

SINGAPORE

Student Learning Space



Eliciting Voices of Students with Diverse Learning Needs

A Resource Guide Featuring SLS

1. Introduction

1. Introduction

About Us

Hi! 🙋 We are educators from the Educational Technology Division (ETD), Information Technology Division (ITD), and Psychological Services Branch (PSB).

We are part of the Classroom of the Future (CotF) project, a multi-divisional effort that leverages design thinking and other human-centric methodologies to enhance the learning experience for students and teachers. We seek to:

- identify challenges, frame and prioritise opportunities in the technology-enabled classroom;
- generate, prototype and test potential digital or non-digital solutions for the delivery of effective teaching and learning experiences; and
- develop capabilities within MOE in the design, deployment and scaling of technologies and solutions for teaching and learning.

1. Introduction

About This Resource Guide



Do you have these students in your class?

- The non-verbal students who struggle to express themselves.
- The anxious students who have trouble understanding text.
- The fearful students who do not want to make mistakes in front of the class.
- The quiet students who have difficulties with reading and writing.

We have something for you! This resource guide aims to shine a spotlight on eliciting students' voices in classes with diverse learning needs.

With the use of these SLS features, we hope to help you support your students with diverse learning needs (e.g., literacy difficulties, challenges in expression), enable them to participate more actively in class, and build their self-confidence.

2. Eliciting Voices of Students with Diverse Learning Needs using SLS Features

2. Eliciting Voices of Students with Diverse Learning Needs using SLS Features

3 Key Considerations

To elicit students' voices in classes with diverse learning needs, we propose 3 key considerations. For each of these considerations, we have provided examples of relevant SLS features that may be helpful in your lesson design.

1. Perception

Support students in gaining access to the text (e.g., seeing, hearing)

Examples of SLS features:

- Font size
- Audio support

2. Comprehension

Support students in interpreting the text

Examples of SLS features:

- Supporting images to accompany text
- Tooltips & Hints

3. Expression

Support students in expressing their response using appropriate scaffolds (e.g., multimodal responses)

Examples of SLS features:

- Component types
- Pre-populated Student Answer

2A. Perception

Support students in gaining access to the text (e.g., seeing, hearing)

2A. Perception

Font Size

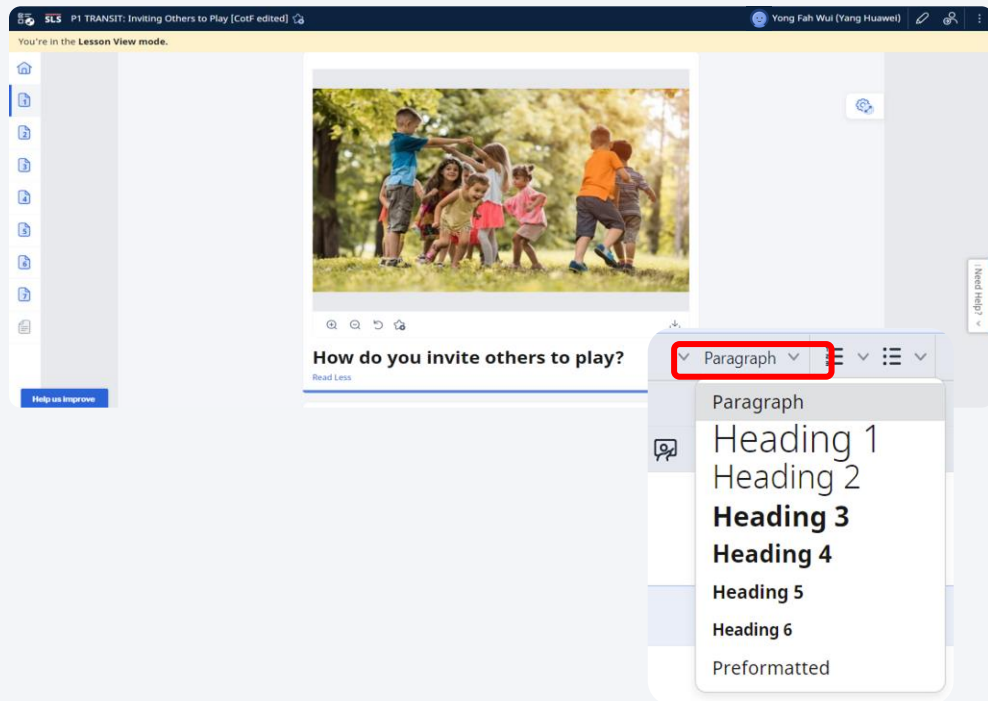
A small font size may be difficult to read, especially for students with limited literacy skills. For primary school students, you may consider using a larger or a more readable font size to bring the students' attention to the text.

2A. Perception

Font Size

You may use a range of font sizes available on SLS under the **Paragraph** tab. Choose a larger font for better readability.

☆ SLS is also mobile-responsive, allowing students to zoom in on their mobile devices.



2A. Perception

Audio Support

Students with reading difficulties may find it challenging to read a whole chunk of text. To support them, consider using an audio recording of the instructions/ questions or text given or using the Text-to-Speech function (currently only available for Chinese Language). This could help reduce the cognitive load of reading and comprehending the text at the same time.

2A. Perception

Audio Support - Supplementary Audio File

Consider uploading an audio recording of the text as an audio media file* to support your students who have reading difficulties.

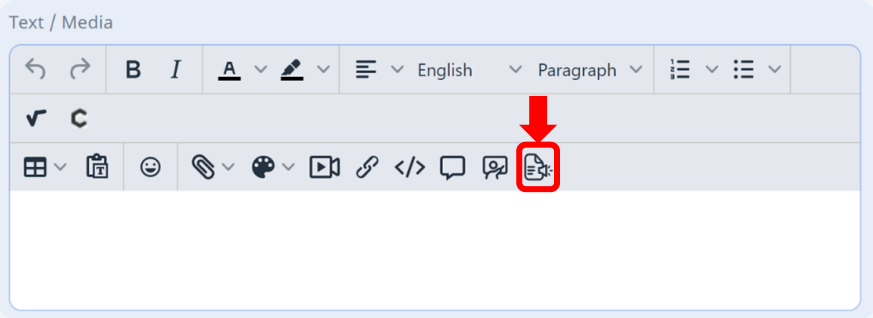
*Use your phone/ computer's Sound Recorder app to record an audio file.

