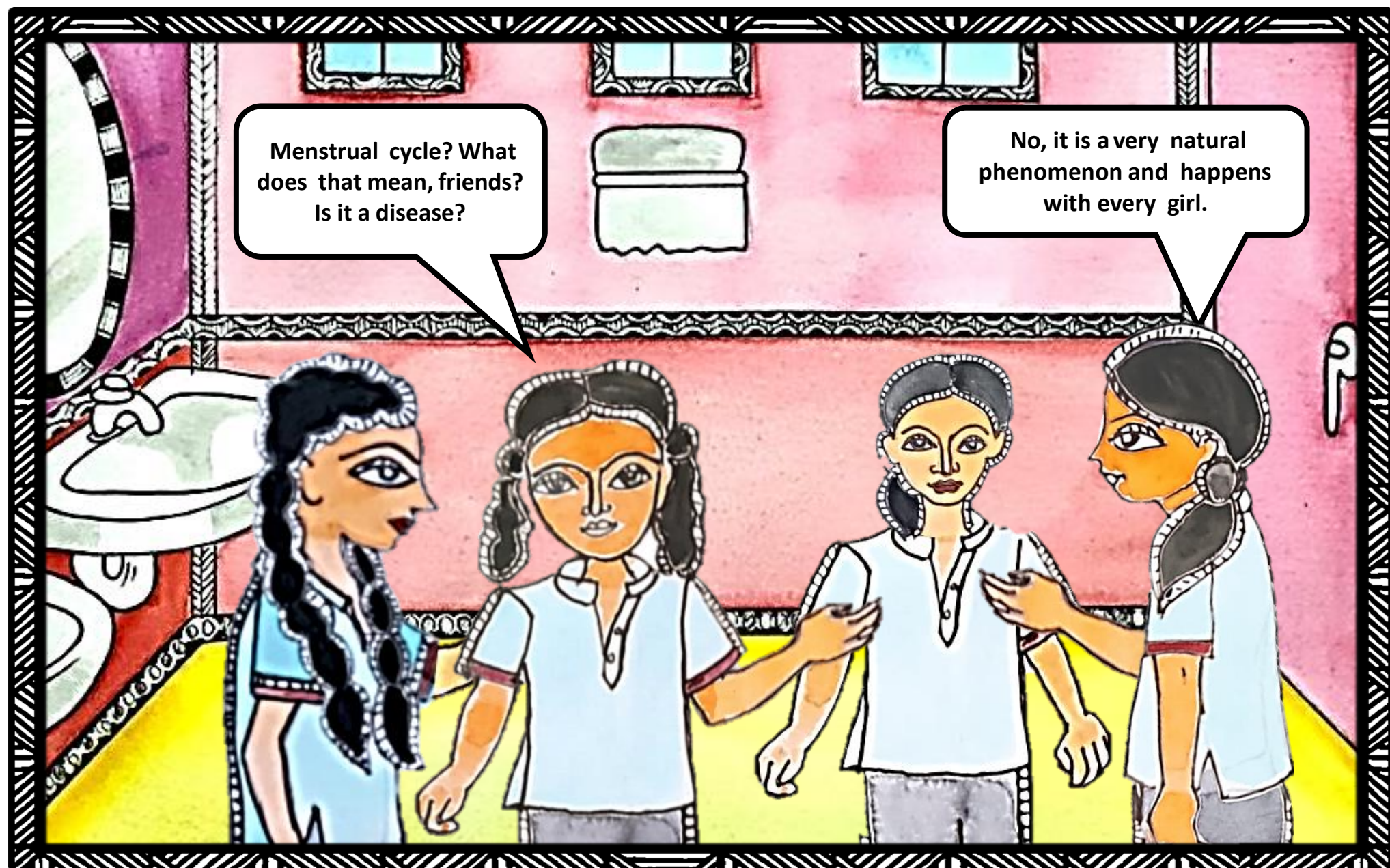
Ananya, Radhika, Suhana and Tanya are sitting together in a classroom and conversing enthusiastically about what they had learnt in the previous class. One of the girls, Radhika, is feeling very uncomfortable and wants to be excused to go to the washroom.



Radhika realises that her trousers is stained with blood and is horrified and aghast to witness the situation. She urgently calls for her friends.



Ananya calms her down and gives her reassurance that she is fine and her situation is normal. Ananya then tells her that she has got her first menstrual cycle and gives her a sanitary pad, teaching her how to use it properly.



Along with all her friends Radhika goes to the medical room where she confides in the nurse what had just happened. The nurse calls their class teacher and together they gently explain the process of menstruation to Radhika and her friends.



Radhika, what happened to you is normal. When a girl is growing up, her body goes through some physical changes and menstrual cycle is just one of them.

The onset of menstruation is menarche and starts between the age of 11 to 14 years.



A menstrual cycle occurs approximately every 28 days. Most menstrual periods last for 3 to 7 days.



It signifies the ability in females to reproduce and it starts from the age of 10-12 year. The ova begin to mature with the onset of puberty. One ovum matures and is released by one of the ovaries once in about 28 – 30 days. During this period, the wall of uterus becomes thick so as to receive the egg. In case it is fertilized, it results in pregnancy.



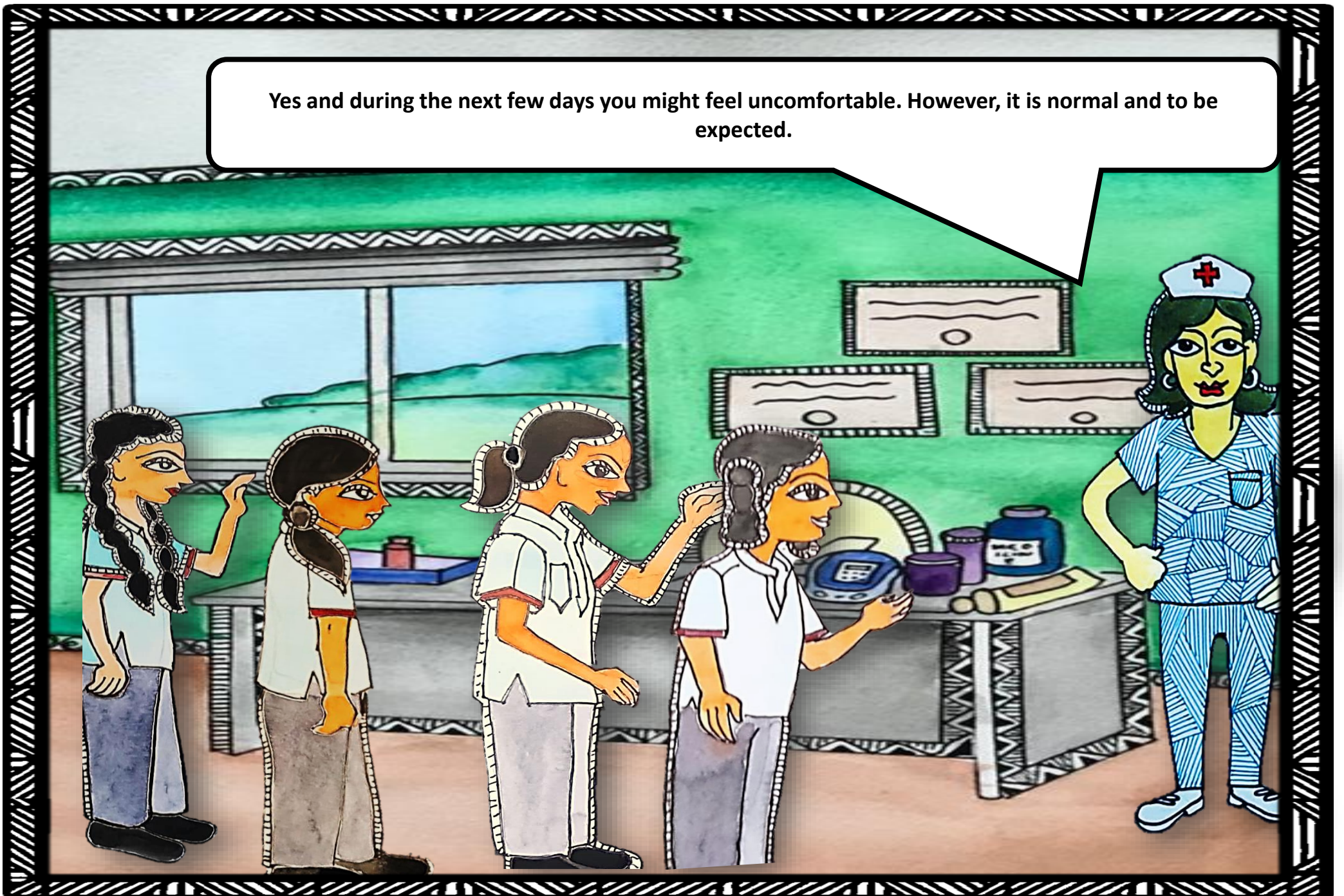
Ma'am, what happens if fertilization does not occur?



If fertilization does not occur, the released egg and the thickened lining of the uterus along with its blood vessels are shed off. This causes bleeding in women which is called menstruation.



Yes and during the next few days you might feel uncomfortable. However, it is normal and to be expected.



Ma'am what kind of diet would you suggest?

My dear, as I already told you, this is a natural phenomenon, but with good diet and proper care of your emotional and mental well being you will get used to it.



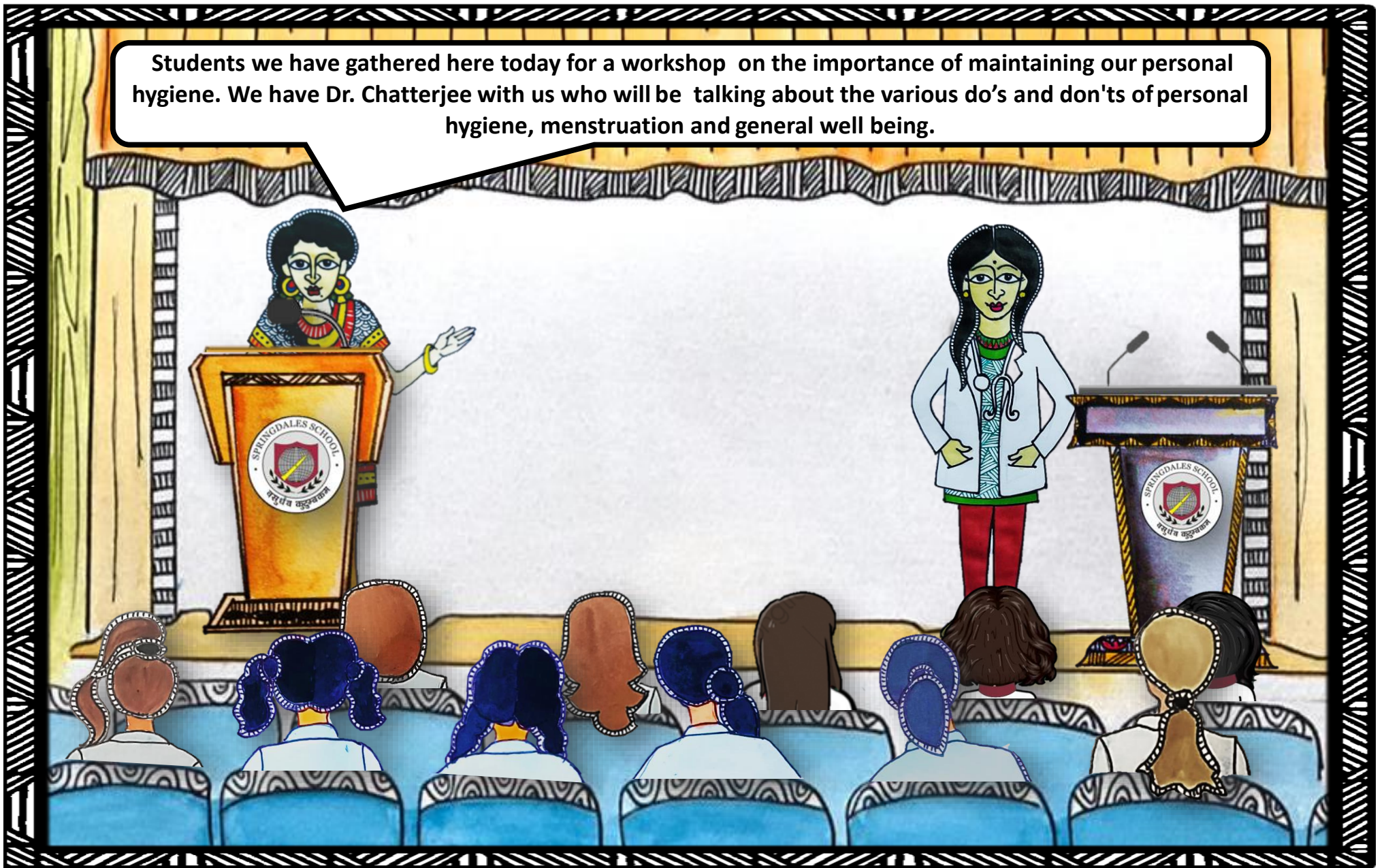


Girls are relieved and go back to the class. There they are teased by some students who don't understand what had happened. The girls feel embarrassed and ashamed and sit quietly in a corner not knowing how to respond.

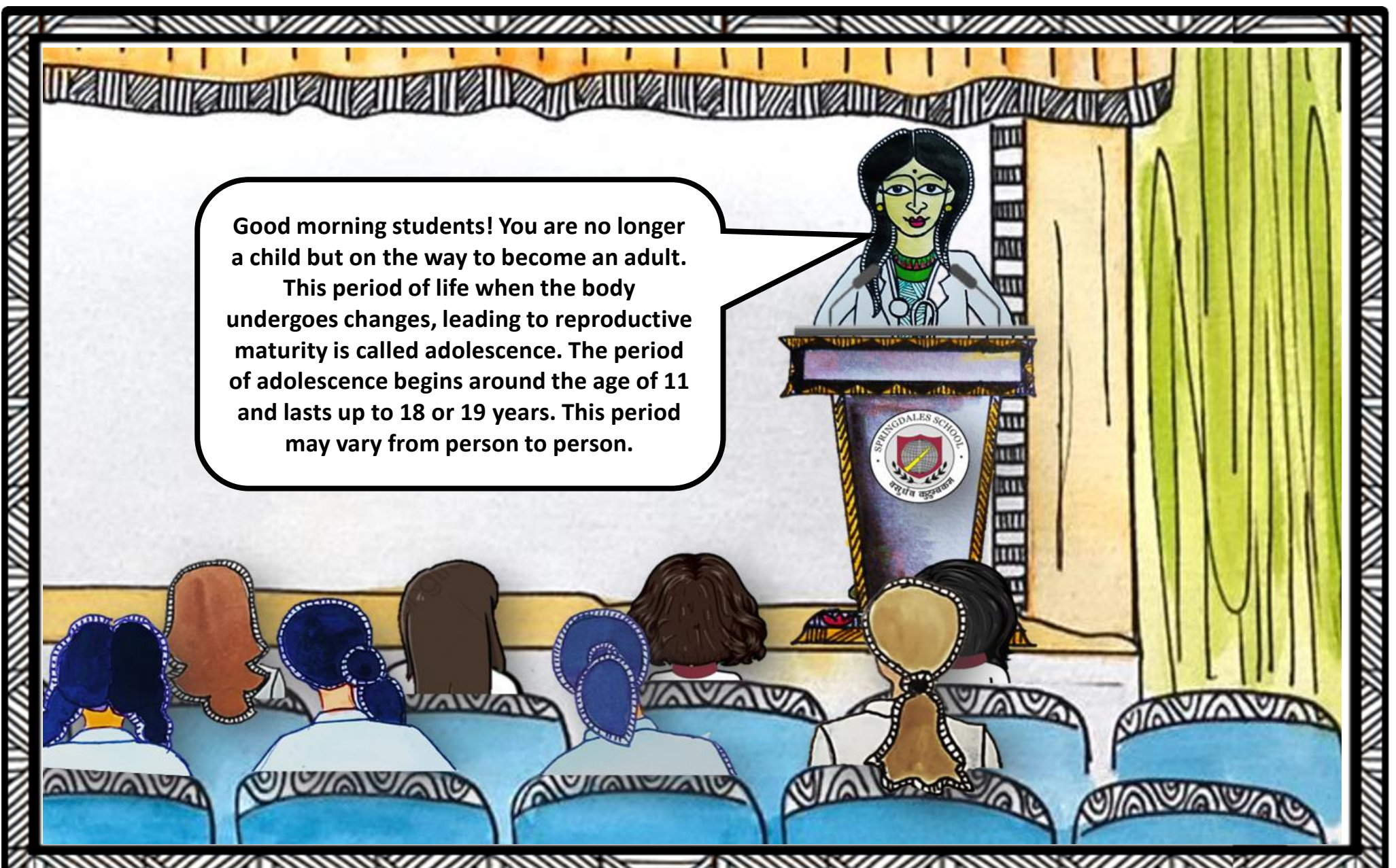


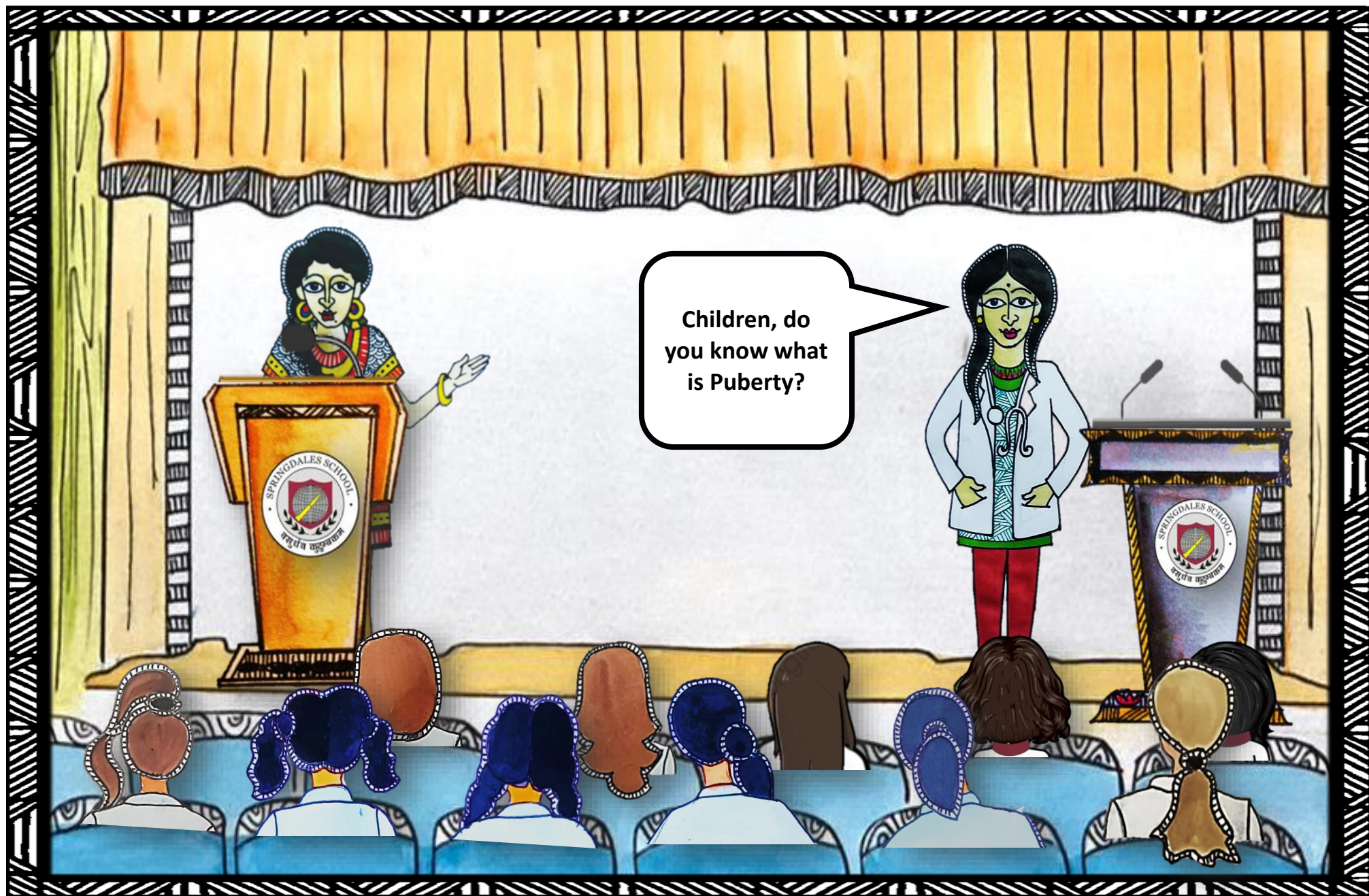
Workshop for female students is in progress where Dr. Chatterjee, a renowned gynecologist addresses the students on the importance of menstruation and personal hygiene. She makes them aware of various methods of sanitation, the need to change their sanitary pads frequently and proper ways of disposing used sanitary products.

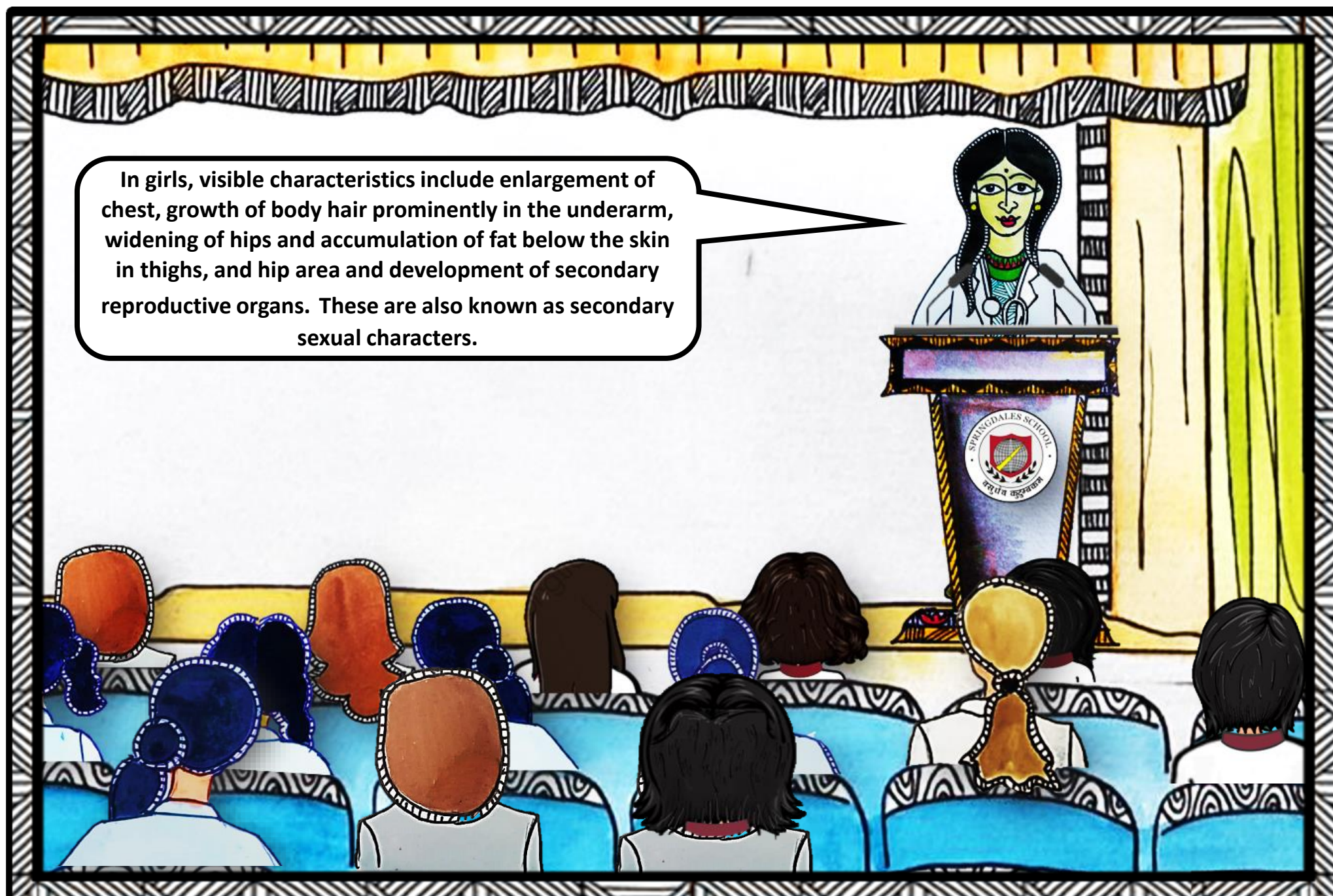
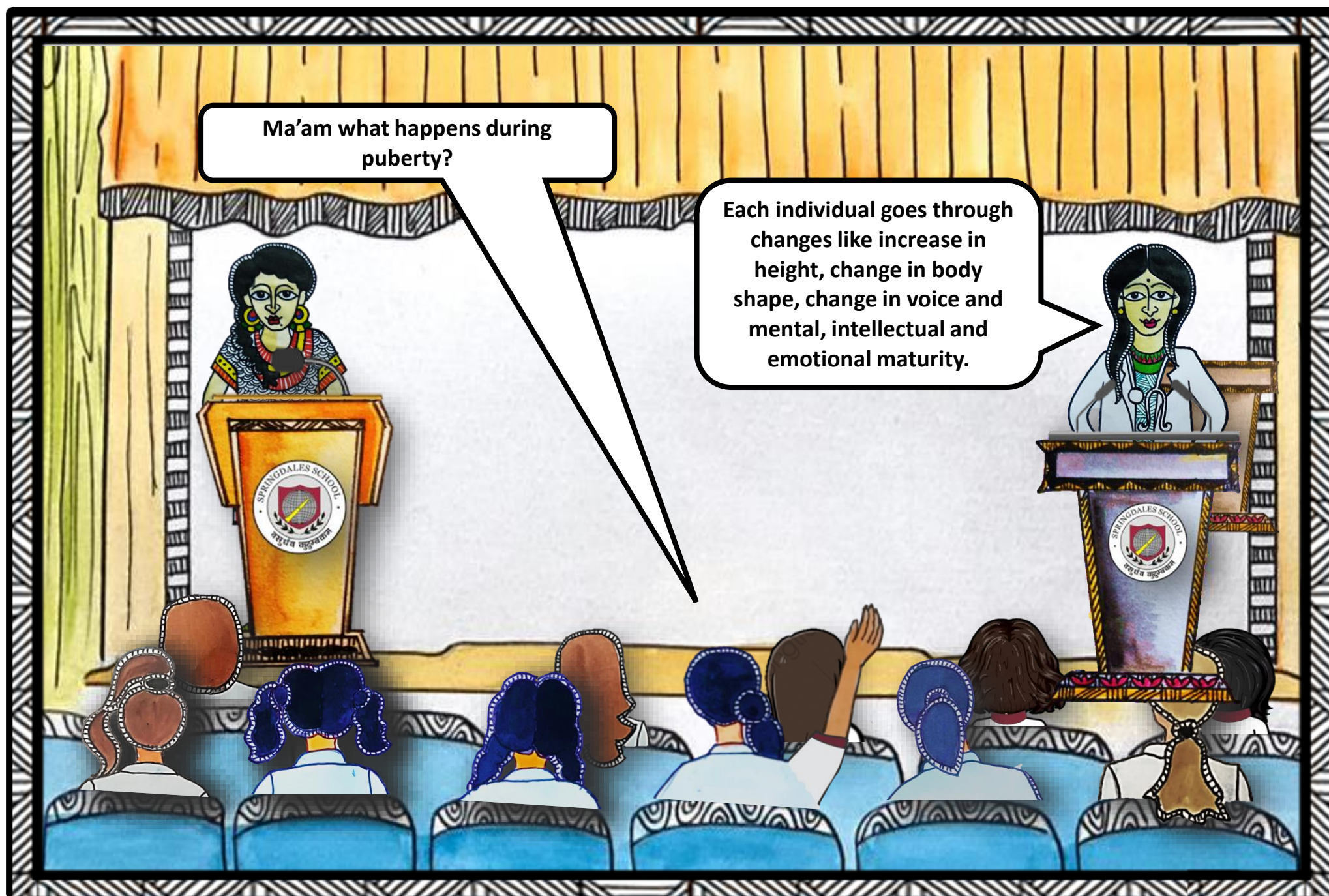
Students we have gathered here today for a workshop on the importance of maintaining our personal hygiene. We have Dr. Chatterjee with us who will be talking about the various do's and don'ts of personal hygiene, menstruation and general well being.

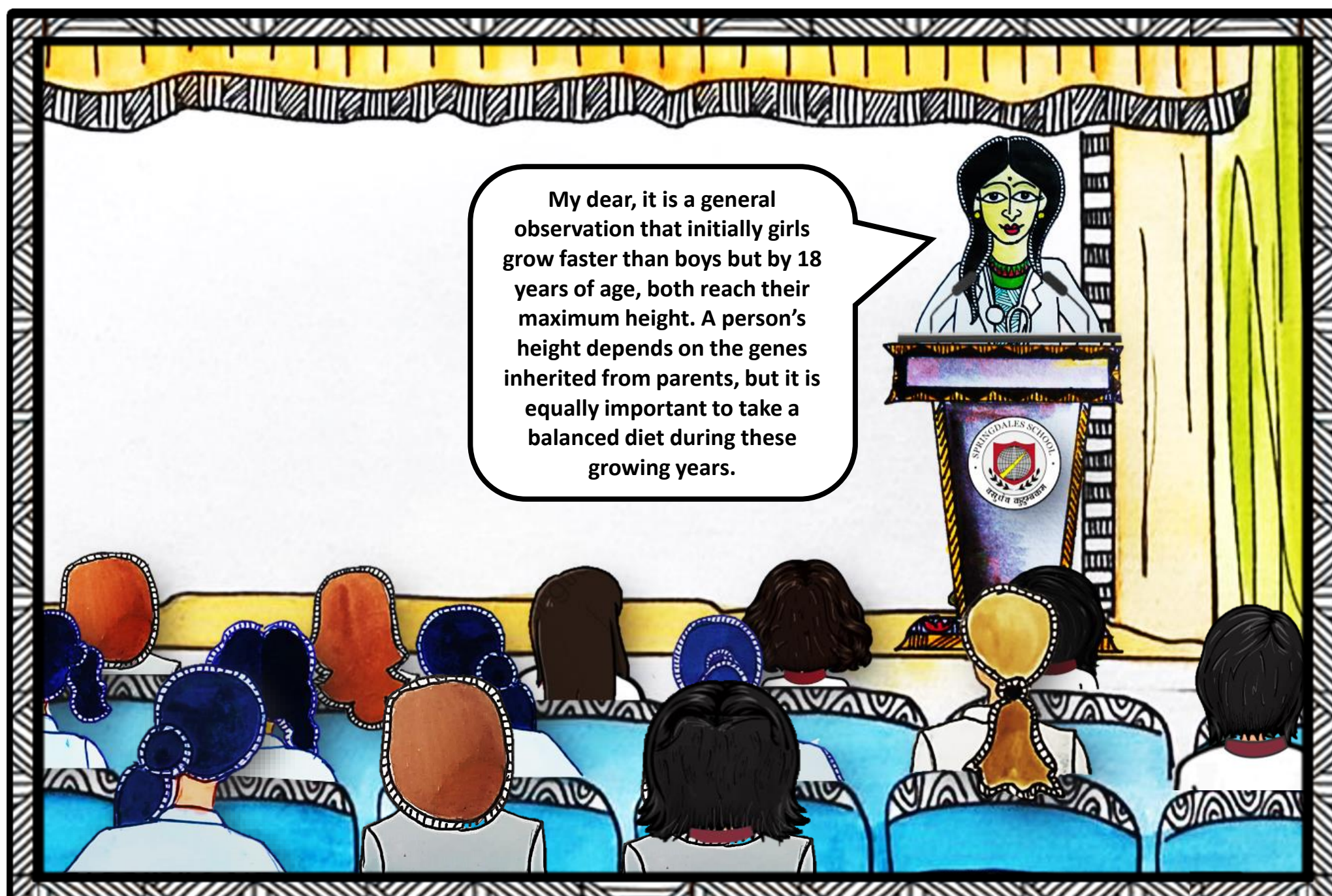
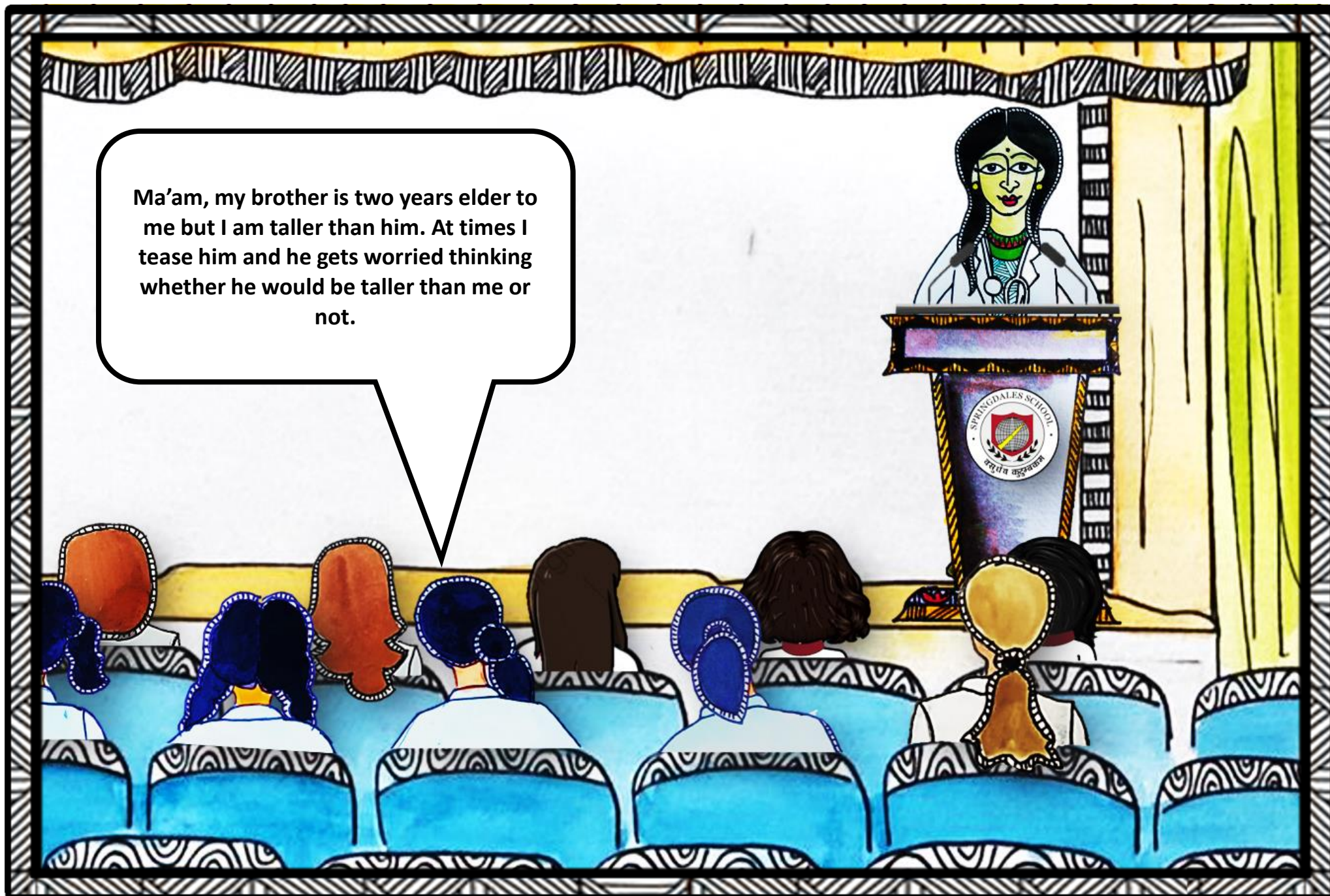


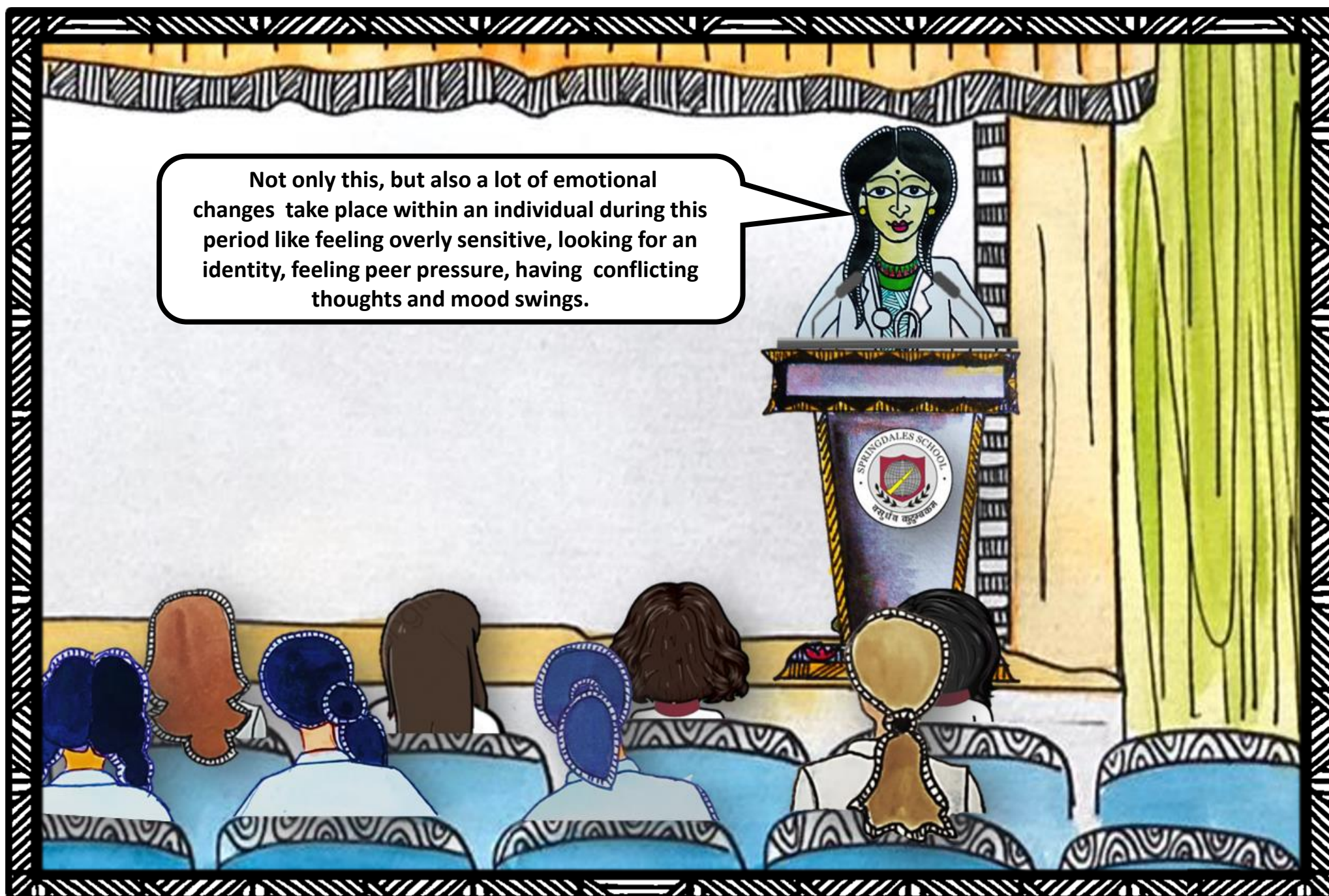
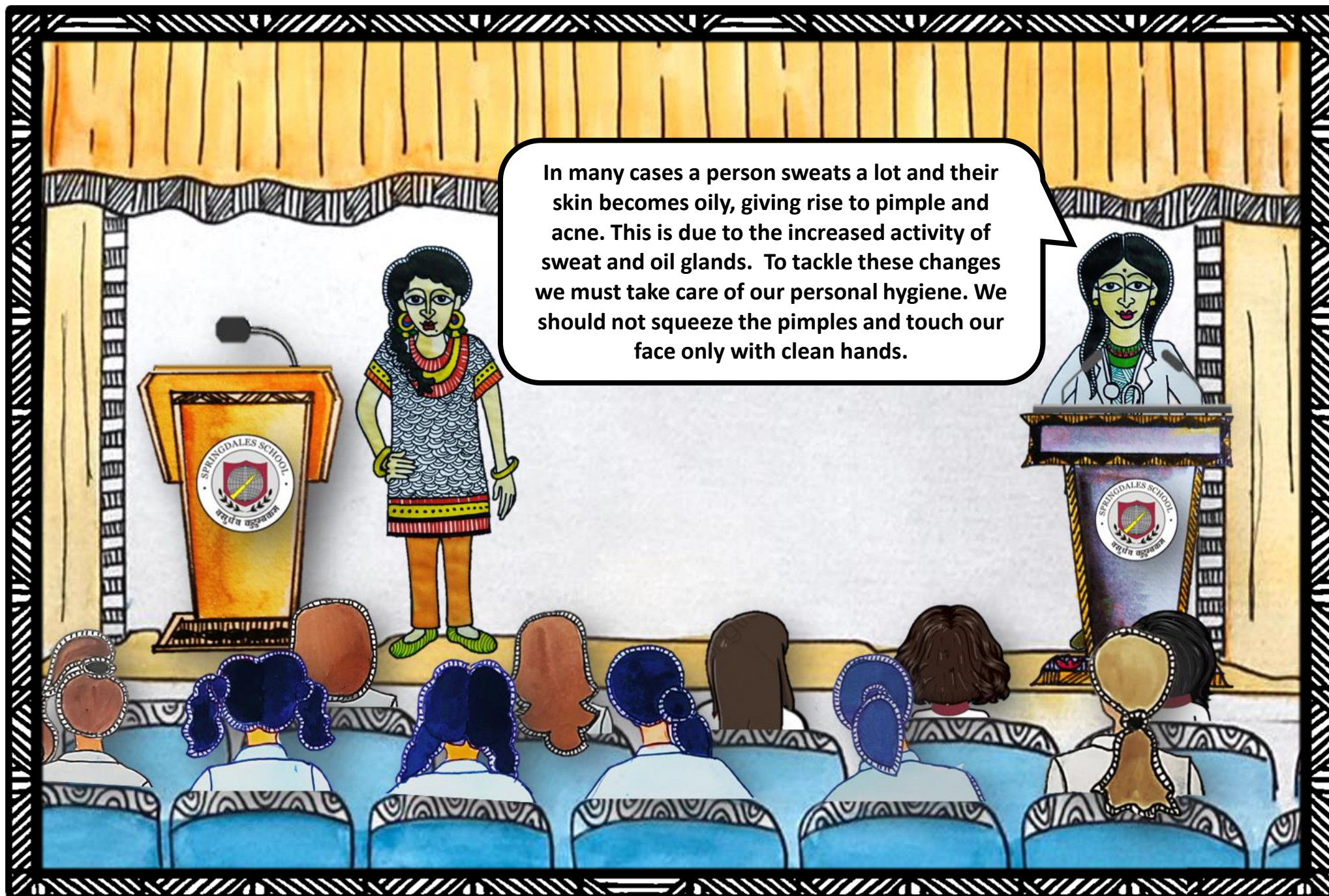
Good morning students! You are no longer a child but on the way to become an adult. This period of life when the body undergoes changes, leading to reproductive maturity is called adolescence. The period of adolescence begins around the age of 11 and lasts up to 18 or 19 years. This period may vary from person to person.