The image displays two screenshots of a lesson editor interface. The top screenshot shows the 'Lesson Description' editor with a toolbar containing various icons. A red arrow points to the 'Upload File' icon (a paperclip with a plus sign), which is highlighted with a red box. Below the toolbar, the text 'Upload File' is also highlighted with a red box. The bottom screenshot shows the same editor with the audio player interface visible. The audio player shows a play button, a progress bar, a volume icon, and the filename 'Audio_for_Activity_1.mp3'. The entire audio player interface is highlighted with a red box.

2A. Perception

Audio Support - Text-to-Speech Function

1. To use the **Text-to-Speech (TTS)** function (available to all Mother Tongue Language teachers), select the **TTS** icon.
2. Select the language and add text to generate the audio file.



Text / Media

← → B I A English Paragraph

✓ C

Generate Text-to-Speech File ×

Language

Chinese

Input Text

一天早晨，蚊子看见鬣蜥在水洼边喝水。蚊子说：“鬣蜥大哥，知道昨天我看见什么了吗？说出来你肯定不信！”
“说来听听。”鬣蜥答道。
蚊子说：“我看见一个农夫挖红薯，那些红薯呀，都跟我一般大呢。”



GENERATE AUDIO

CANCEL SAVE

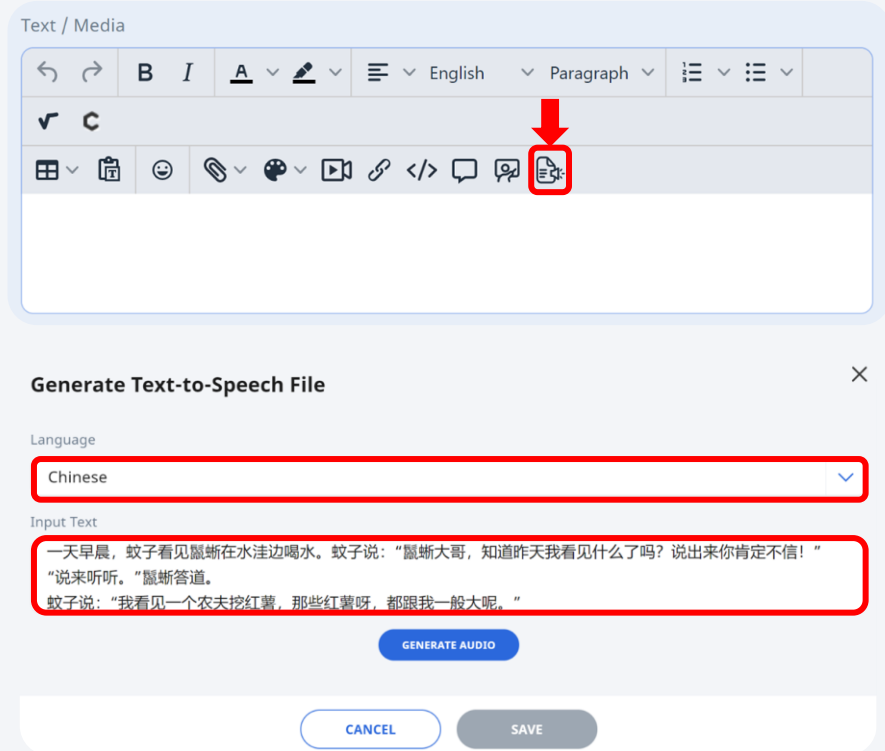
2A. Perception

Audio Support - Text-to-Speech Function

3. When previewing the file, you can:

- play/pause the audio
- toggle between sentences using the back () and forward () arrows
- click on specific sentences to play that sentence

☆ The sentence being read at the moment will be highlighted in yellow.



The screenshot shows a rich text editor toolbar with various icons. A red arrow points to the TTS icon (a document with a speaker). Below the toolbar is a dialog box titled "Generate Text-to-Speech File" with a close button (X). The dialog box has a "Language" dropdown menu set to "Chinese" and an "Input Text" field containing the following text: "一天早晨, 蚊子看见鬏蜥在水洼边喝水。蚊子说: “鬏蜥大哥, 知道昨天我看见什么了吗? 说出来你肯定不信!” “说来听听。”鬏蜥答道。蚊子说: “我看见一个农夫挖红薯, 那些红薯呀, 都跟我一般大呢。”". Below the input text is a "GENERATE AUDIO" button. At the bottom of the dialog box are "CANCEL" and "SAVE" buttons.

2A. Perception

Audio Support - Text-to-Speech Function

4. Spotted an error? Feel free to edit the text!

Generate Text-to-Speech File ✕

Language

Chinese ▾

⏸ ⏪ ⏩ ⏹

一天早晨，蚊子看见鬚蜥在水洼边喝水。蚊子说：“鬚蜥大哥，知道昨天我看见什么了吗？说出来你肯定不信！”
“说来听听。”鬚蜥答道。
蚊子说：“我看见一个农夫挖红薯，那些红薯呀，都跟我一般大呢。”

EDIT TEXT

CANCEL SAVE

2B. Comprehension

Support students in interpreting the text

2B. Comprehension

Tooltip

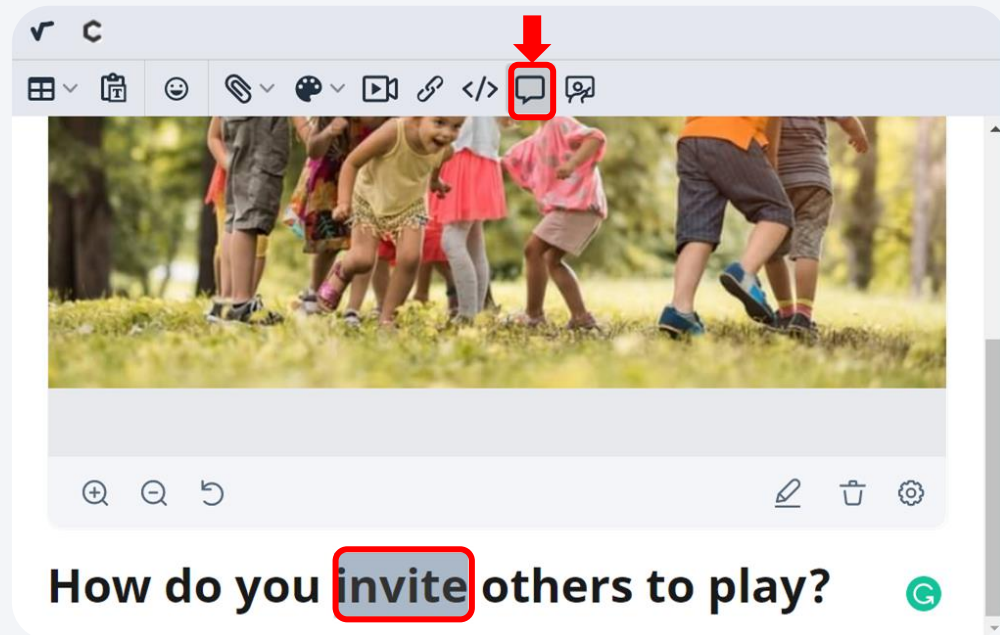
If there are words that you feel the students may have difficulty comprehending, you may provide them with simple definitions to support them in their understanding of the text.

☆ Using age-appropriate language makes comprehension easier!

2B. Comprehension

Tooltip

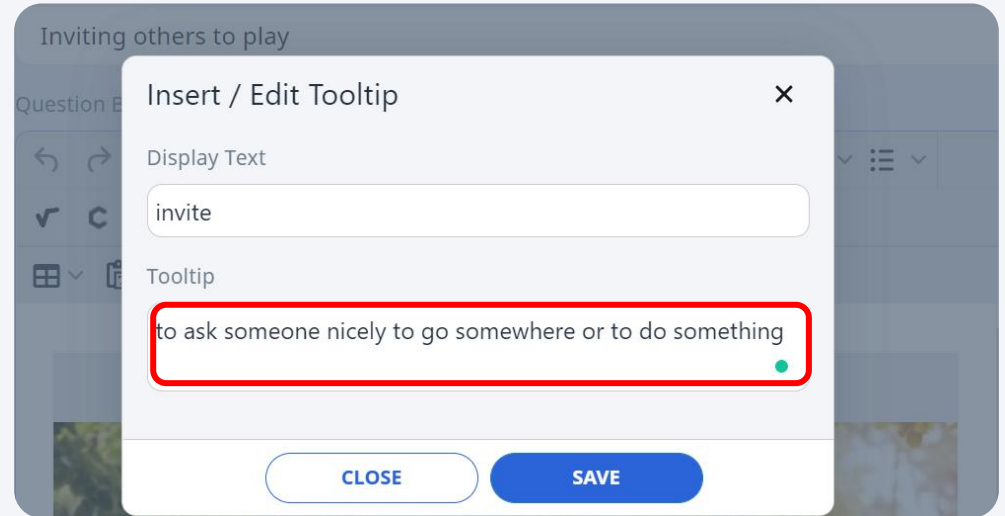
1. Highlight a difficult word and click on the **Tooltip** icon.



2B. Comprehension

Tooltip

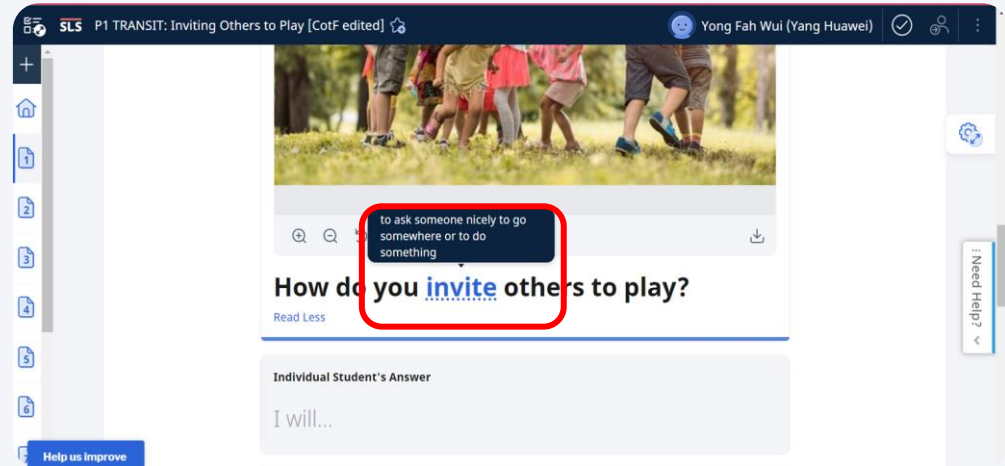
2. Type the meaning of the word under **Tooltip**.



2B. Comprehension

Tooltip

3. The word will be highlighted in blue and the meaning of the word will appear when students mouseover or tap on the word.



2B. Comprehension

Supporting Images to Accompany Texts

You may include supporting images to help students interpret the text. Using pictures could also facilitate students' reading comprehension.