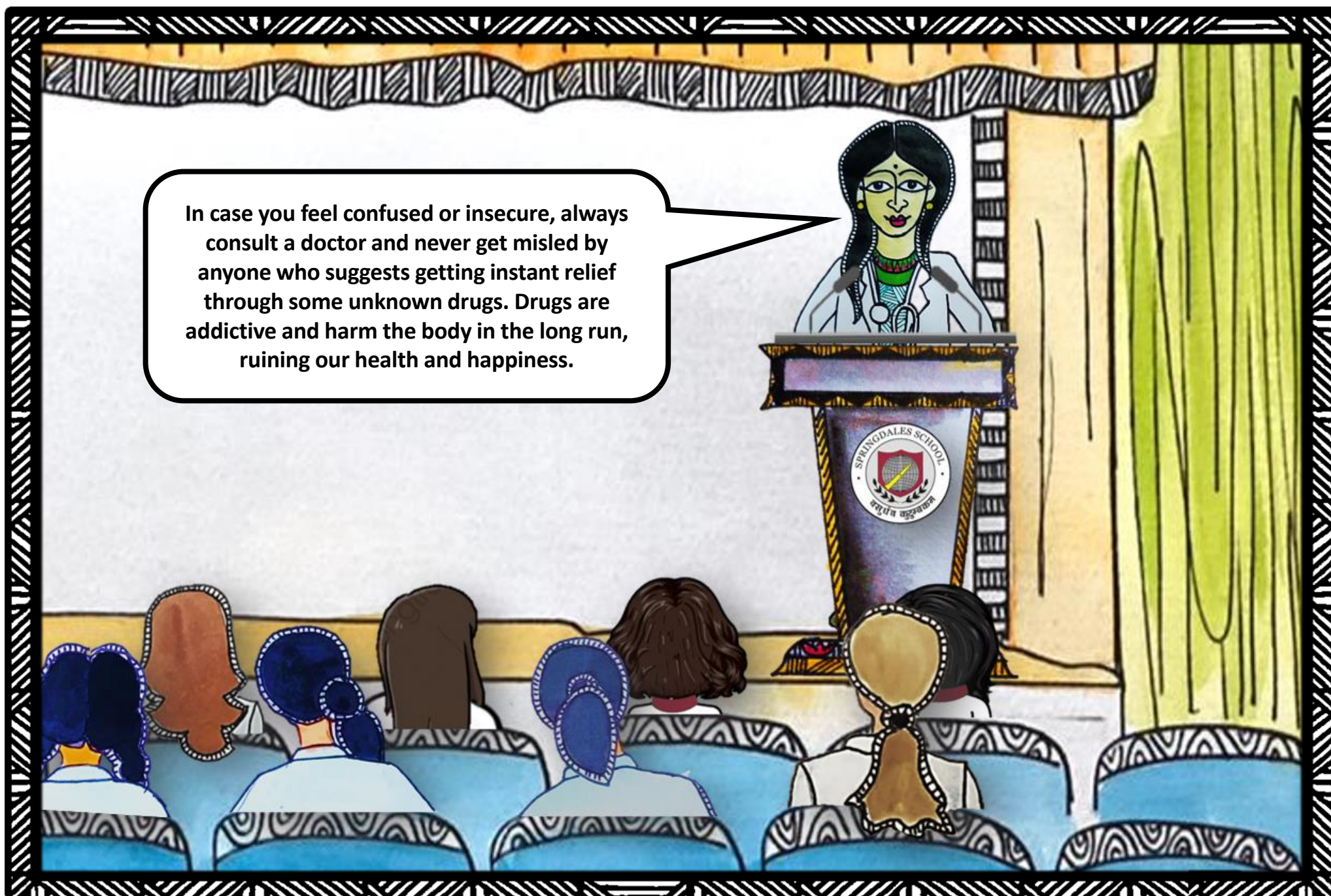
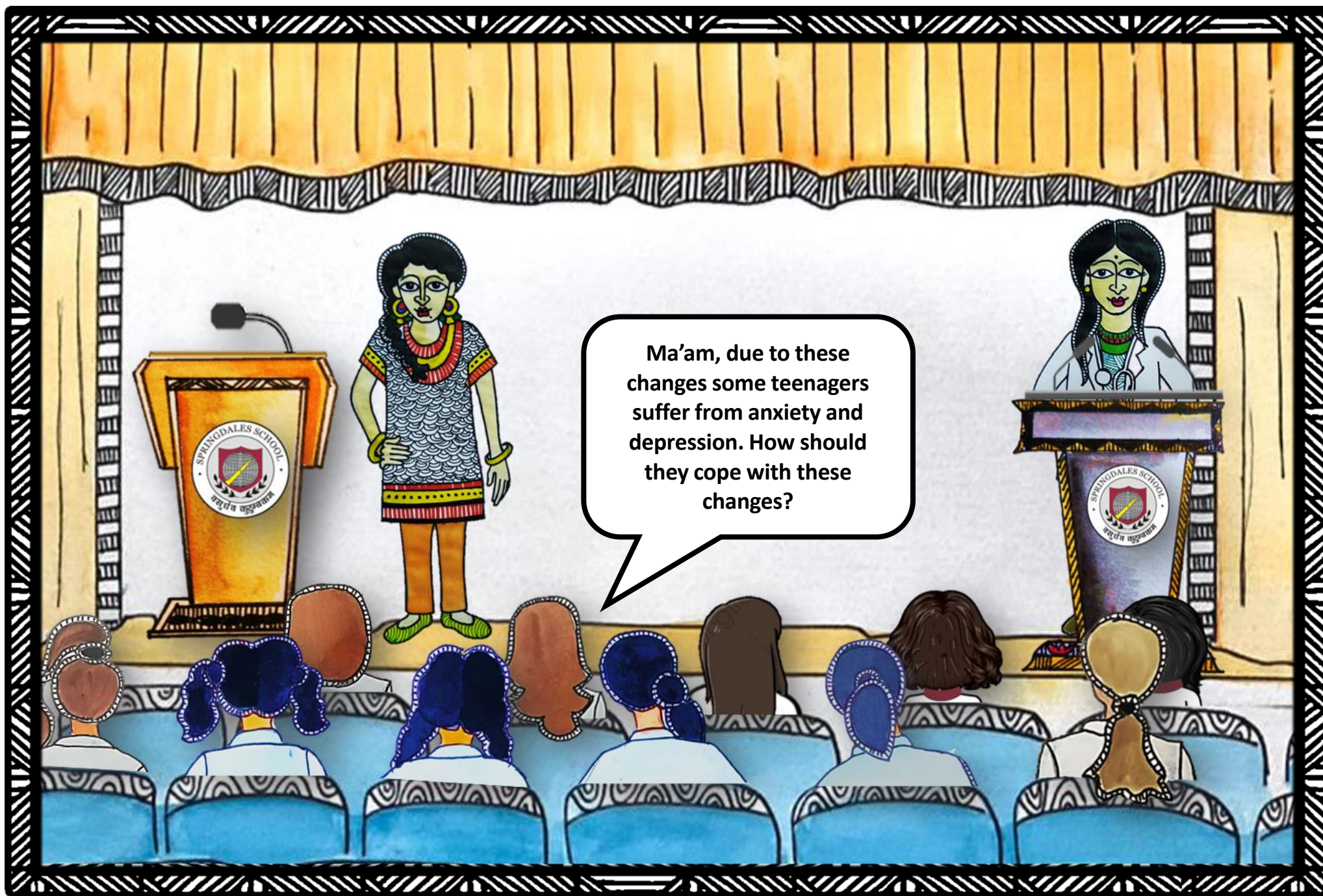


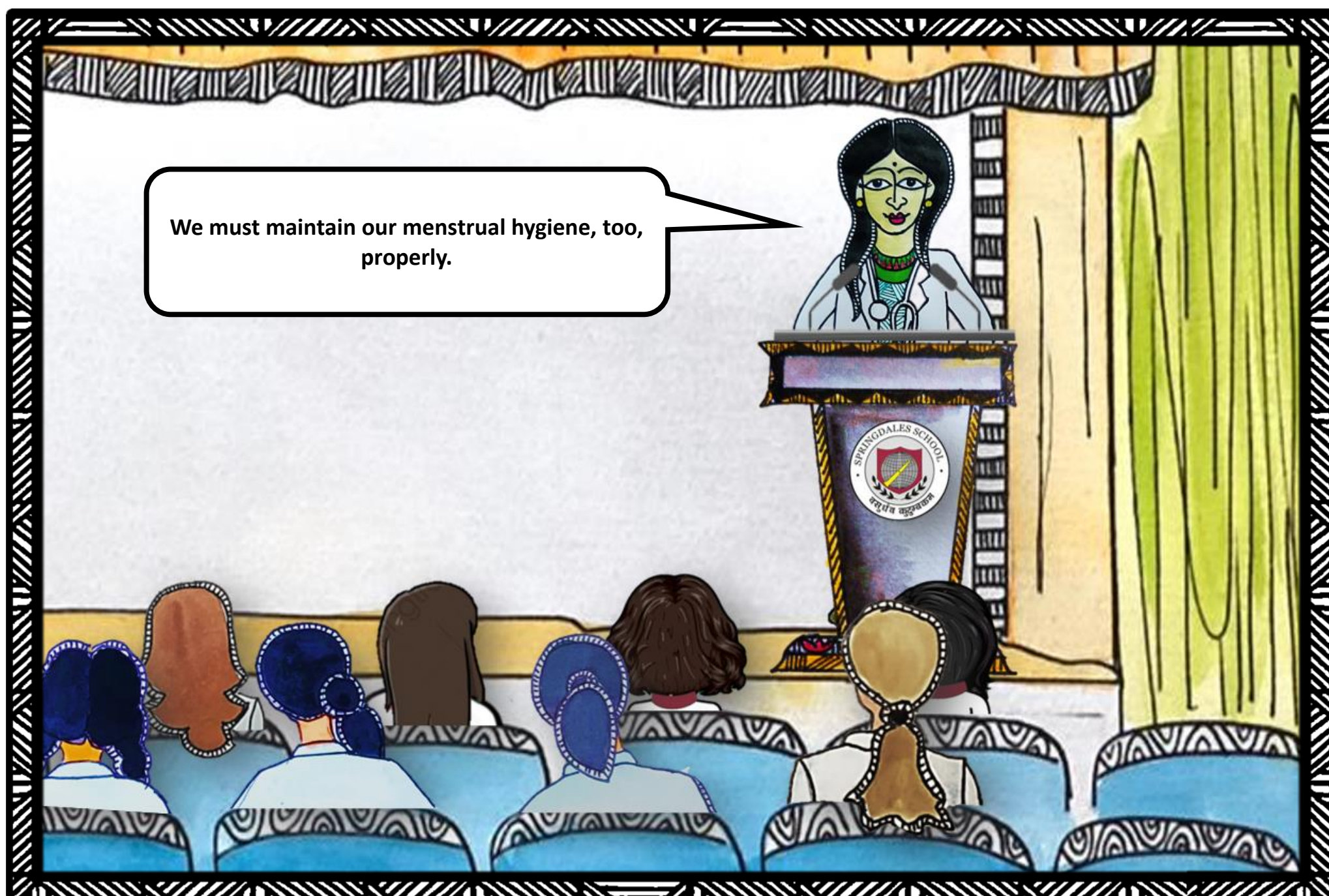


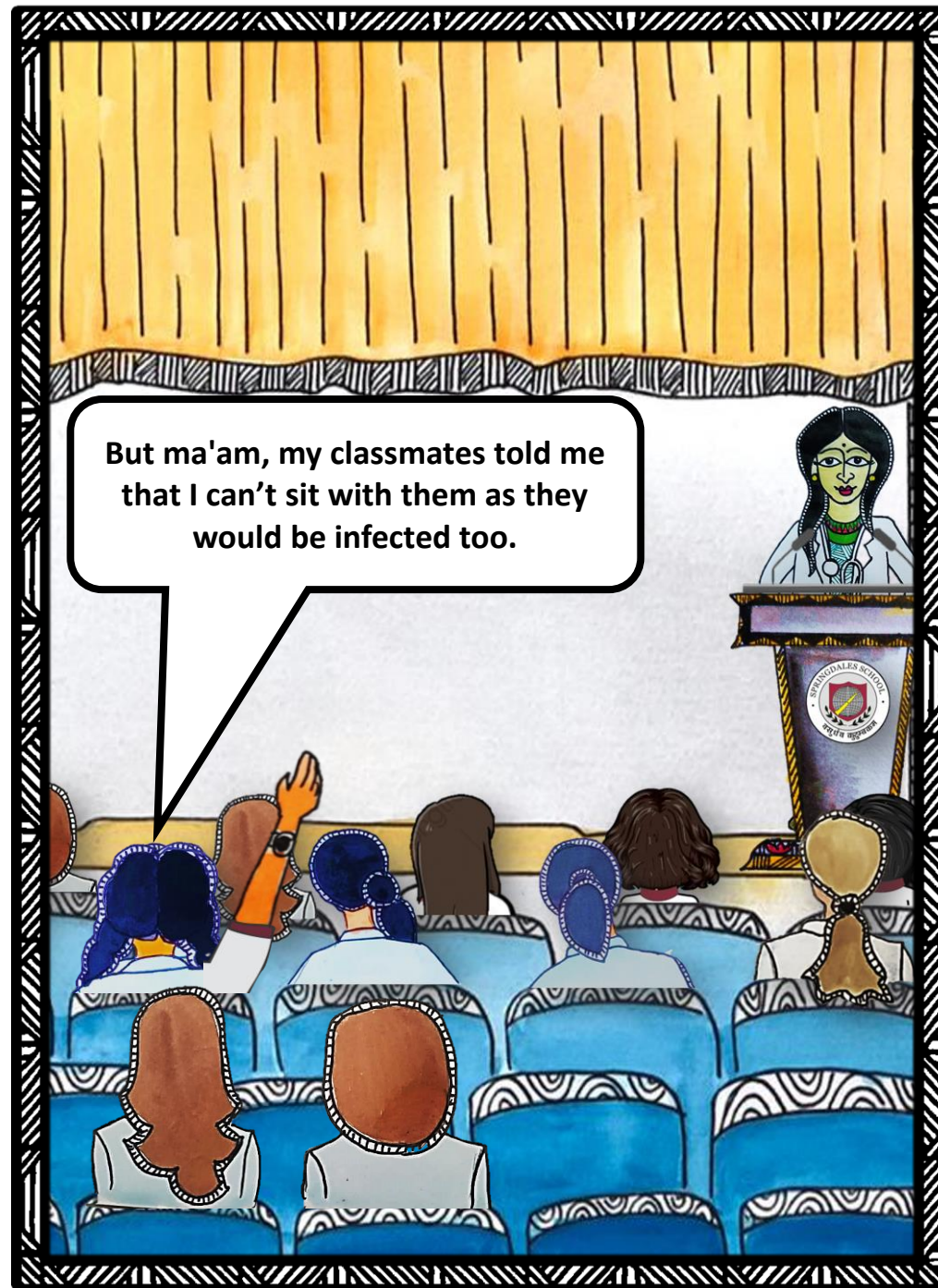
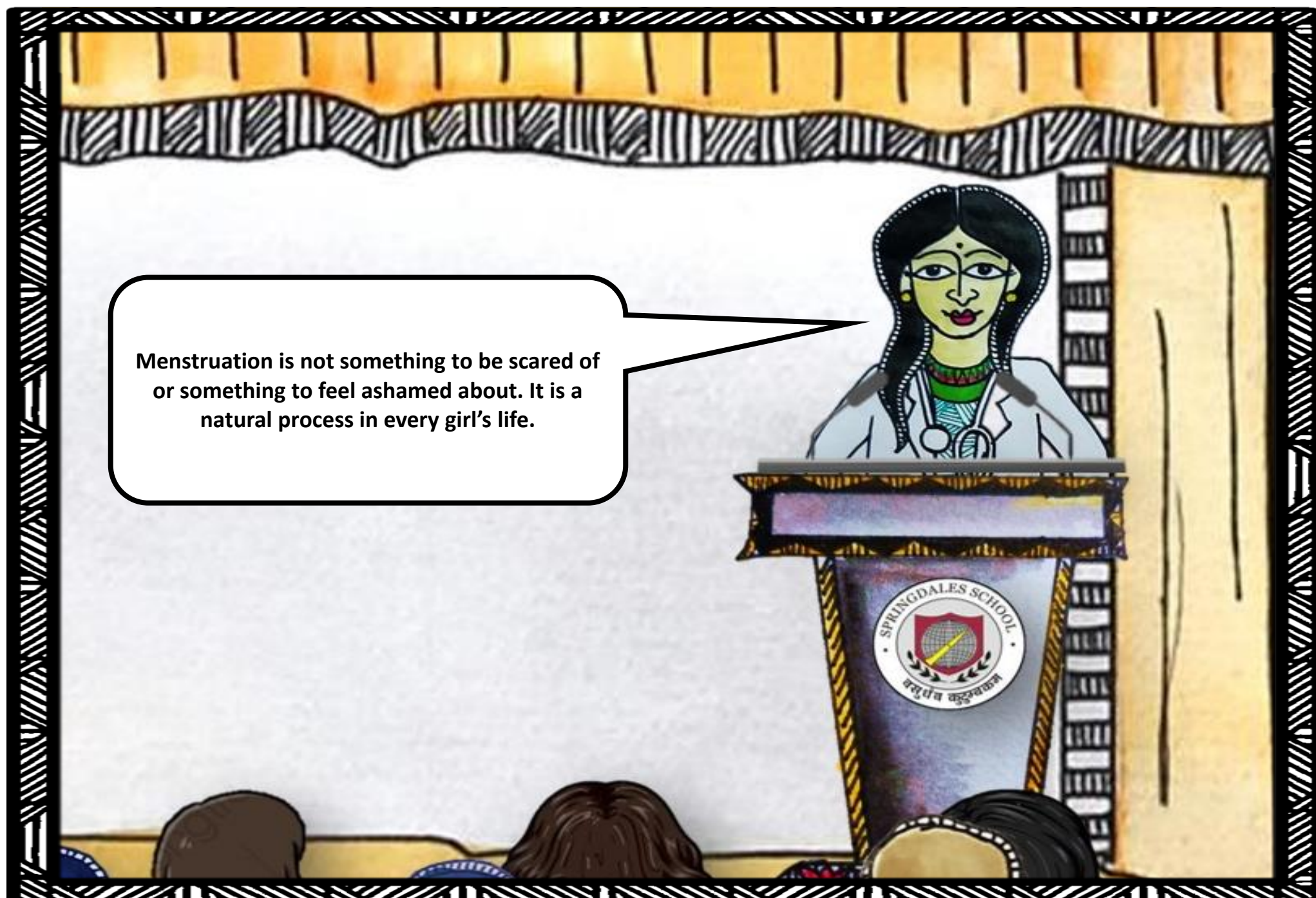