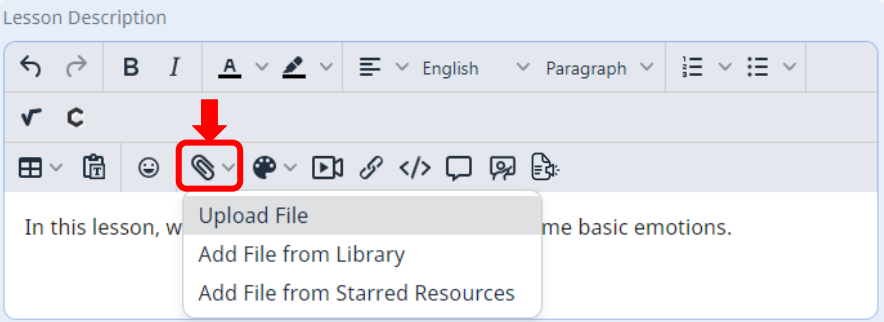
☆ Using pictures may help to capture students' attention, allowing them to be more engaged in their learning.

2B. Comprehension

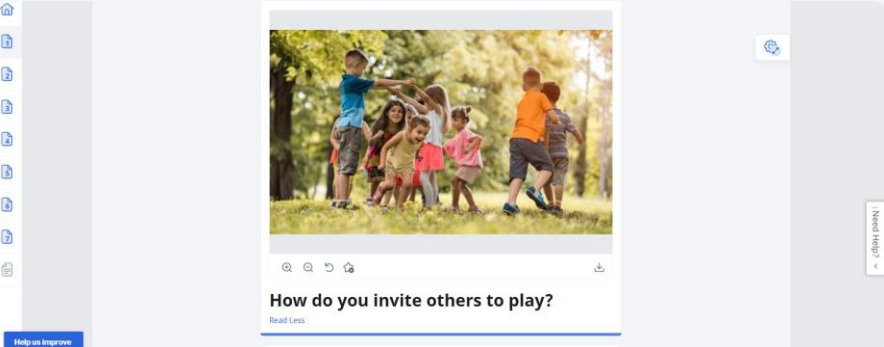
Supporting Images to Accompany Texts

Add supporting images by uploading the image file.

Lesson Description



The screenshot shows a rich text editor interface. At the top, there's a title 'Lesson Description'. Below it is a toolbar with various icons for undo, redo, bold, italic, text color, background color, list, language (English), paragraph style, and alignment. A red arrow points to the 'Add File' icon (a paperclip) in the toolbar. A dropdown menu is open below the icon, showing three options: 'Upload File', 'Add File from Library', and 'Add File from Starred Resources'. The main text area contains the text 'In this lesson, w... me basic emotions.'



The screenshot shows a lesson page layout. On the left is a vertical sidebar with navigation icons. In the center is a video player. The video player has a photo of children playing in a park. Below the photo is the text 'How do you invite others to play?' and 'Read Less'. On the right is a vertical sidebar with a 'Need help?' button.

2B. Comprehension

Example of Supporting Images - For Mathematics

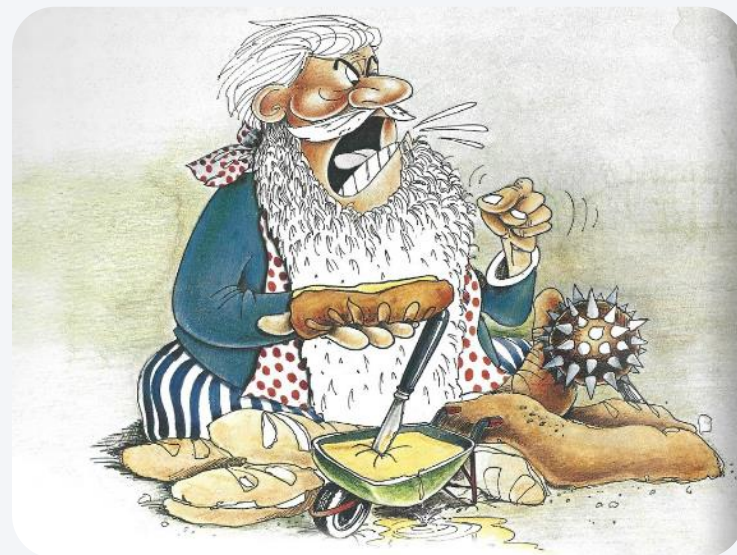


1. $2 + 3 =$

2B. Comprehension

Example of Supporting Images - For English

1. Why do you think the giant was angry?



Credits: <https://fliphtml5.com/herfc/qttl/basic>

2B. Comprehension

Example of Supporting Images - For Self-Management Skill/Form Teacher Guidance Period

1. How do you feel after listening to the story?

I felt _____.



happy



sad



shocked



angry



2B. Comprehension

Hint

Students may experience difficulties understanding the question prompt. Giving hints may provide cognitive scaffolds to guide students in their thought processes.

2B. Comprehension

Hint

Type in the Hint under the question body to scaffold students' comprehension and response.

(Applicable for Multiple-Choice Questions)

Question Body

Step 1 - Decide on _____ to ask the permission from.

 HINT

We must ask the right person for permission.

2C. Expression

Support students in expressing their response using appropriate scaffolds






2C. Expression

Component Types

SLS offers a variety of Component Types which you may use to elicit quick responses from your students. Try choosing different Component Types to suit the purpose of the questions asked as the choice of Component Types could support students' diverse learning needs.

2C. Expression

Component Types in SLS

Component Type	How diverse learning needs can be supported
Interactive Thinking Tool (ITT)	 <p>Enables students to share their responses using their preferred mode (e.g., drawing, audio recording, text, etc.) with teachers and classmates, and to comment on peers' responses. Responses can be viewed by everyone in class and this provides opportunities for students to learn from one another.</p>
Poll	 <p>Supports students who have difficulties typing out an answer; the students can select one or more options from a list provided when the question does not require a correct answer.</p>
Multiple-Choice	 <p>Supports students who have difficulties typing out an answer; the students can select one of the options from a list provided when the question requires a correct answer.</p>
Free-Response	 <p>Enables students to share their responses with teachers using their preferred mode (e.g., drawing, audio recording, text, etc.).</p>
Audio-Response	 <p>Supports students who may have difficulties typing out an answer; the students can record their answers verbally.</p>

2C. Expression

Pre-populated Student Answer

You may use the Pre-populated Student Answer feature in SLS to support students who may have difficulty in crafting their response, which may be through words or drawing.

2C. Expression

Pre-populated Student Answer (Text)

Type the sentence starter in the 'Pre-populated Student Answer' text box and it will automatically be shown in your students' assignment.



The screenshot shows a digital assignment interface. At the top, there is a header area with a button labeled 'Choose a feeling' and a 'View All' button. Below this is a 'Header' section with a text box containing 'Choose a feeling'. The 'Question Body' section contains the text 'Choose a feeling and draw it on the given template below.' The 'Pre-populated Student Answer' section is highlighted with a red border and contains a rich text editor with a toolbar (undo, redo, bold, italic, text color, background color, list, indent, link, unlink, insert link, insert image, insert video, insert audio, insert code) and a text box containing the pre-populated text 'The feeling I have chosen is|'. At the bottom, there is a blue information bar with an 'i' icon and the text 'Students' submissions will be displayed on the Interaction Board.'

2C. Expression

Some Examples of Useful Sentence Starters for Answering Questions

- I think this way because ...
- I think/believe/imagine that ...
- I am right because...
- To add on ...
- I was taught by our teacher to ...
- For example ...
- My answer is ...
- In my opinion ...
- In my opinion ...
- It seems to me that ...
- I know because ...
- It said in the story ...
- This happened because ...
- The reason for this is ...
- I know this is true because ...
- [For Mathematics] I did it this way because ...

2C. Expression

Some Examples of Useful Sentence Starters for Commenting on Others' Responses

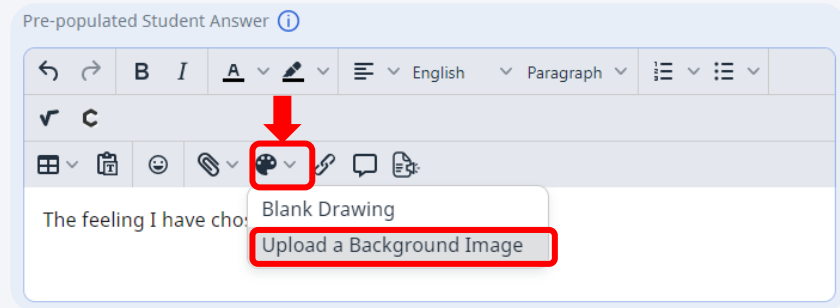
- This makes sense because . . .
- Another way to look at this is . . .
- I agree/disagree with you because . . .
- I'd like to add that . . .
- To add on what _____ said, . . .
- After listening to _____, I think the answer should be . . .
- After seeing _____, I want to change my thinking to . . .
- I thought _____, but now I think . . .
- I think your answer is correct because . . .
- That's an interesting idea, and I also think . . .
- [For Mathematics] My way is different from yours because I . . .
- [For Mathematics] I used the same way, but I want to add . . .
- [For Mathematics] I can prove what _____ is saying is correct because . . .

2C. Expression

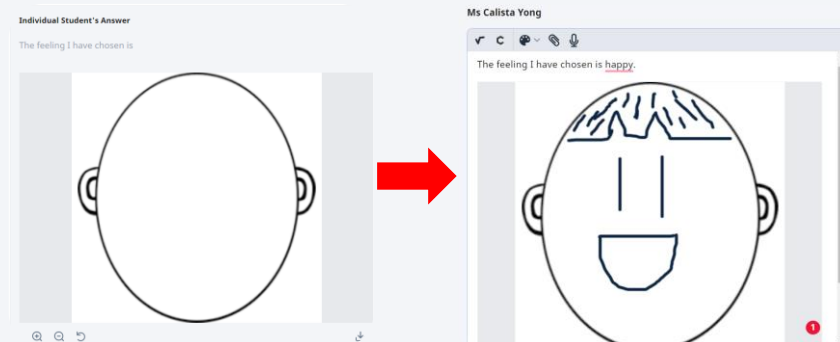
Pre-populated Student Answer (Drawing)

☆ Drawing function could be useful to support students who have challenges expressing themselves through words.

1) To add an image, click on the **Drawing** icon and upload a Background Image.



2) Upon uploading an image, your students will be able to draw on the image that you have uploaded.



3. Sample SLS CG Lessons

3. Sample SLS CG Lessons

Examples - Lesson Plans in SLS CG

To guide you in creating your own SLS lessons catering to students with diverse learning needs, here are some lesson examples from the SLS Community Gallery (CG). In the following section, we have highlighted how these lessons incorporate the features shared in this resource guide.

Two of the examples include Self-Management Skills lessons that we have co-designed with our partner teachers from two primary schools using some of the recommended SLS features in this resource guide for their students with diverse learning needs in the Transition Support for Integration programme (TRANSIT) classes.

TRANSIT Lesson 1: Asking for Permission

Co-designed by:
CotF, PSB, St Anthony's Primary School and North Vista
Primary School

<https://vle.learning.moe.edu.sg/mrv/community-gallery/lesson/view/48ecf4c2-ac17-4386-a69d-368b3f6ce570/cover>

3. Sample SLS CG Lessons

Use of Poll & Supporting Image in SLS

- Use the Poll Component type so that students with literacy difficulties could easily respond without typing.
- Use Emoticons as supporting images to help students who have difficulties in reading or text comprehension.

Poll 1

How would you feel if someone take your things without asking for your permission?

Sad 😞

Happy 😊

Angry 😡

Shocked 😱



Students' submissions will be displayed on the Interaction Board.

3. Sample SLS CG Lessons

Use of Hints in SLS

Include a Hint to guide students in deciding which option was the most suitable.

Q1

Step 1 - Decide on _____ to ask the permission from.

 HINT 

We must ask the right person for permission.