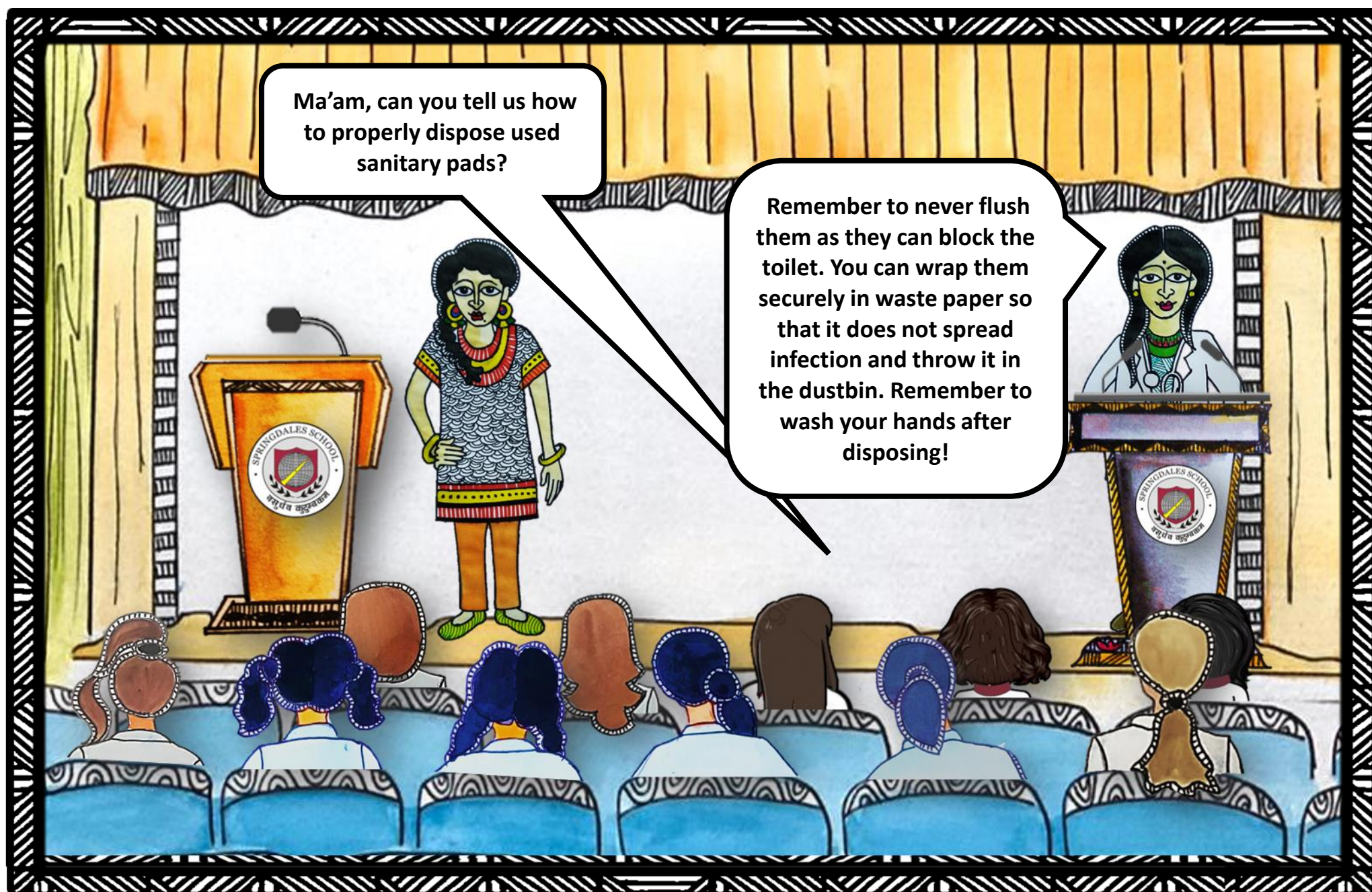
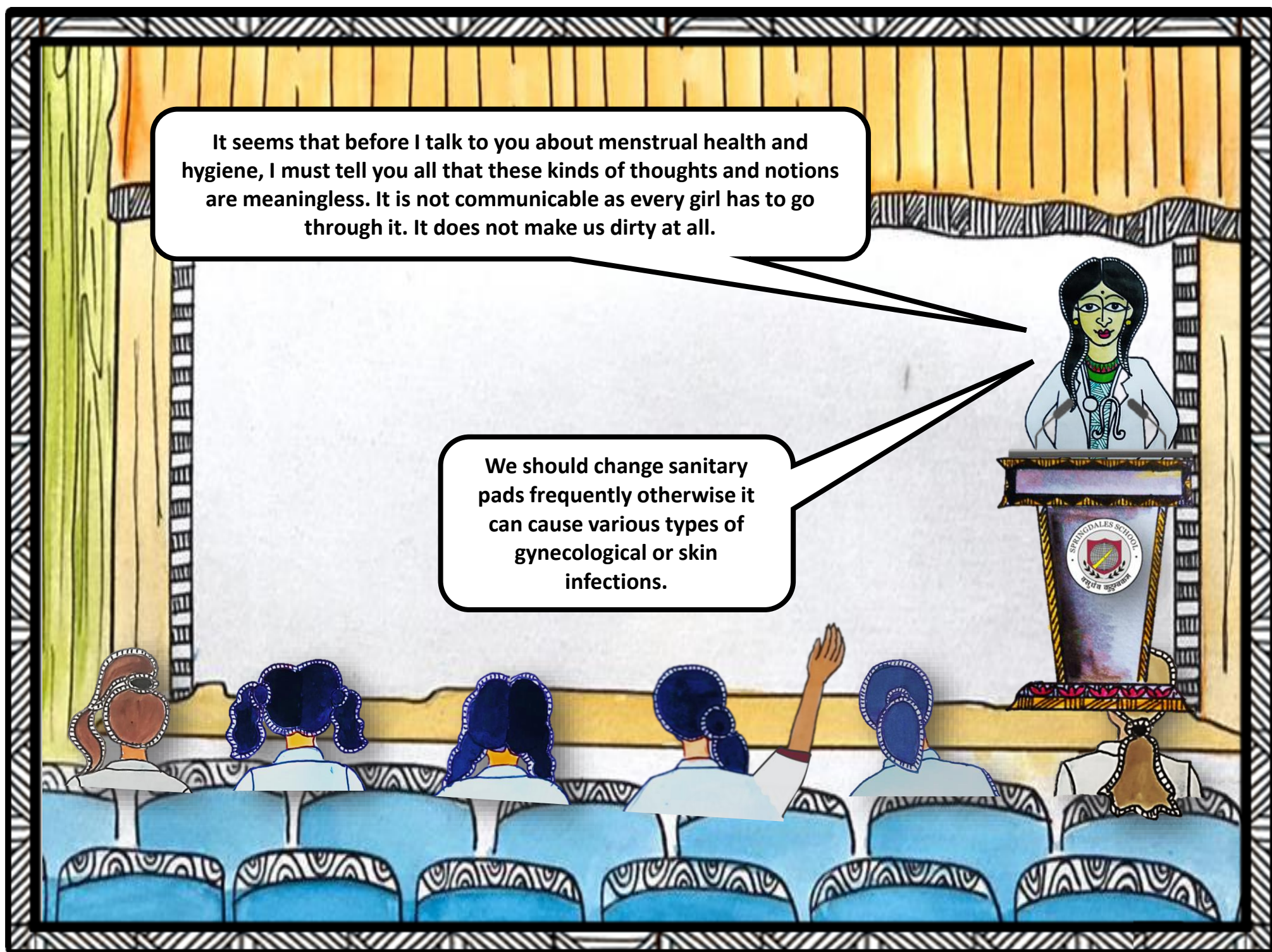




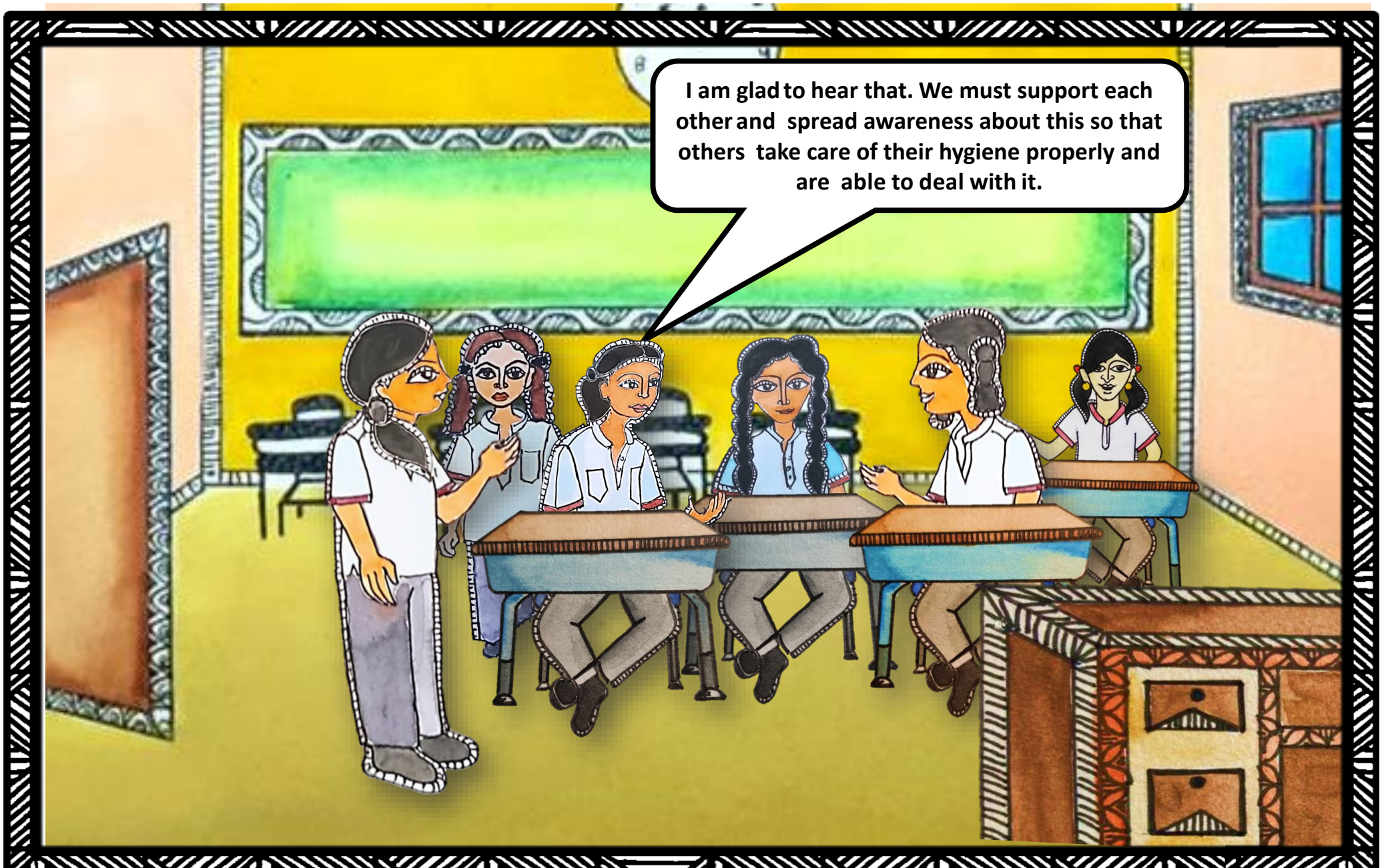
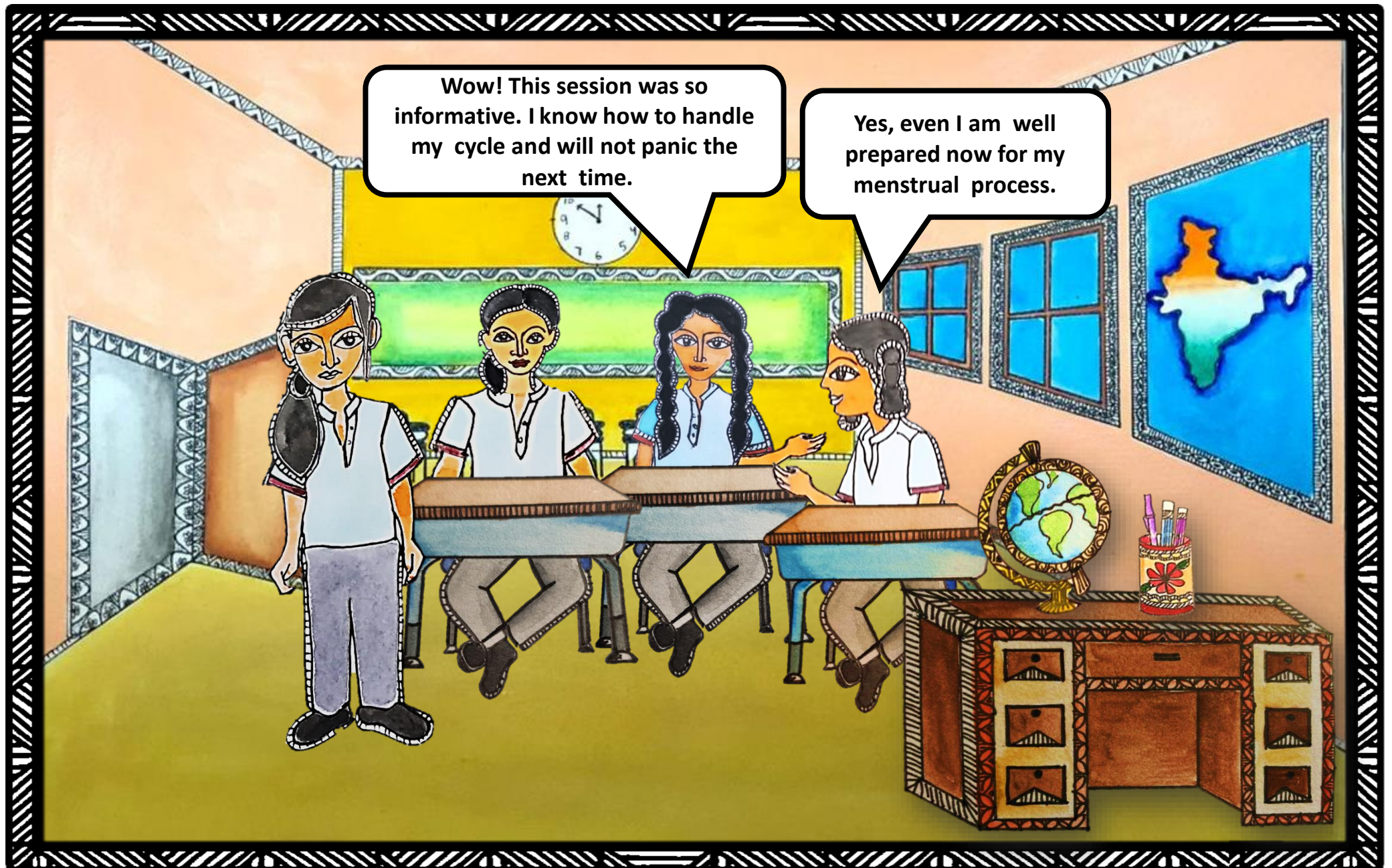








The girls are happy and their curiosity regarding this new development is satisfied. They feel confident and capable of handling this new phase on their own.





Next day, the students eagerly gather in the classroom to ask their questions in the Science period. The teacher patiently answers all their questions and explains all the concepts to clarify their doubts.



Ma'am, does the process of menstruation continue throughout our lives?



No Radhika, this process does not continue throughout our lives. Between 45 to 55 years of age this cycle gradually stops and this is termed as Menopause.



Ma'am, why does menstruation start only at the onset of puberty and not before that?



There are certain chemicals known as hormones that are secreted by glands present in our body known as Endocrine glands. They are ductless glands.



A teacher with dark hair, wearing a patterned blue dress with red and yellow necklaces and bangles, stands in a classroom. She is pointing her right hand towards a large green chalkboard. The room has yellow walls and several wooden desks and chairs are visible in the background.

Once puberty is reached in girls, ovaries begin to produce the female hormone, Estrogen, and this is how all the changes in the body, including menstruation, begin.

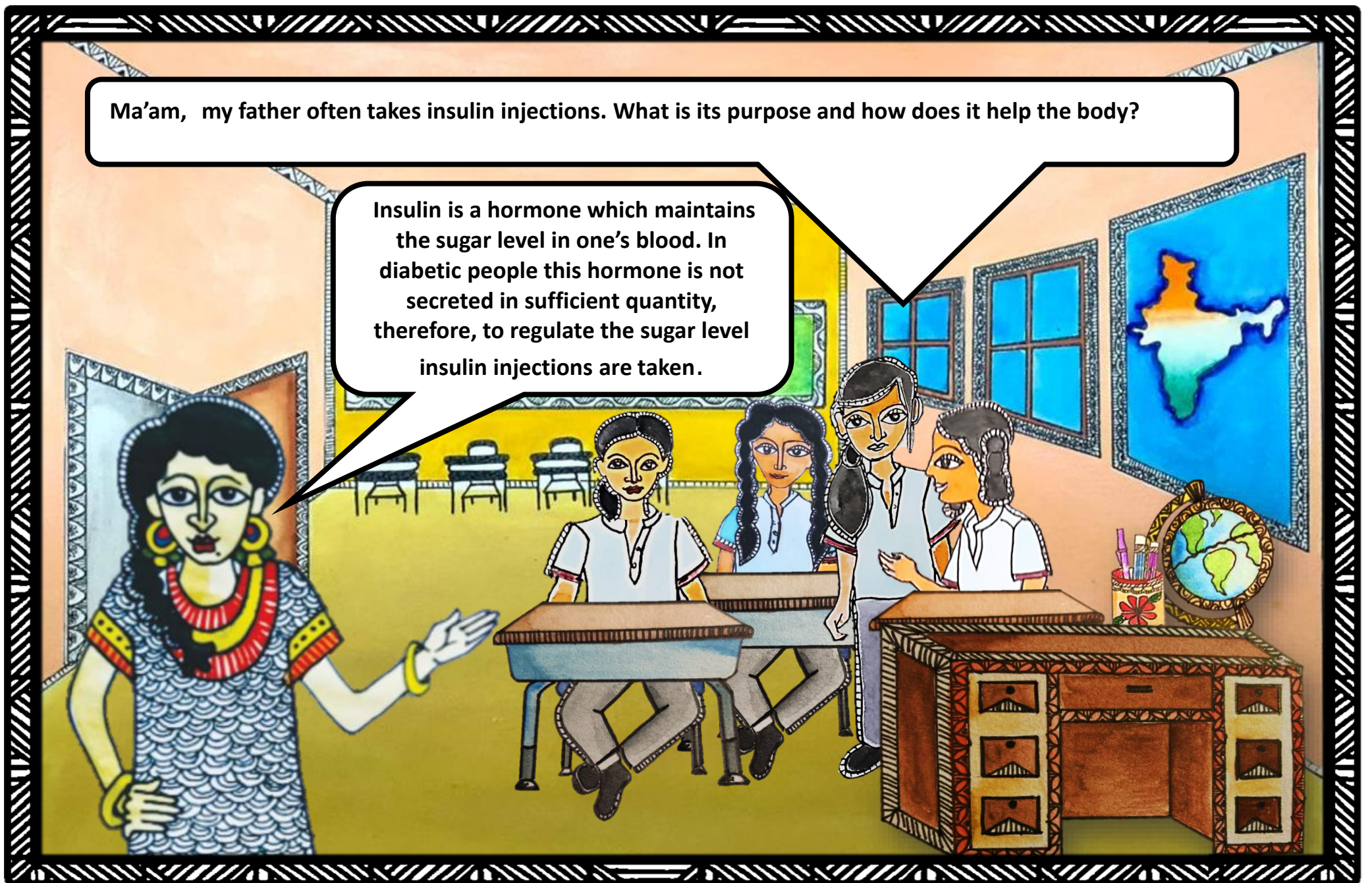
A teacher, identical to the one in the first panel, stands on the right side of a classroom, gesturing with her right hand. On the left, five female students in white school uniforms are looking at her. They are standing behind wooden desks. In the background, there is a green chalkboard, a round wall clock showing approximately 10:10, and a window with blue panes.

So how many Endocrine glands do we have in our body?



Ma'am, my father often takes insulin injections. What is its purpose and how does it help the body?

Insulin is a hormone which maintains the sugar level in one's blood. In diabetic people this hormone is not secreted in sufficient quantity, therefore, to regulate the sugar level insulin injections are taken.

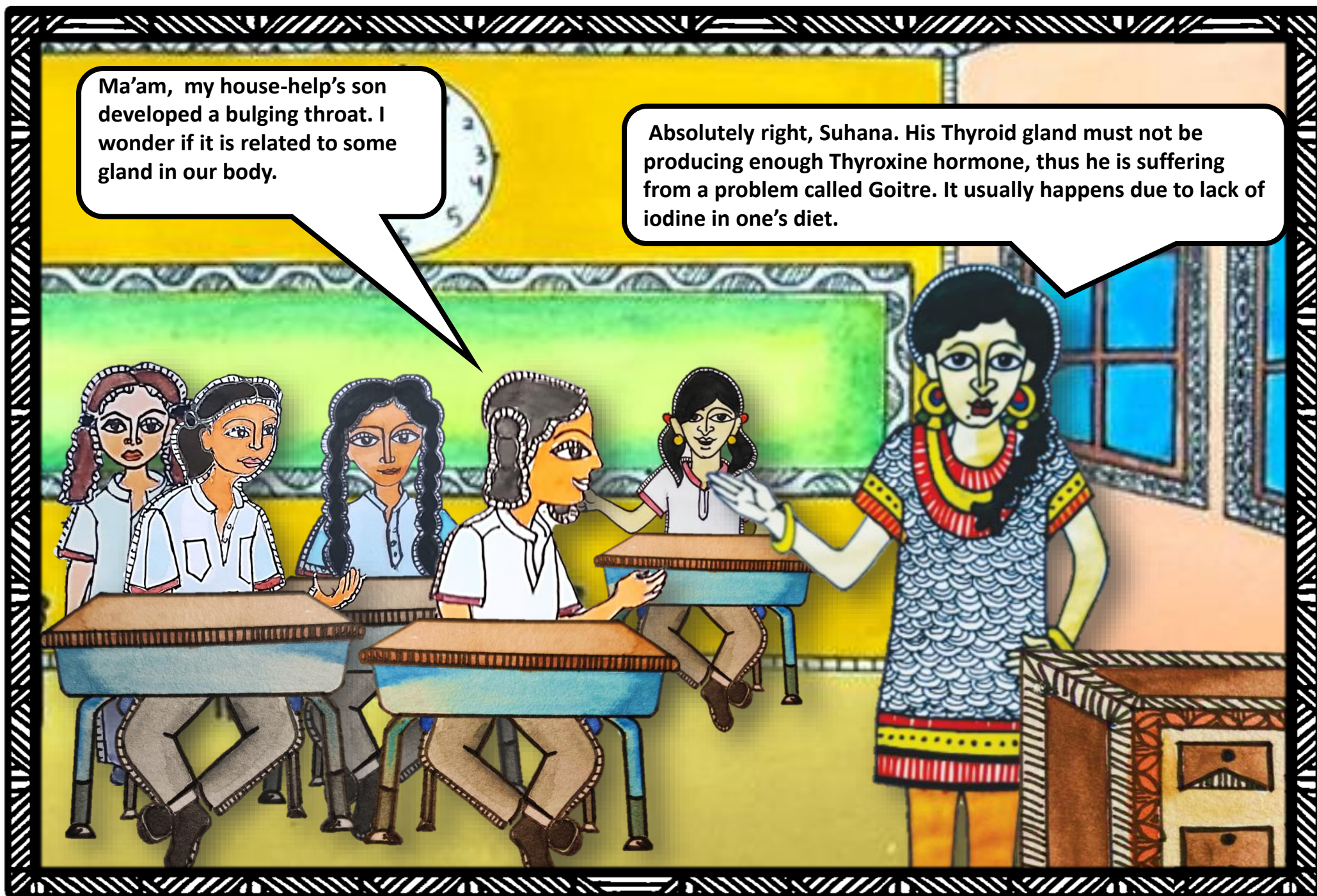


I have read the phrase 'adrenaline rush' in a novel! Is it related to the adrenaline hormone in our body, ma'am?