Who

where

NUMBER OF TRIES

1

MARKS

[1]

TRANSIT Lesson 2: Feelings

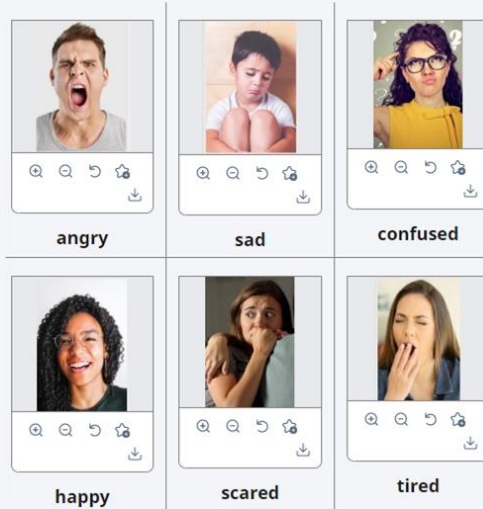
Co-designed by:
CotF, PSB and Sembawang Primary School

<https://vle.learning.moe.edu.sg/mrv/community-gallery/lesson/view/45526087-9fe1-4f6b-887e-d303f15f53a0/cover>

3. Sample SLS CG Lessons

Use of Poll & Supporting Image in SLS


Use a variety of supporting images depicting feelings (e.g., realistic, illustrations) to help students recognise the feelings better.



3. Sample SLS CG Lessons

Use SLS ITT & Pre-populated Student Answer (Drawing) in SLS

- Use the SLS ITT to help students see their classmates' responses, which were used later to facilitate a discussion.
- Pre-populate a template to direct students to draw the facial expression of the feeling that they had chosen.

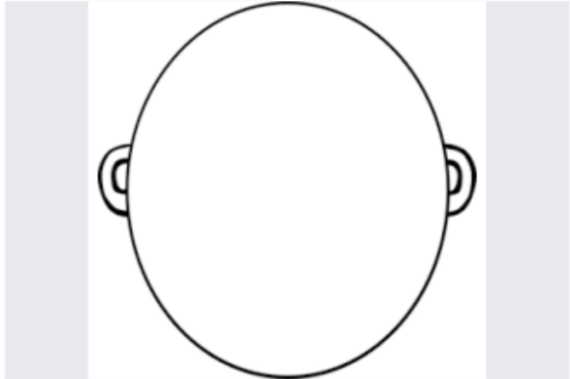
Interactive Thinking Tool 

Draw a feeling [View All](#)

Choose a feeling and draw it in the face template below.

Individual Student's Answer

The feeling I chose was ...



P1 Learning Support Programme (LSP) Reading And Spelling (Words with digraph *th*)

Lesson Created by: Lim Mei Yin Diane from Bedok Green
Primary School

<https://vle.learning.moe.edu.sg/mrv/community-gallery/lesson/view/e01704ab-278a-482f-9ff3-da7e333e7895/cover>

3. Sample SLS CG Lessons

Use of Large Font Size and Audio Support in SLS

In addition to using a large font size, upload a recording of the instructions given to assist students with reading difficulties.

Listen to each word carefully. Then spell them in the blanks provided.



4. External Accessibility Functions

☆ Share this section with parents/ guardians to help them support their child/ ward's learning at home!

4. External Accessibility Functions

External Accessibility Functions

In this section, we have included some external accessibility functions that may be useful to you as you explore designing SLS lessons to elicit voices of students with diverse learning needs:

- Apple Text-to-Speech and Speech-to-Text functions
- Google Chrome Text-to-Speech extension
- Windows Text-to-Speech function

Google Chrome/ Apple Accessibility Functions

For students with reading difficulties, using the Text-to-Speech function on devices and browser extensions can help reduce the cognitive load of reading and text comprehension.

The Speech-to-Text function* on Windows and Apple devices may be useful to support students with literacy difficulties (especially with spelling) when responding to question prompts.

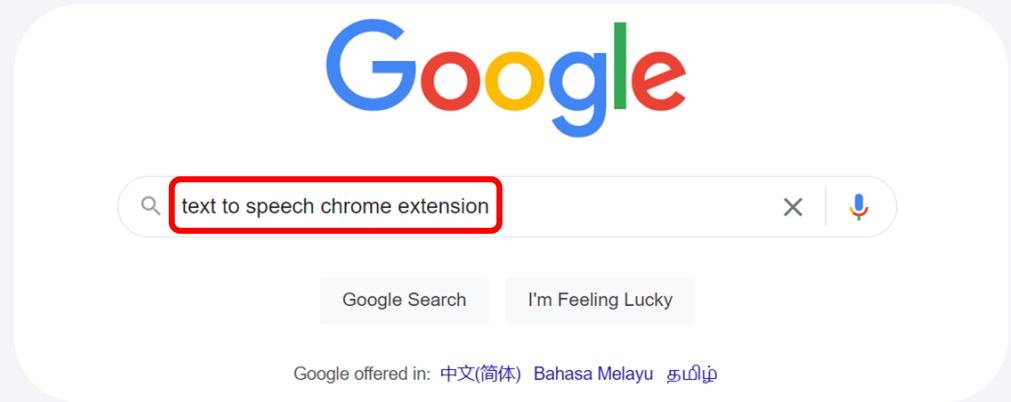
*Note: Transcription may not be entirely accurate.