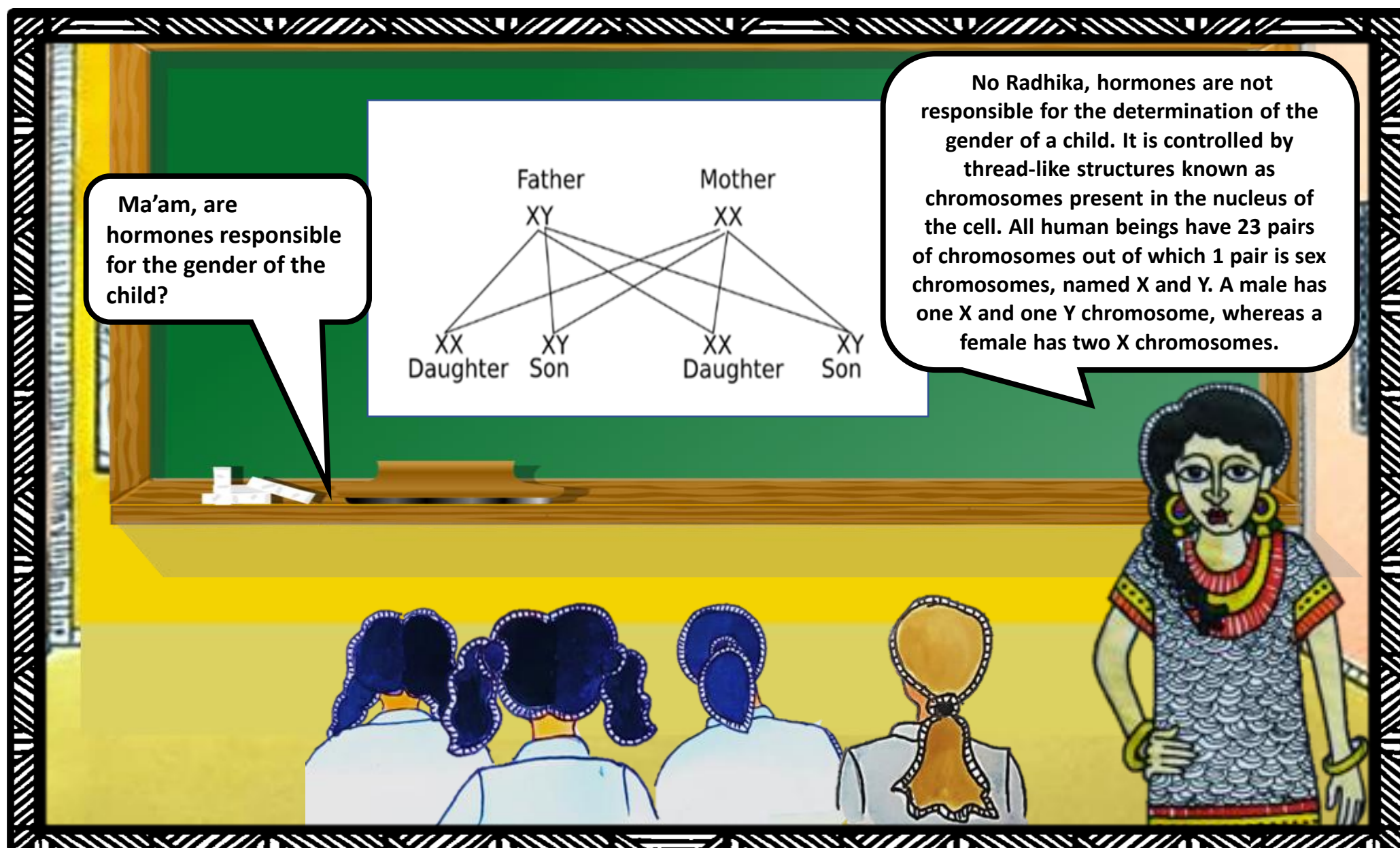


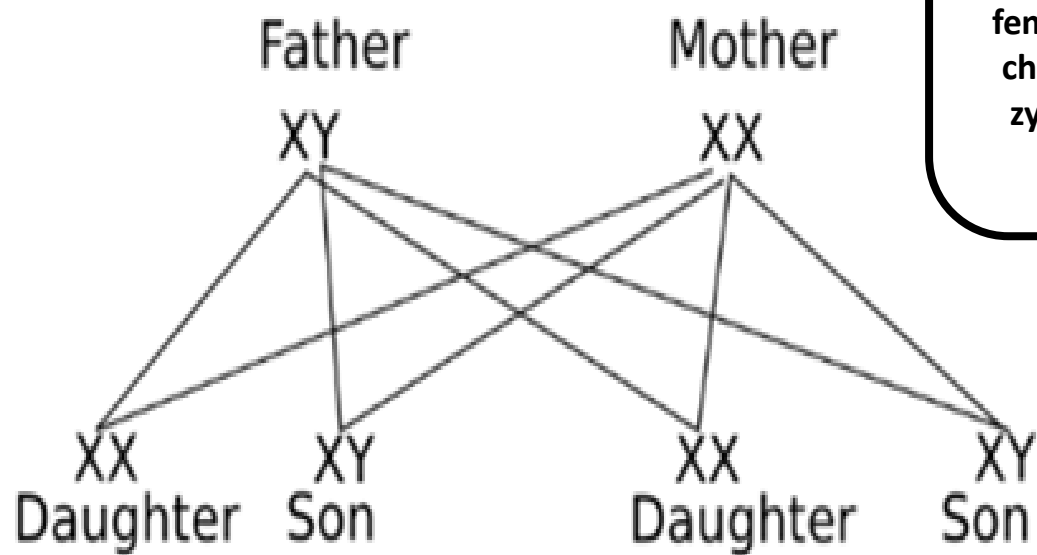
Yes, it helps the body to adjust to stressful situations such as anger, fear, embarrassment or excitement.



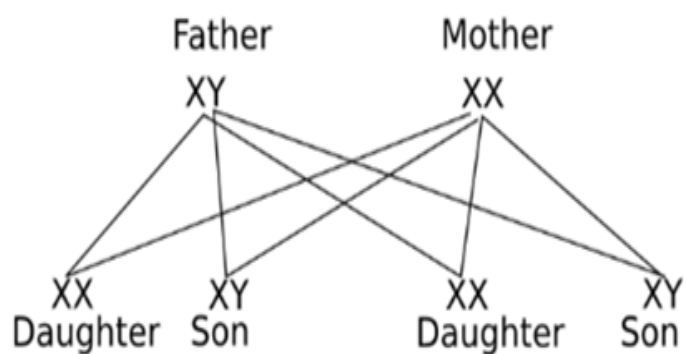


Teacher explaining concept through flowchart on board

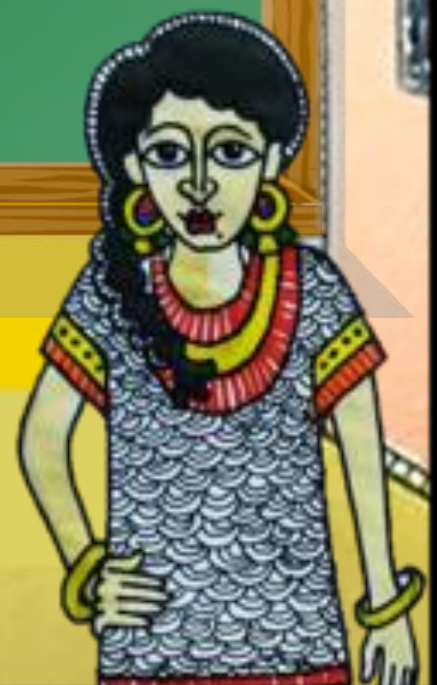




When a male gamete (sperm) containing X chromosome fertilizes the egg, the zygote will have two X chromosomes and develop into a female child. If the sperm carrying Y chromosome fertilizes the egg, the zygote would develop into a male child.



Oh, thank you for explaining this to us, ma'am! Usually a woman is considered responsible for the gender of the child and I could never understand why it was so. Now we know that it is, in fact, the father who is responsible for it.



Do you have any idea what sexually transmitted diseases are?

No ma'am, we don't know what it means.

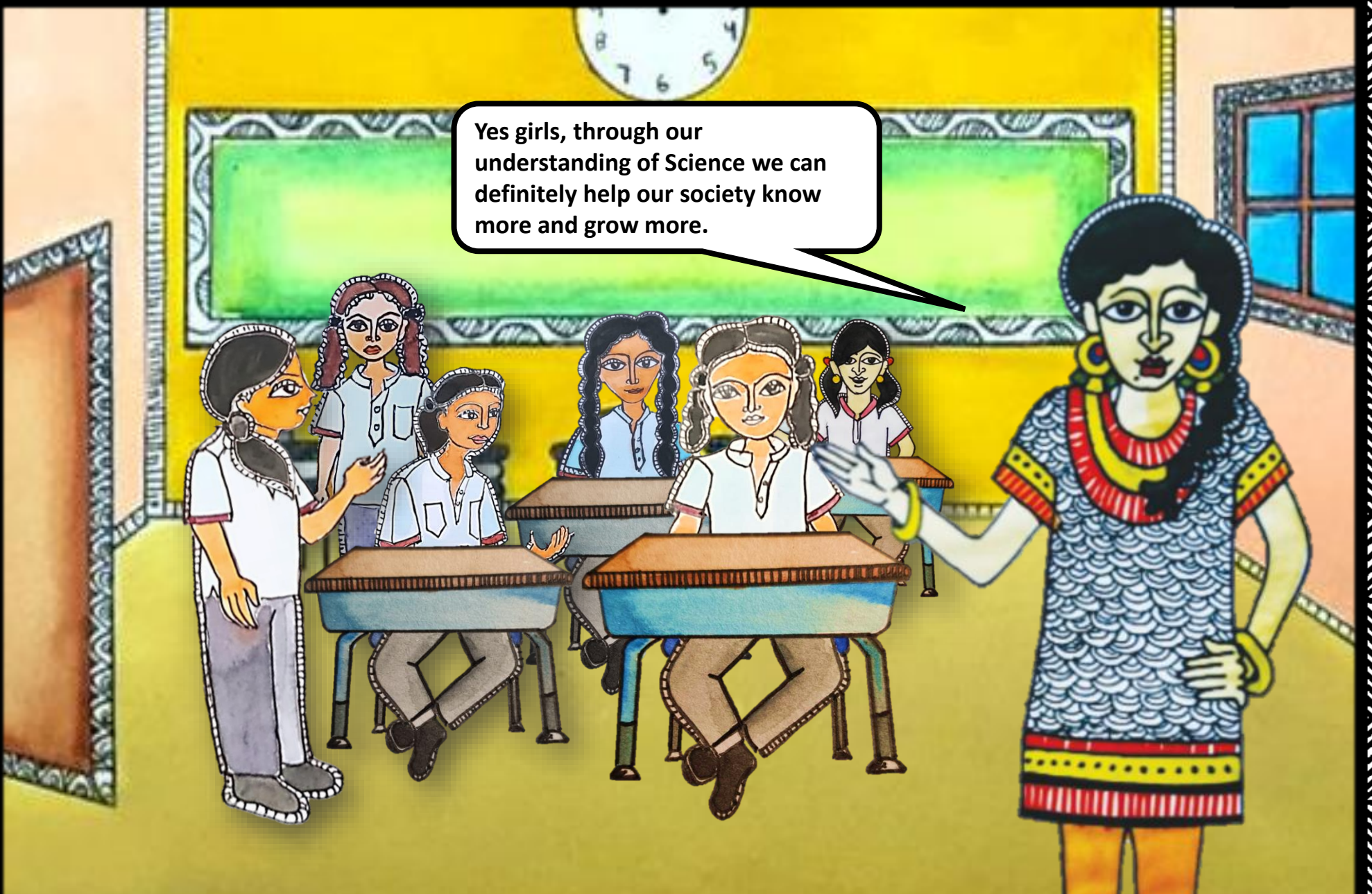
A disease called AIDS is caused by a virus known as HIV. There are various modes through which this virus gets transmitted from an infected person to others such as by sharing of syringes, from infected mother to her infant and through sexual contact with an infected person.



Ma'am, these important facts should be shared with other people, including some adults, to bring awareness and change their mindset. Science can help us in dispelling the various myths and notions that are widespread in our society and hold us back.



Yes girls, through our understanding of Science we can definitely help our society know more and grow more.



REACHING THE AGE OF ADOLESCENCE

(CLASS –VIII)
PART - II



CHARACTERS



ARNAV



KARTIK



AYAN



RISHAB

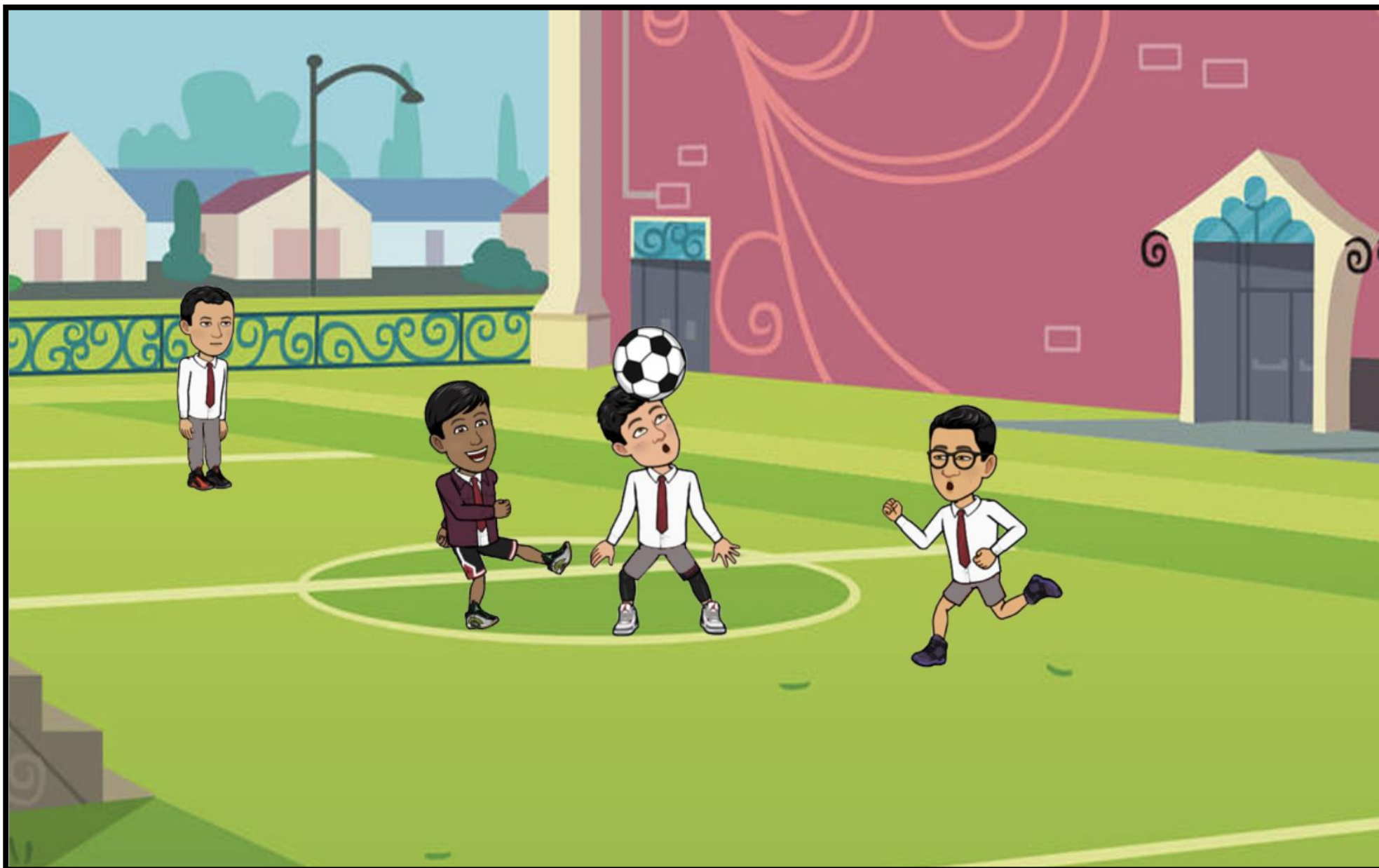


P.ED. TEACHER



SCIENCE TEACHER

Four boys practicing in the playground for an upcoming football match, competing with each other and running around in the field.



Hey Kartik, pass the ball to me!



Here you go, make the goal!



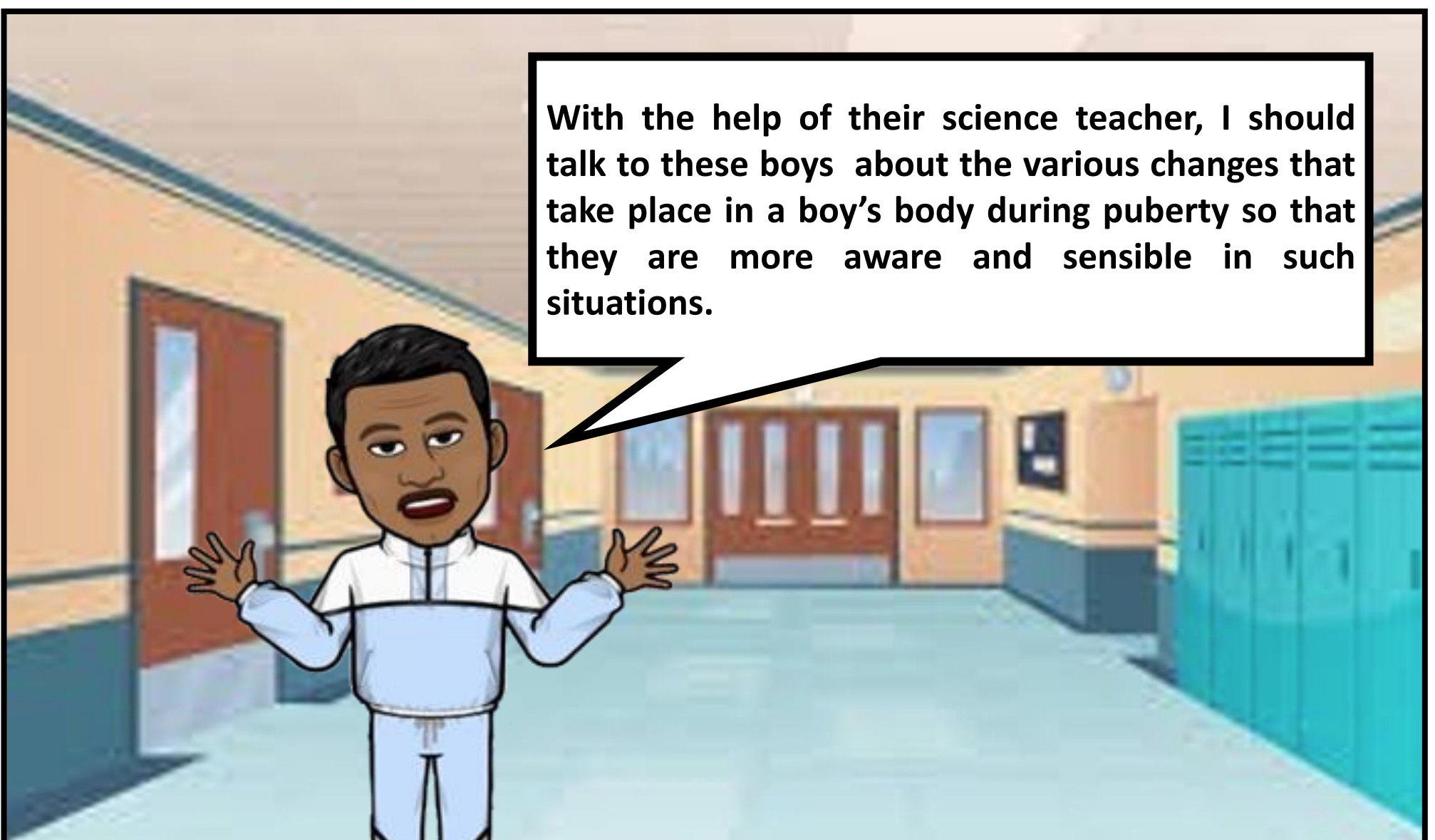
They take a break to cool down and sit together to have their snacks. Amidst all the fun and banter, Rishab feels uncomfortable because of excessive sweating and constantly feels the need to excuse himself from the group but is unable to.