4. External Accessibility Functions

Google Chrome Accessibility Functions

Text-to-Speech

1. To start, search for the **Text-to-Speech** extension on Google Chrome.

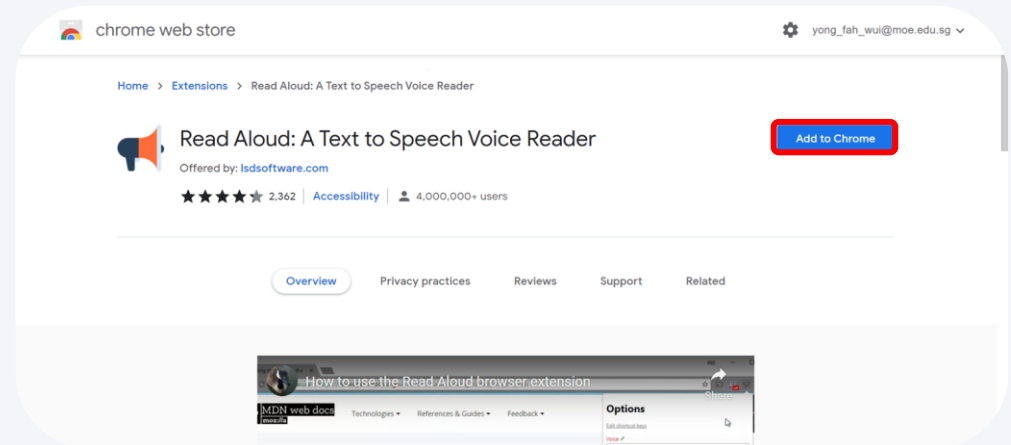


4. External Accessibility Functions

Google Chrome Accessibility Functions

Text-to-Speech

2. Then, add the **Text-to-Speech** extension to Google Chrome.

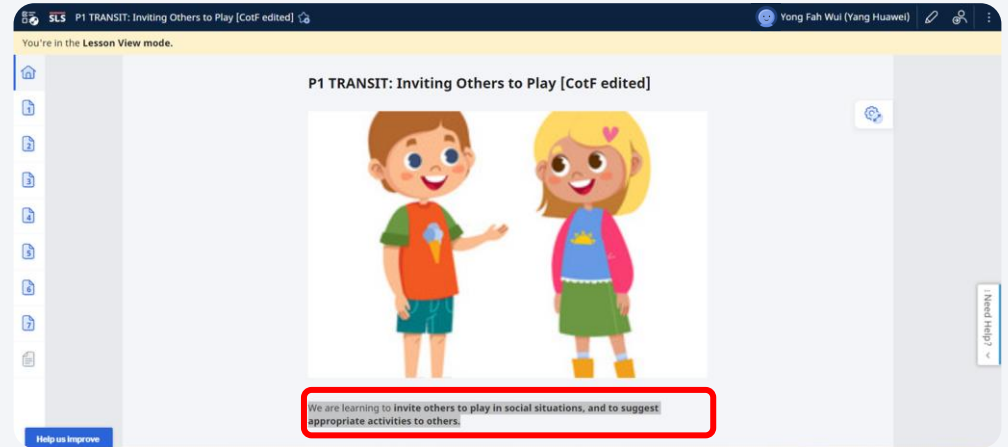


4. External Accessibility Functions

Google Chrome Accessibility Functions

Text-to-Speech

3. In SLS, highlight the text to be read.

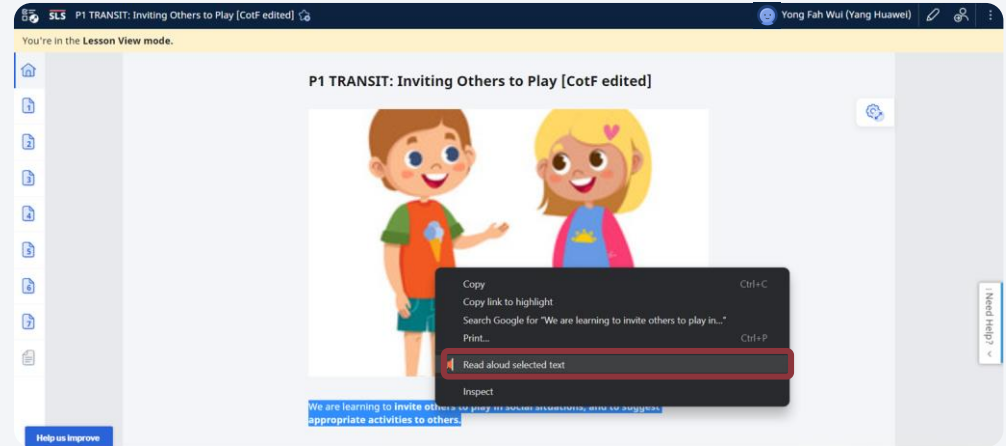


4. External Accessibility Functions

Google Chrome Accessibility Functions

Text-to-Speech

4. Next, right-click and select **Read aloud selected text**.

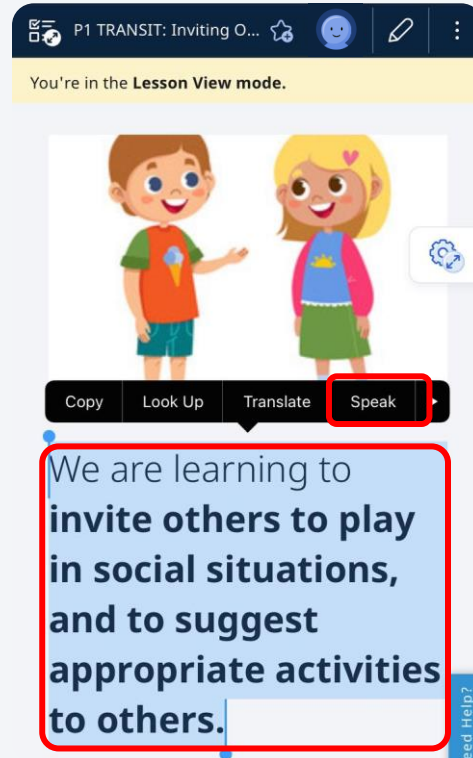


4. External Accessibility Functions

Apple (iPad) Accessibility Functions

Text-to-Speech

Spoken Content - highlight specific text to be read, double-tap the highlighted text, then click on **Speak**.