Kartik and Rishab get into an argument which makes their Physical Education teacher intervene. The teacher realizes what the issue is and decides to speak to all the boys about it.



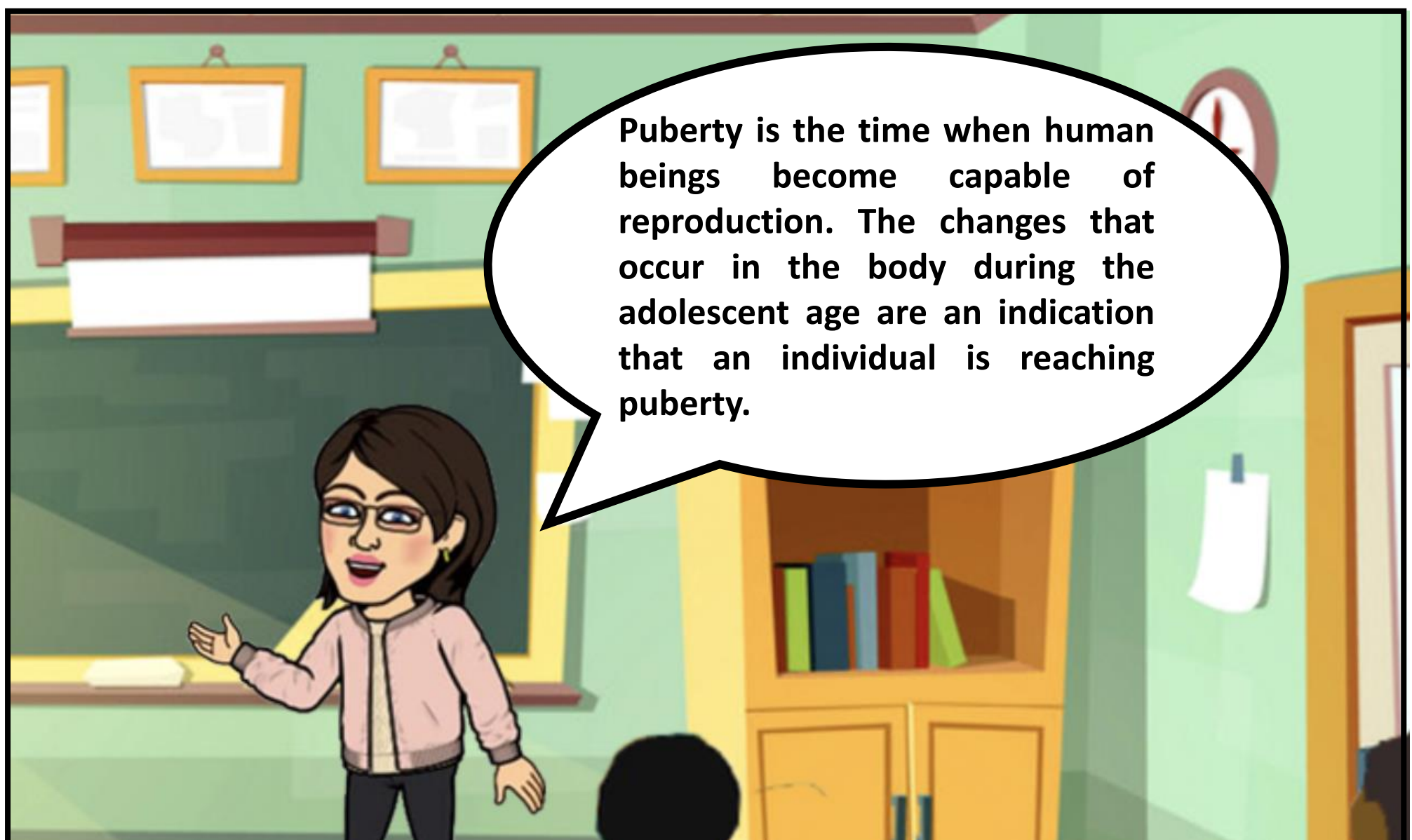
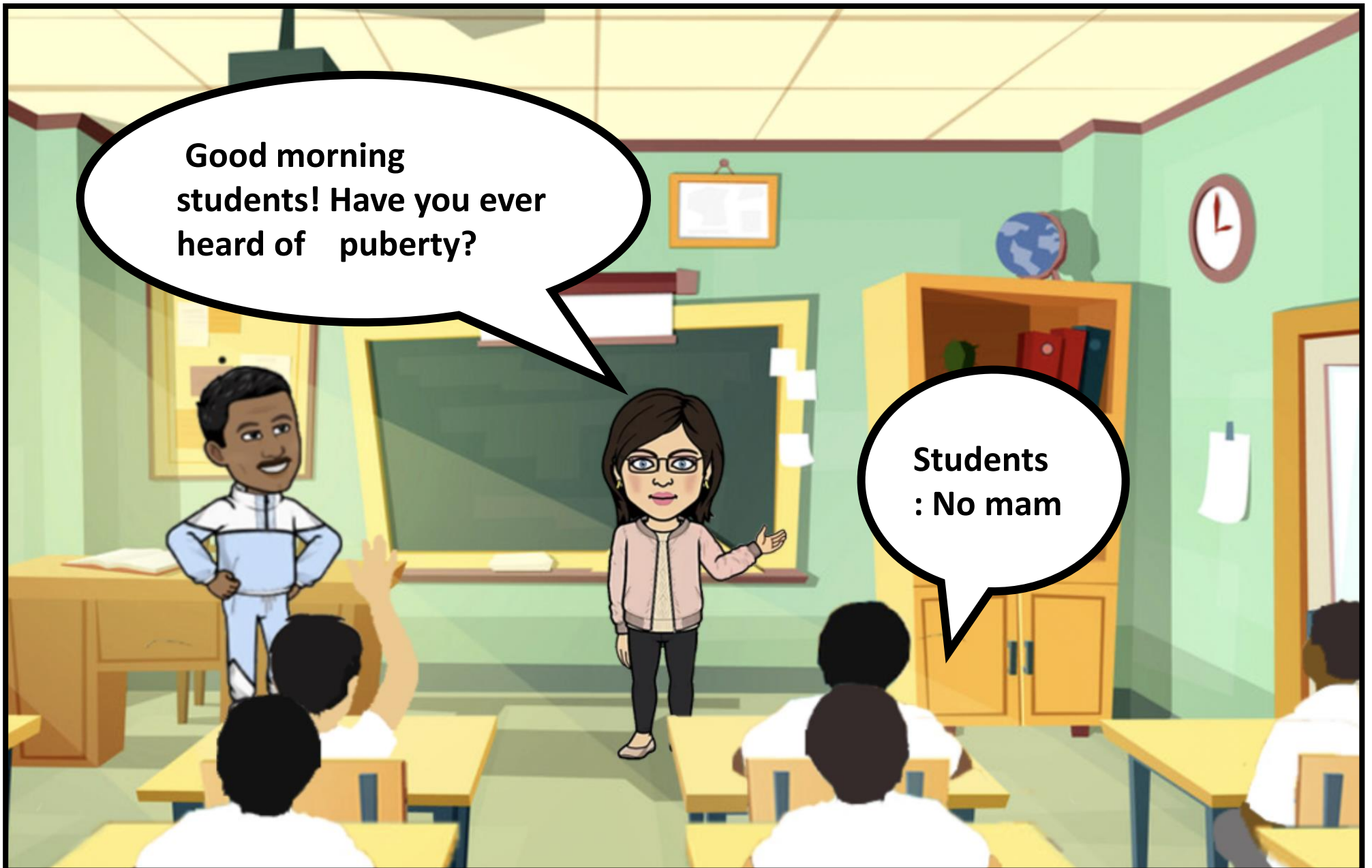
The boys leave the ground and move towards their class.

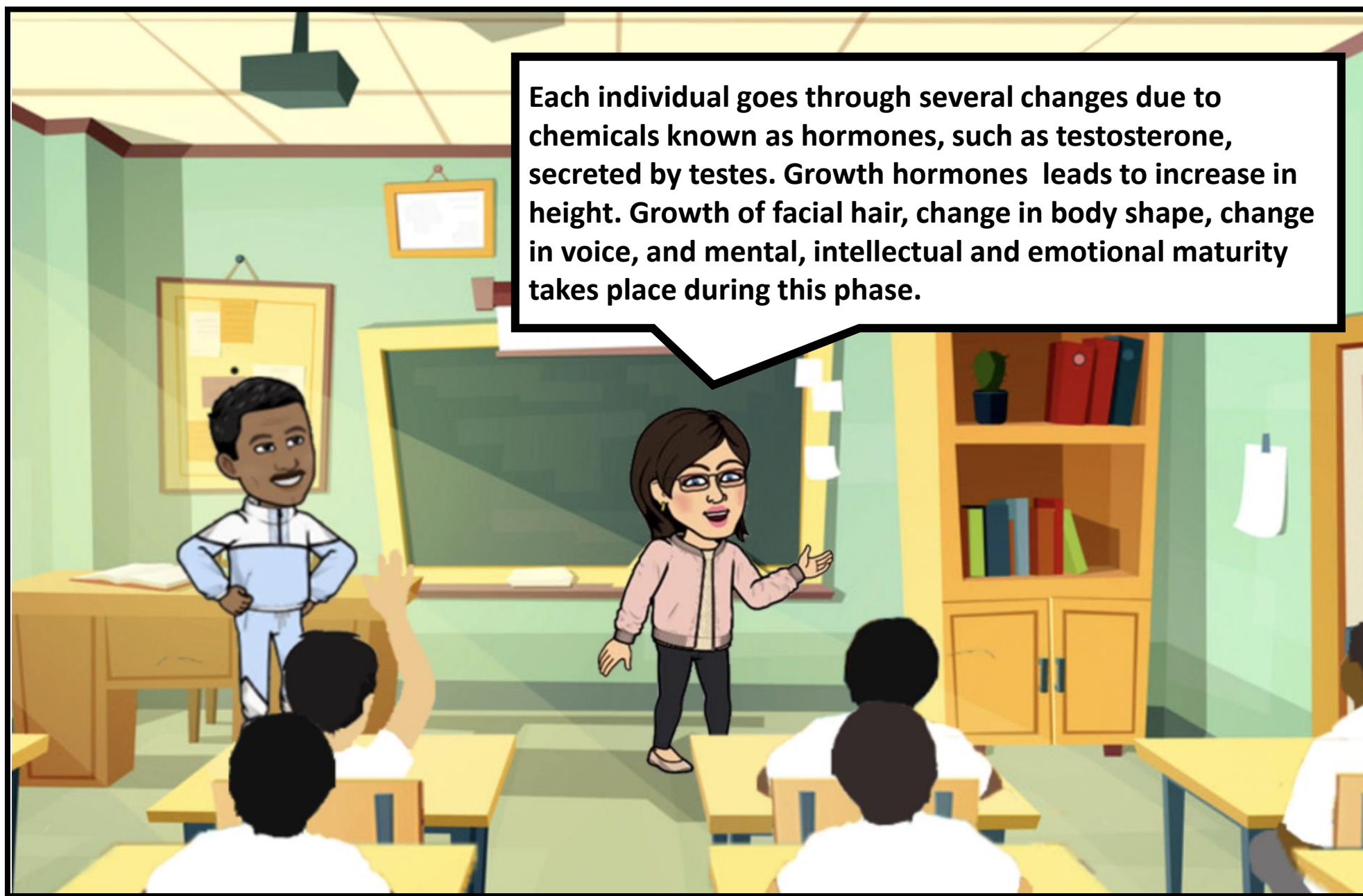


The P.Ed teacher shares his own experiences and tells them about the various changes that take place in a boy's body as he grows up.

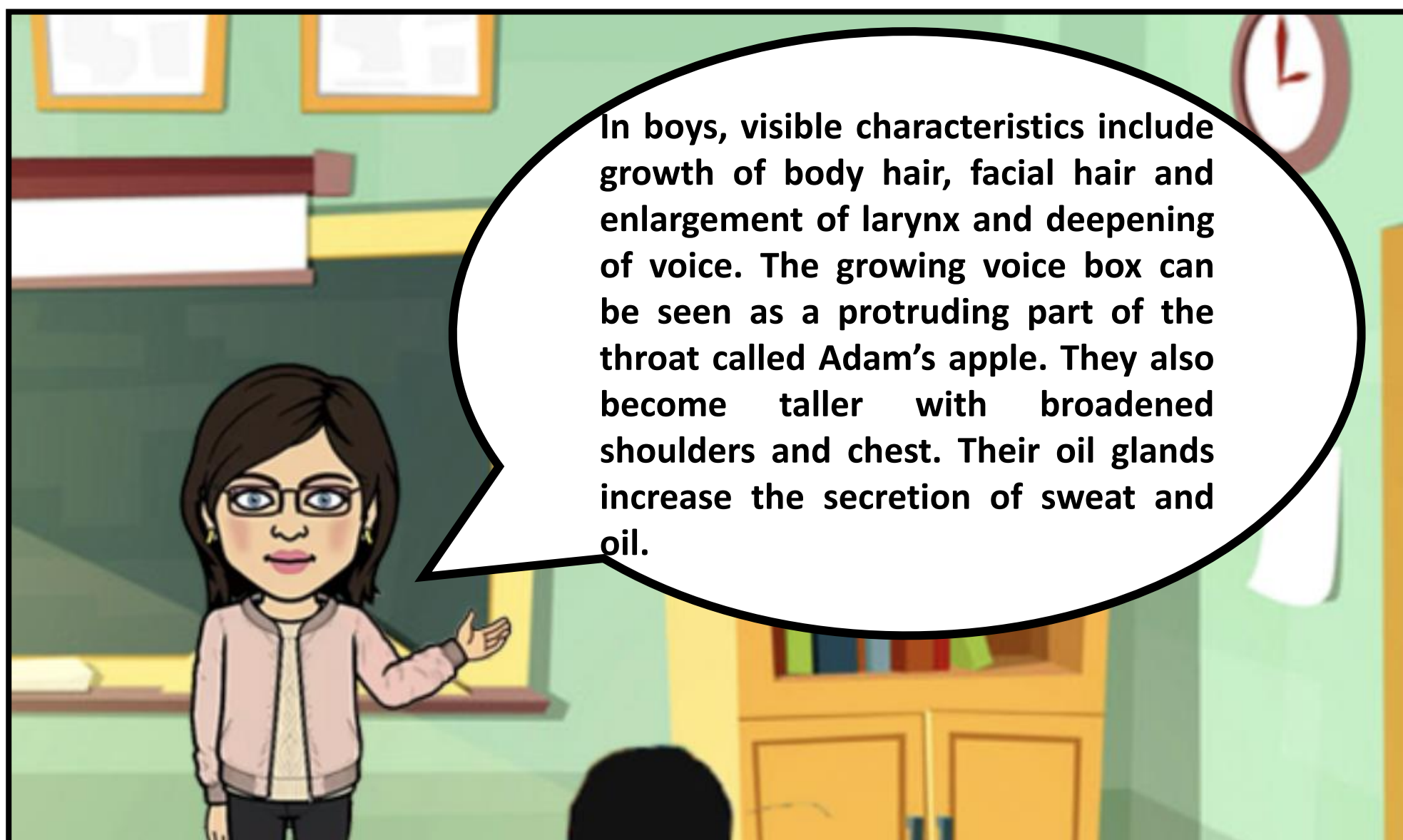


Science Teacher explains the concept of puberty. She addresses the various issues they face such as excessive sweating, pungent body odour, acne, unwanted hair growth and unhealthy scalp.

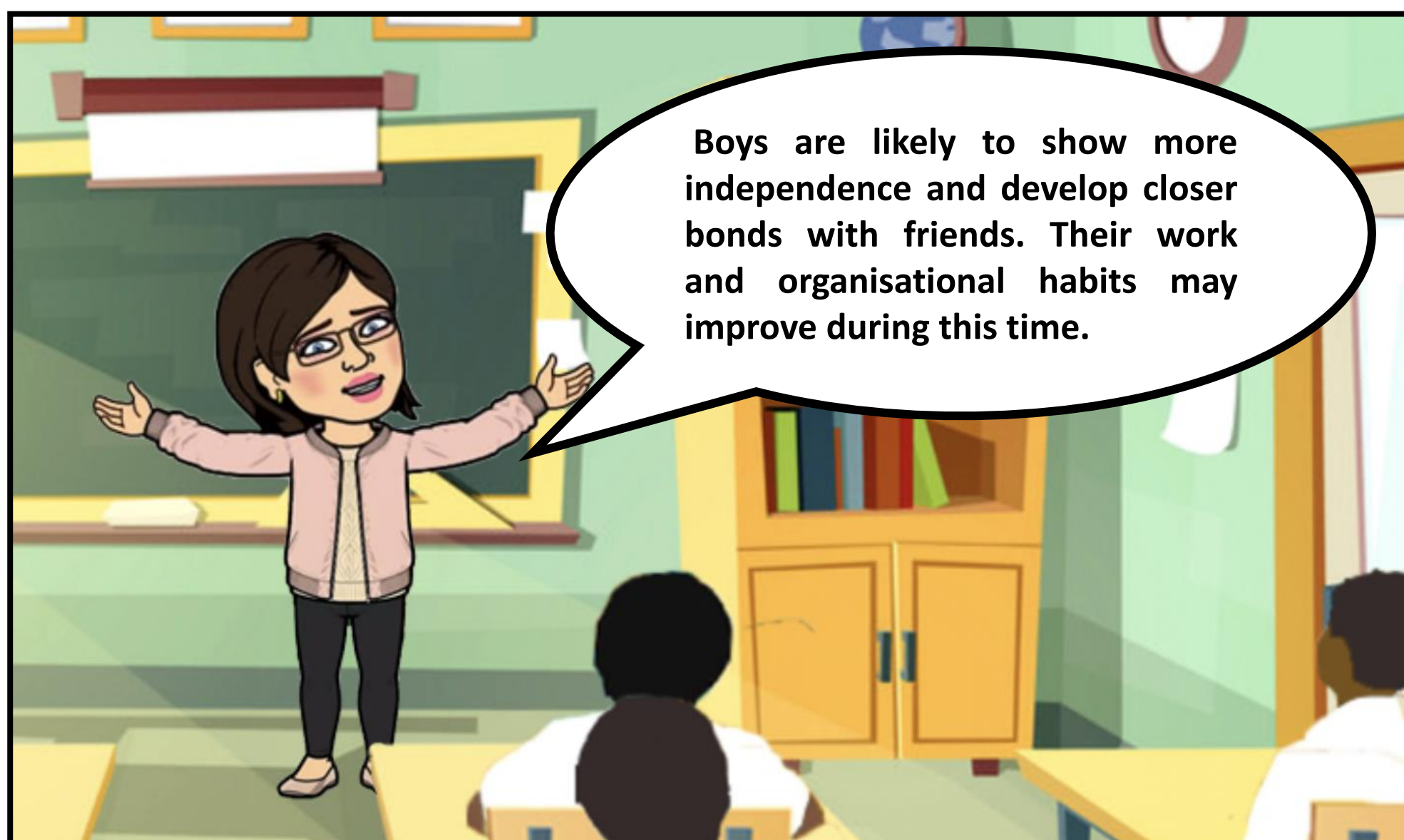
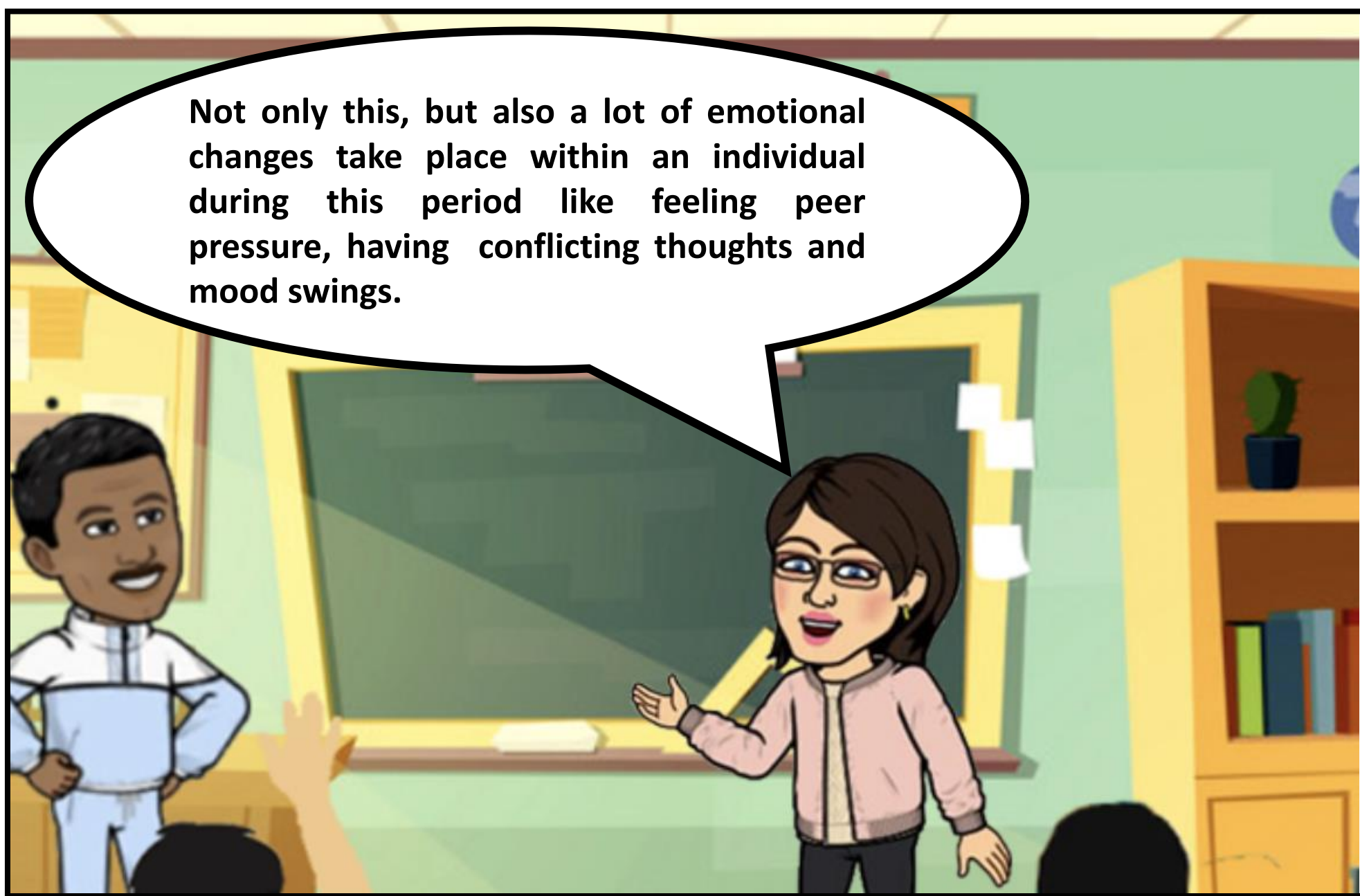




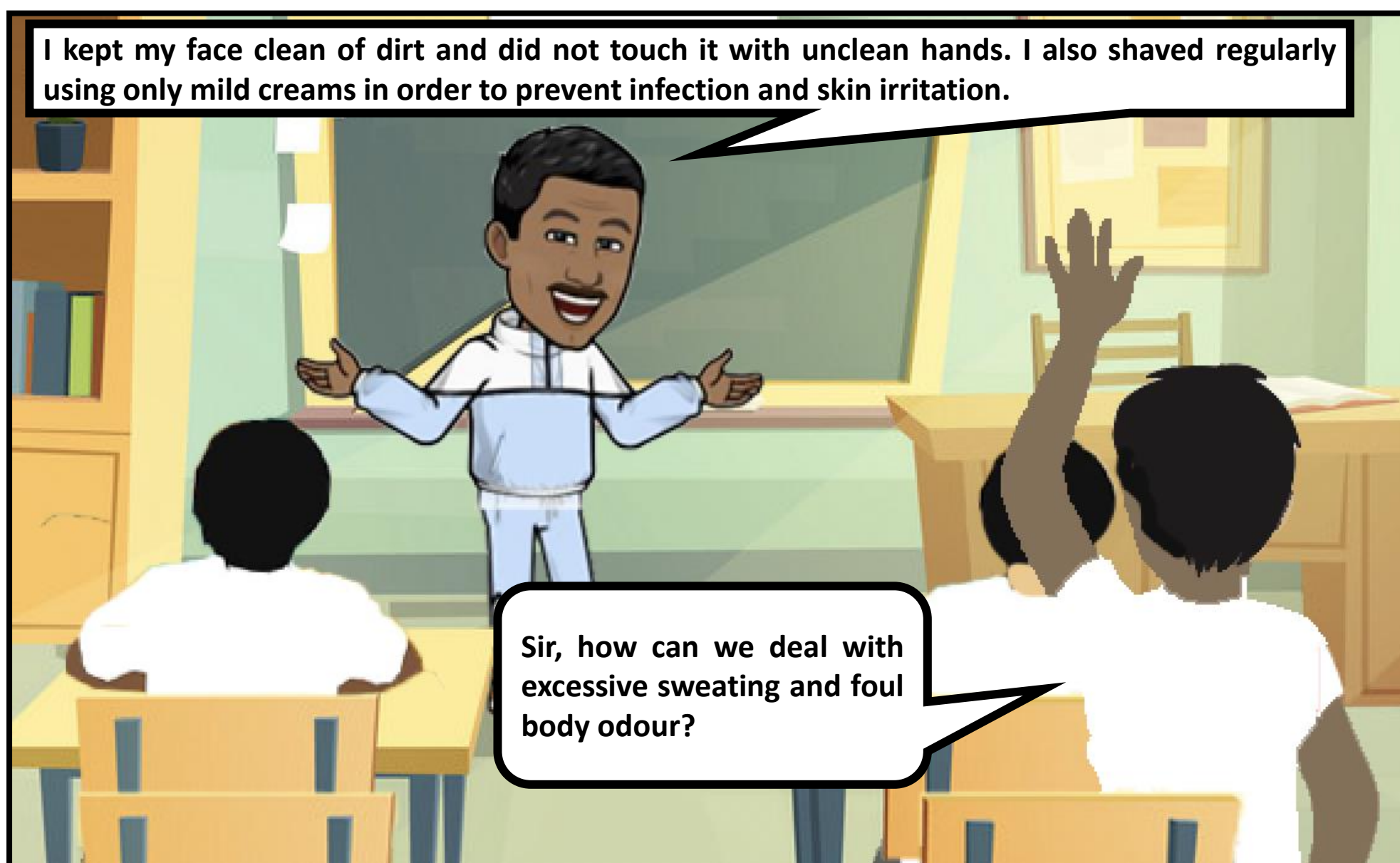
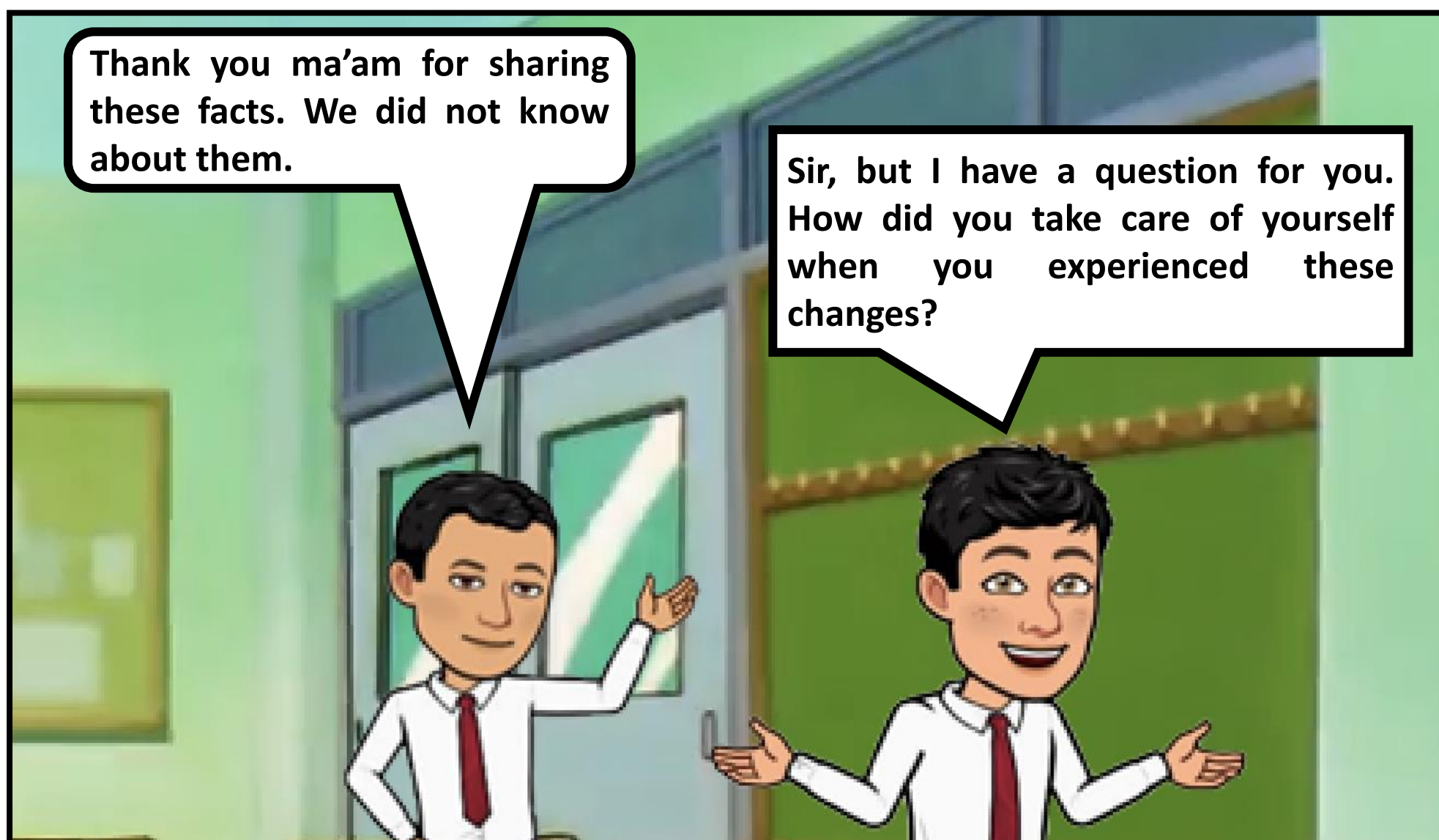
Each individual goes through several changes due to chemicals known as hormones, such as testosterone, secreted by testes. Growth hormones leads to increase in height. Growth of facial hair, change in body shape, change in voice, and mental, intellectual and emotional maturity takes place during this phase.



In boys, visible characteristics include growth of body hair, facial hair and enlargement of larynx and deepening of voice. The growing voice box can be seen as a protruding part of the throat called Adam's apple. They also become taller with broadened shoulders and chest. Their oil glands increase the secretion of sweat and oil.



The boys have an interactive discussion with their teacher and share the various changes they observe in themselves as they grow up.



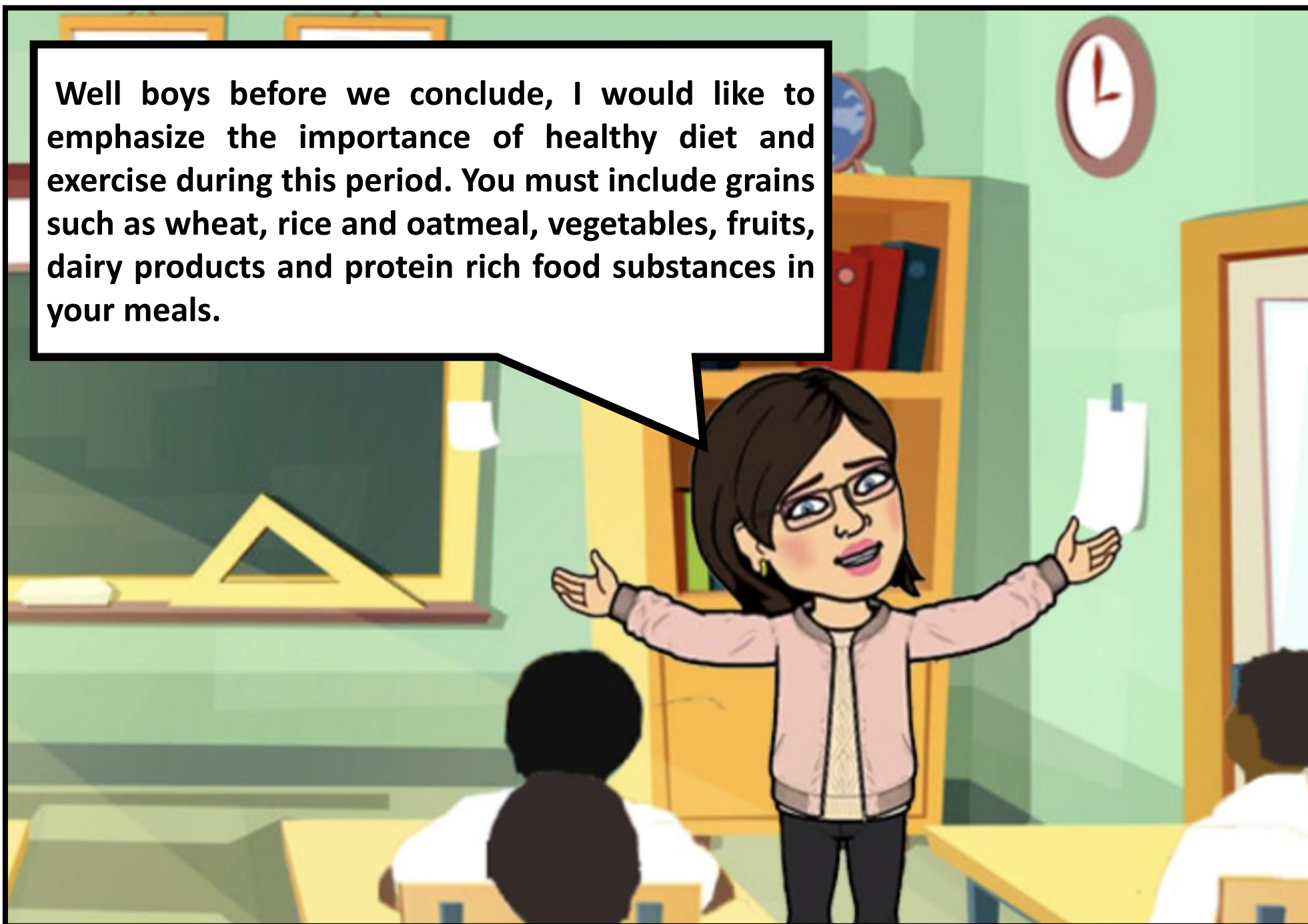
In order to take care of that we must follow a good personal hygiene routine. Be sure to wear clean clothes everyday especially undergarments and socks.



We must wash our armpits, feet and other places where there are many sweat glands using warm water and antiseptic soap. This helps in preventing bacterial growth. If it still bothers you then one can use an anti-perspirant deodorant which helps in masking the odour.



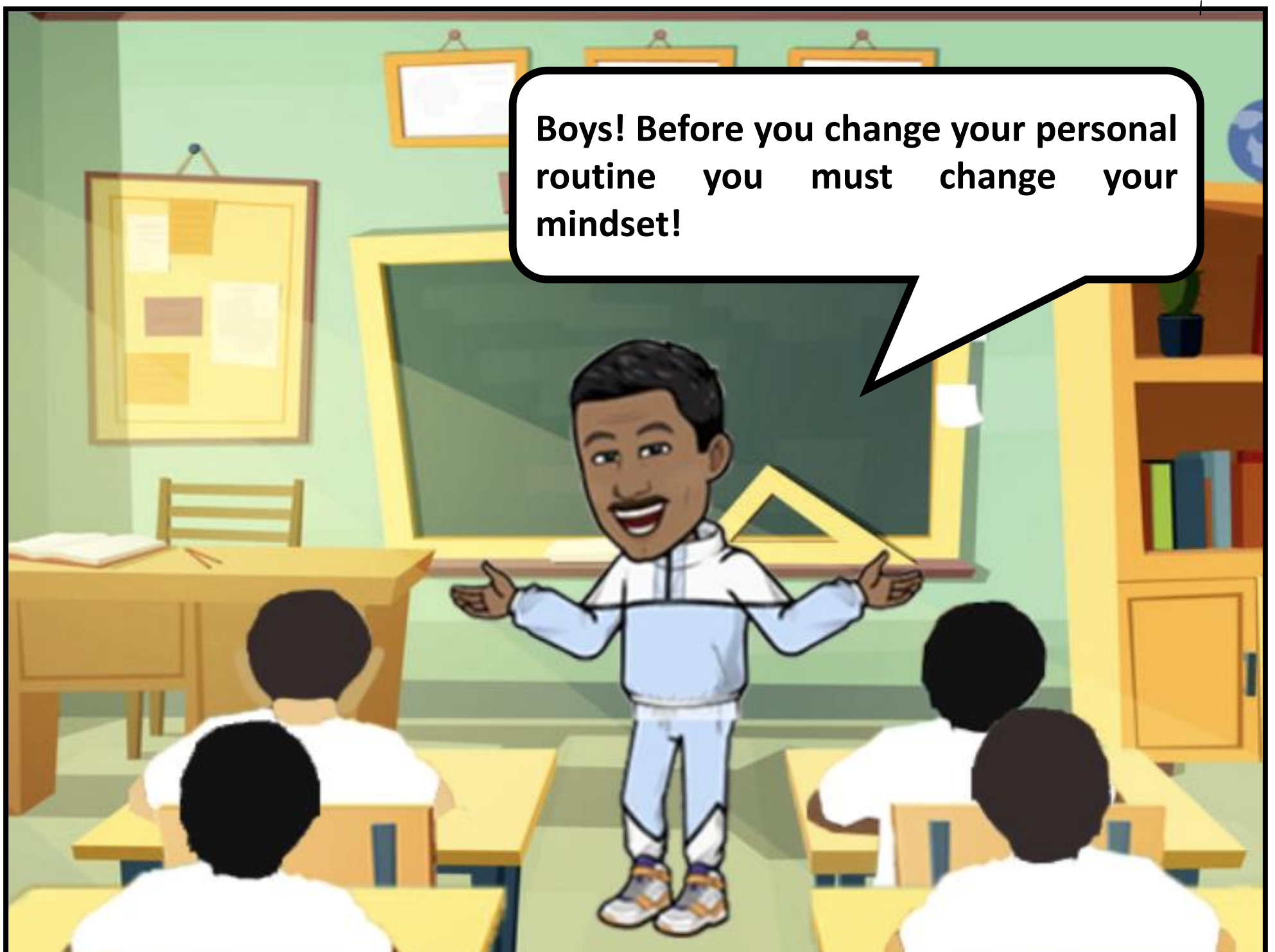
Well boys before we conclude, I would like to emphasize the importance of healthy diet and exercise during this period. You must include grains such as wheat, rice and oatmeal, vegetables, fruits, dairy products and protein rich food substances in your meals.



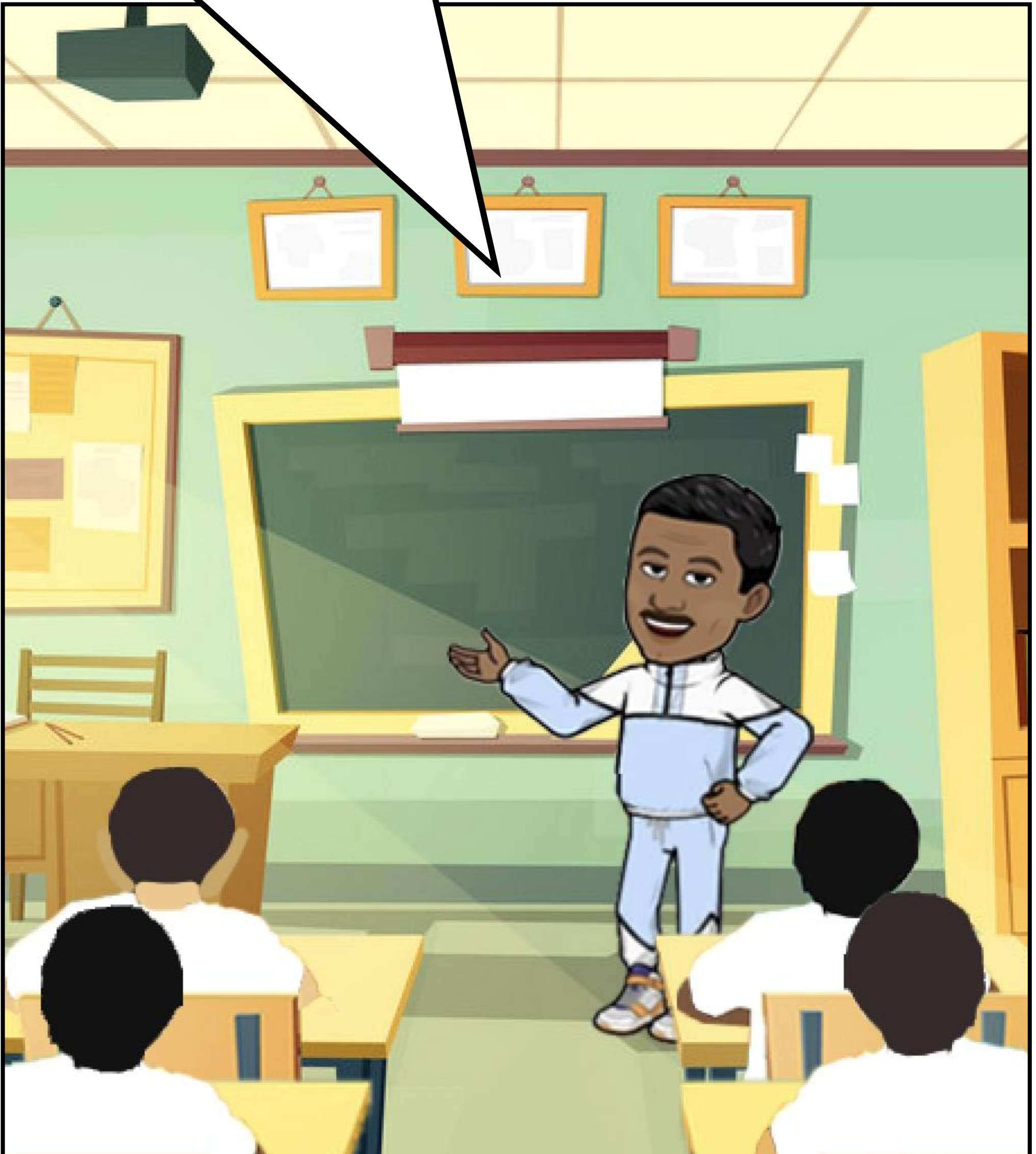
Drinking plain water or milk instead of sugary drinks, having a few nuts and fruits in place of chips, biscuits and pastries makes our diet healthy and helps us in staying fit. You can also increase intake of lean meats and poultry rather than fast food and processed meats.



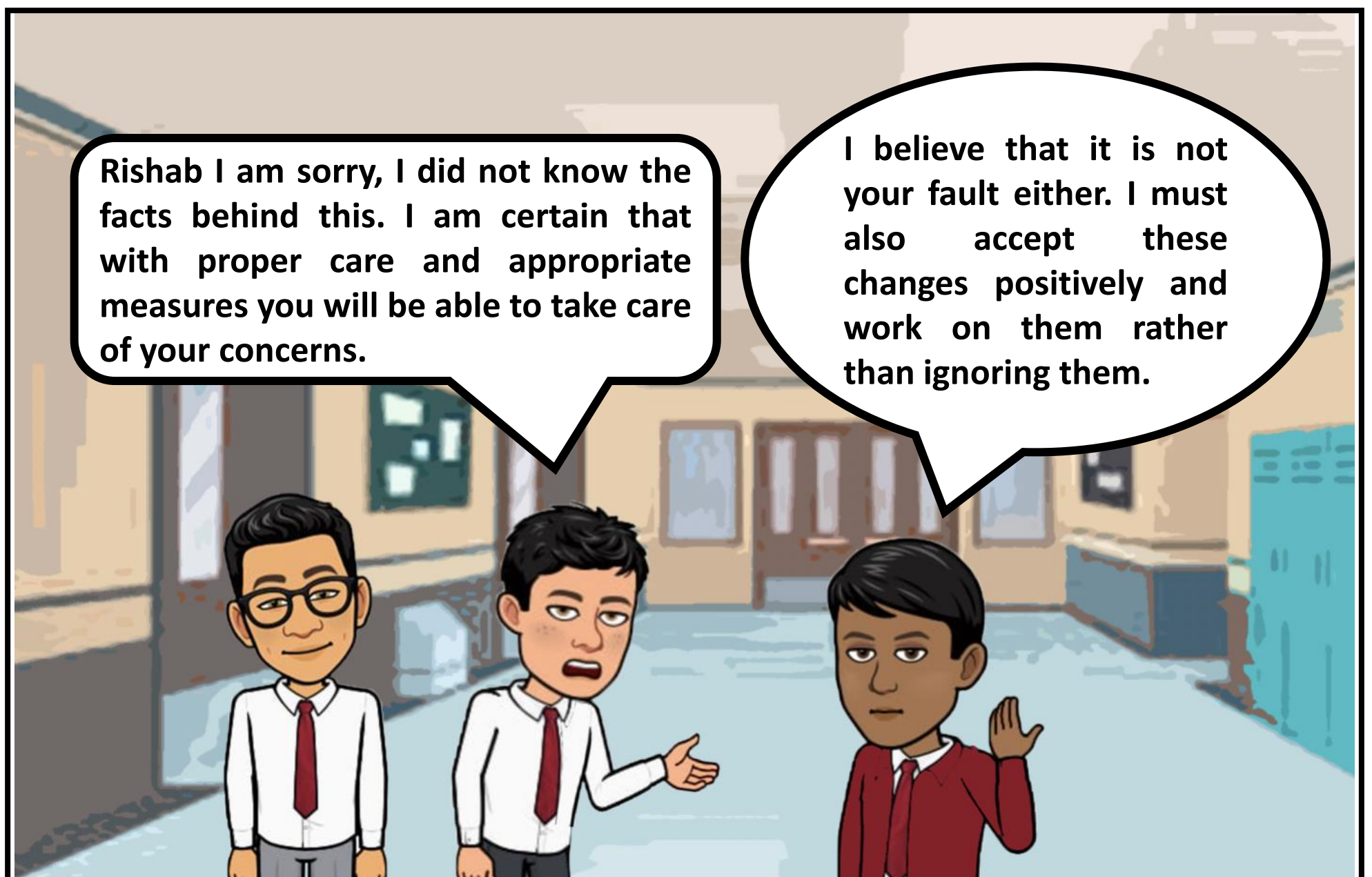
The teacher concludes the session by making them all understand that they should be sensitive towards each other's process of physical growth as it varies for every individual.



Each individual's body responds to external factors differently as they grow. Some sweat a lot and have foul body odour, some have stunted growth, some have more facial hair than others, some have a heavier voice and some have frail physique. But that does not mean that you will not respect your peers. Making fun or arguing over someone's physical appearance or their growth pattern does not make you any better. Learn to embrace growth positively rather than making a mockery of it.



This makes the boys realize that their fight could have only led to ignorance and not acceptance.



After the session the boys become aware of the significant changes that each individual goes through and also learn the importance of maintaining one's personal hygiene to avoid the issues they face as they grow. They finally understand that it is the acceptance of these changes that helps them in knowing better and growing better.

Now that sir has shared so much with us, it is our duty to spread awareness about these concerns and treat them with sensitivity and understanding instead of resorting to petty arguments.



LET'S DISCUSS

I Choose the correct answer from each of the following:

- I. Which of the following should an adolescent choose for her meal?
 - a. Chips, noodles, aerated beverages
 - b. Vegetable cutlets, chips, lemonade
 - c. Rice, noodles, popcorn
 - d. Chapati, dal, vegetable

2. The onset of menstruation in a female is known as _____.
 - a. menstrual cycle
 - b. menstruation
 - c. menarche
 - d. ovulation

3. Puberty in females begins at the age of _____.
 - a. 11 to 14 years
 - b. 16 to 18 years
 - c. 14 to 16 years
 - d. 18 to 21 years

4. Which change does not take place in adolescent girls?
 - a. Growth of hair in the armpits
 - b. Skin becomes oily
 - c. Change in body shape
 - d. Growth of muscles of the voice box

LET'S DISCUSS

5. Larynx is called

- a. Music box
- b. Voice box
- c. Respiratory Organ
- d. Sound box

6. Thyroxine hormone is produced by

- a. Adrenal gland
- b. Testes
- c. Pituitary gland
- d. Thyroid gland

7. The number of sex chromosomes in a human body are

- a. Three
- b. Two
- c. Four
- d. One

II. Fill in the blanks:

a. The stage when the menstrual cycle stops is called _____.

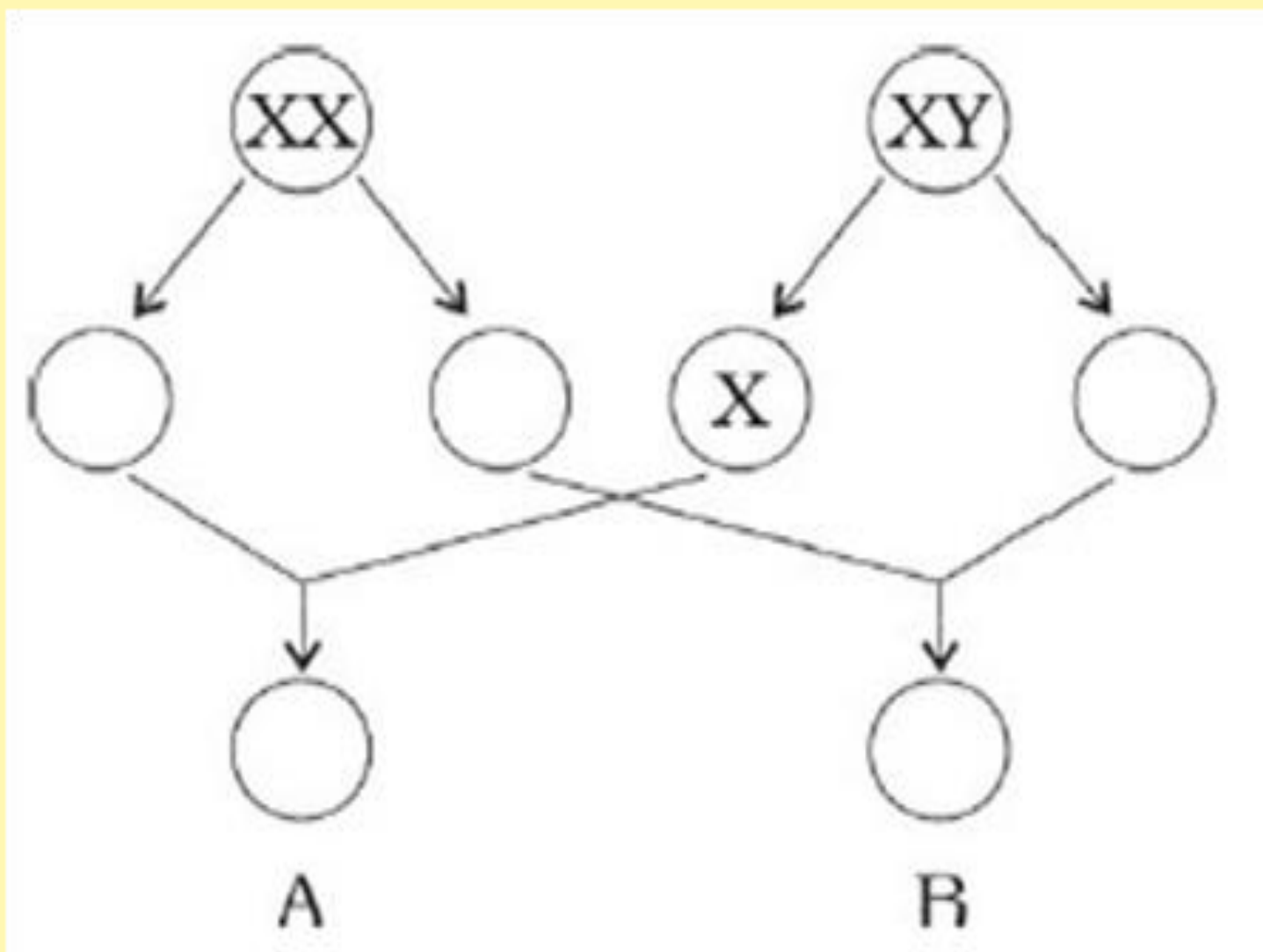
b. The master gland called _____ helps in controlling the production of both testosterone and estrogen hormones in males and females respectively.

c. Diabetes is caused due to the deficiency of _____ in the body.

LET'S DISCUSS

- d. _____ is caused due to deficiency of thyroxine hormone.
- e. _____ secretes male sex hormones.
- f. _____ secretes female sex hormones.
- g. Sex of the unborn child depends on whether the _____ has _____ or _____ chromosomes.
- h. _____ helps the body to adjust and fight the stress.

III. Fill in the blank circles in the picture given below. Identify the gender of child A and B.



WORD SEARCH

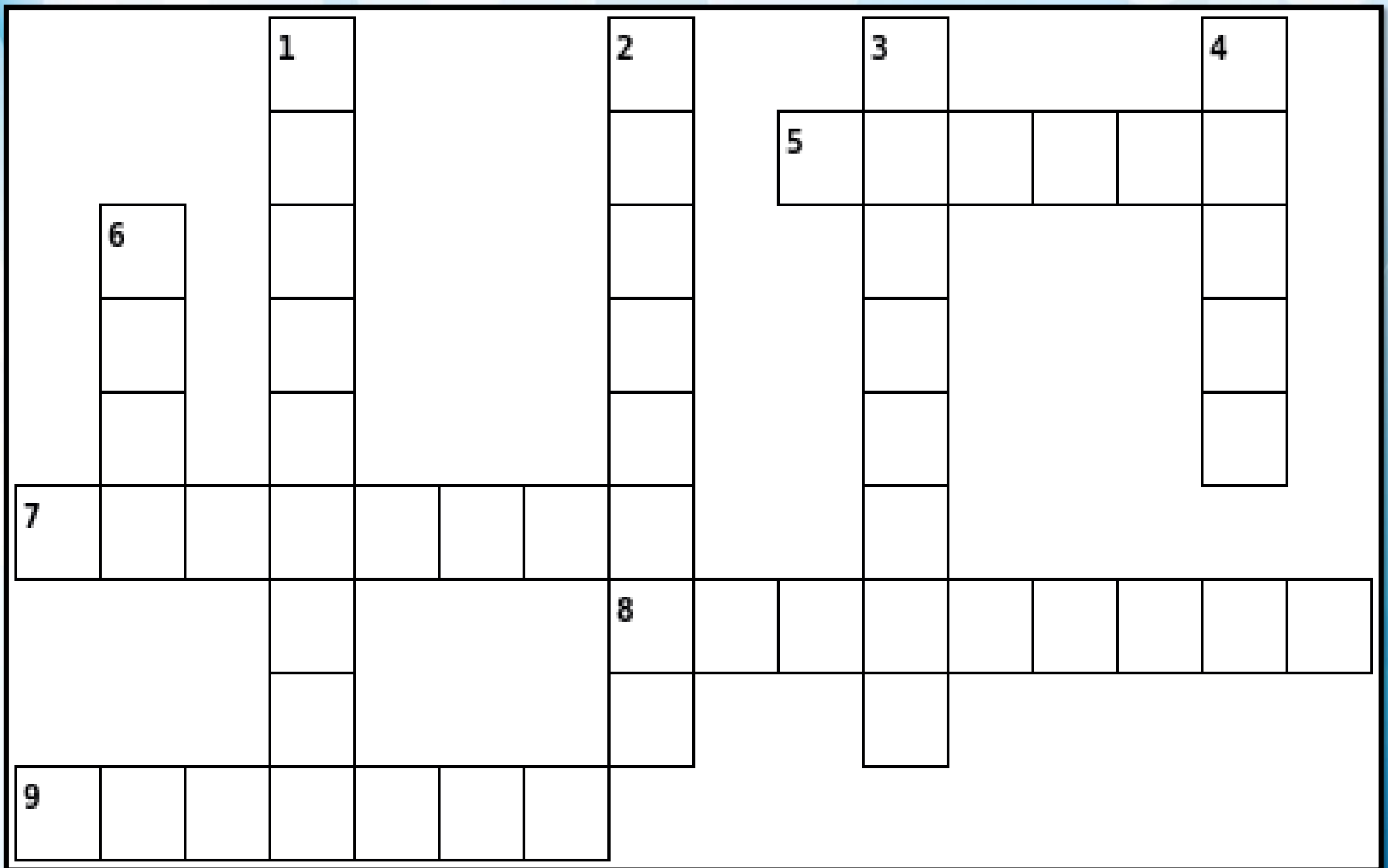
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A	Y	L	Z	W	V	S	A	S	V	K	K	W	S	S	X	L	H	N	S
P	S	I	R	O	U	A	M	E	Z	P	V	D	P	X	F	H	Z	P	W
J	U	C	A	L	P	H	E	A	Q	X	A	O	I	K	X	A	R	F	G
H	X	C	J	D	Y	G	N	O	C	V	S	O	Z	H	X	E	O	P	Y
L	I	T	Y	O	A	A	A	P	Y	E	O	J	H	J	B	O	K	G	O
W	L	L	W	B	P	B	R	Q	L	E	C	U	D	O	R	P	E	R	N
I	W	E	N	C	B	L	C	Q	C	D	Z	H	O	N	W	K	D	S	G
V	K	K	H	Z	E	W	H	U	E	C	N	A	R	U	S	S	A	E	R
Z	A	X	E	V	E	F	E	M	Z	J	I	N	P	N	M	X	W	S	O
N	O	D	C	L	D	H	H	H	T	X	S	N	Y	M	X	R	E	X	W
A	Q	B	O	V	M	D	A	I	M	Q	G	S	R	K	L	K	U	N	J
Z	E	T	J	L	I	R	G	B	L	C	O	N	F	I	D	E	E	S	B
J	H	Y	G	I	E	N	E	I	H	P	U	W	B	W	B	U	D	S	X
C	X	S	T	W	R	S	C	G	J	U	L	W	B	M	X	G	W	N	A
K	Y	K	J	V	Z	V	C	S	I	T	D	L	R	H	M	Y	I	D	S
W	X	I	Y	L	J	T	I	E	T	V	Z	L	E	G	I	Z	C	S	H
T	H	T	A	L	L	U	P	R	N	P	F	X	M	Y	A	I	P	F	H
T	Q	J	D	H	Q	L	S	O	S	T	W	F	T	U	N	M	H	P	B

ADOLESCENT
AGHAUST
REPRODUCE

MATURATION
DISPOSE
CONFIDE

REASSURANCE
MENARCHE
HYGIENE

CROSSWORD PUZZLE



Across

5. Sujata has a swollen neck because of the deficiency of iodine in her diet.
7. Rita is anxious as it is the beginning of her menstrual cycle.
8. Rohit gets angry very often but a friendly hormone controls his emotions
9. Sumit noticed many changes in his physical appearance when he was thirteen years old. These are due to the onset of which phase?

Down

1. Geeta's menstrual cycle has stopped at the age of fifty years.
2. Sudhir is diabetic because of the malfunctioning of this gland in his body
3. Jiya wants to know one term for all the chemicals secreted by various glands that control so many functions in our body.
4. Doctors always advise us to take these only if prescribed by them.
6. Siya is suffering from a skin problem due to excessive secretion of oil on face.

GLOSSARY

- Competing - striving against one another to gain or win something
- Amidst - In the middle of
- Stinking - foul smelling
- Intervene - take part in something to prevent or alter a result or course of events
- Body odour - the unpleasant smell of a person's unwashed body
- Puberty - when your body begins to develop and change as you move from kid to adult
- Self esteem - a person's overall sense of self-worth or personal value
- Adolescent - a young person in the process of developing from a child into an adult

GLOSSARY

- **Larynx** - the hollow muscular organ forming an air passage to the lungs and holding the vocal cords
- **Personal hygiene** - how you care for your body, includes bathing, washing your hands, brushing your teeth, and more
- **Lean meats** - meats with a relatively low fat content
- **Reconcile** - restore friendly relations
- **Aghast** - struck with terror, amazement or horror
- **Reassurance** - act of comforting someone
- **Menstrual cycle** - process of ovulation in females
- **Confides** - to tell someone a personal matter
- **Menarche** - the first occurrence of menstruation
- **Maturation** - process of emergence of personal and behavioural characteristics through growth process

GLOSSARY

- **Legumes** - a seed, pod, or other edible part of a leguminous plant, used as food which is rich in proteins
- **Starchy** - containing a lot of starch
- **Hygiene** - series of practices performed to preserve health
- **Renowned** - known or talked about by many people; famous
- **Gynaecologist** - a physician or surgeon qualified to practise in gynaecology (deals with the functions and diseases specific to women and girls, especially those affecting the reproductive system)
- **Sanitation** - conditions relating to health and cleanliness
- **Sanitary pads** - an absorbent pad worn by women to absorb menstrual blood

GLOSSARY

- **Personal hygiene** - how you care for your body, includes bathing, washing your hands, brushing your teeth, and more
- **Prominently** - to a large extent
- **Pimple** - a small hard inflamed spot on the skin
- **Acne** - a skin condition that occurs when hair follicles become clogged with oil and dead skin cells
- **Notion** - a conception of or belief about something
- **Communicable** - able to be communicated or passed on to others
- **Menopause** - end of a woman's menstrual cycles.

BIBLIOGRAPHY

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DISCLAIMER

This graphic novel/comic is a thoughtful endeavour to spread awareness about some of the most important and life-altering phenomena in each individual's life, dispelling misconceptions and myths about them. The content is developed by the faculty of Springdales School, Pusa Road. This creative output ensures originality of content, ideas and illustrations.

The story has truly been the work of imagination and the characters and incidents are purely fictitious. The content aims to ensure the better understanding of the concepts to the students. It gives them a wide scope to explore research oriented activities.

Certain characters, places and incidents are the product of imagination and any resemblance to actual persons, living or dead or actual events or locals is entirely coincidental. No part of this novel can be scanned.

SUMMARY

This novel is a thoughtful endeavour to spread awareness about some of the most important and life-altering phenomena in every individual's life, dispelling misconceptions and myths about them.

The characters depicted in the story are compassionate, kind and supportive, who explain the sensitive concepts of menstruation, personal hygiene and growth to young boys and girls with tact and care, enabling them to deal with their changing bodies in a healthier and informed manner.

Dispensing vital knowledge, appropriately dealing with adolescent behaviour and apprising young boys and girls with relevant information to deal with their changing lives is what this story will present as it progresses.