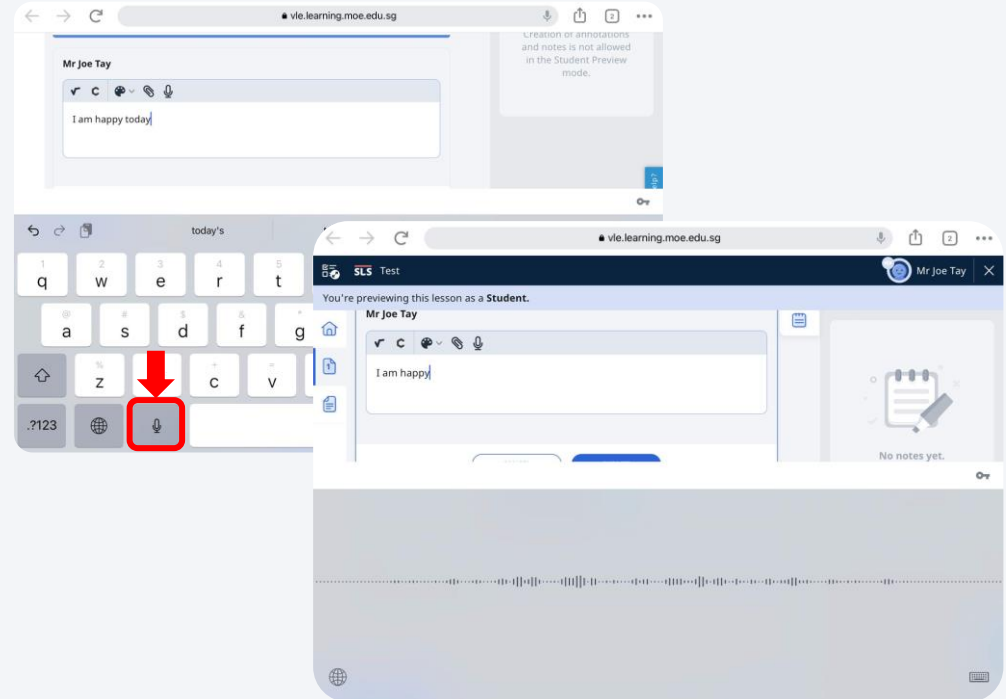


4. External Accessibility Functions

Apple (iPad) Accessibility Functions

Speech-to-Text

Transcription (Speech-to-Text) - select the **Dictation** function on the iPad.



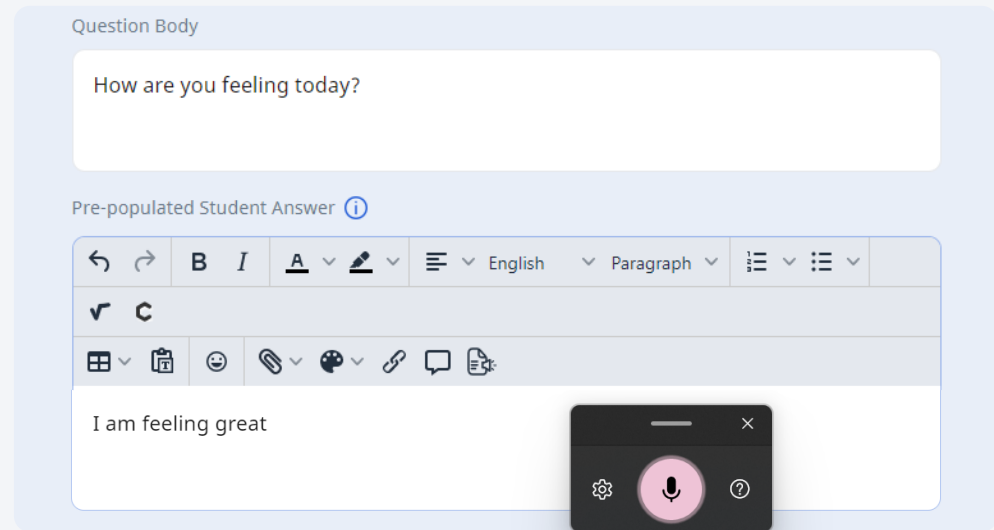
4. External Accessibility Functions

Windows Accessibility Functions

Speech-to-Text

Voice Typing (Speech-to-Text)

1. Select the space where you would like to input your text.
2. Press Windows logo key + H.
3. Click on the **Microphone** icon and start speaking.
4. To stop the voice typing, click on the **Microphone** icon again.



4. External Accessibility Functions

Other Google Chrome Accessibility Functions

<https://www.google.com/accessibility/products-features/>

Accessibility Function	Examples
Vision	<ul style="list-style-type: none">• High Contrast Chrome Extension• Custom Colour Controls
Hearing	<ul style="list-style-type: none">• Live Caption• Image Descriptions
Cognitive	<ul style="list-style-type: none">• Simplified Views

4. External Accessibility Functions

Other Apple (iPad) Accessibility Functions

<https://www.apple.com/sg/accessibility/>

Accessibility Function	Examples	Link
Vision	<ul style="list-style-type: none">• VoiceOver• Magnifier• Colour Filter	https://www.apple.com/sg/accessibility/vision/
Mobility	<ul style="list-style-type: none">• Voice Control• Head Tracking• Assistive Touch	https://www.apple.com/sg/accessibility/mobility/
Hearing	<ul style="list-style-type: none">• Conversation Boost• Sound Recognition• Sensory Alerts	https://www.apple.com/sg/accessibility/hearing/
Cognitive	<ul style="list-style-type: none">• Safari Reader• Guided Access	https://www.apple.com/sg/accessibility/cognitive/

4. External Accessibility Functions

Other Windows Accessibility Functions

<https://www.microsoft.com/en-us/accessibility/windows>

Accessibility Function	Examples
Vision	<ul style="list-style-type: none">• Colour Contrast Themes• Magnifier• Colour Filters• Narrator
Hearing	<ul style="list-style-type: none">• Windows Caption• MonoAudio
Mobility	<ul style="list-style-type: none">• Eye Control• Voice Typing
Neurodiversity and learning	<ul style="list-style-type: none">• Immersive Reader• Focus Assist

In Appreciation

Our team would like to express our sincere gratitude to the colleagues who have joined us on this journey:

1. Lim Mei Poh Cynthia (Sembawang Primary School)
2. Nuremiliyana Suhaidi (Sembawang Primary School)
3. Mardiana Radja Abdul Rani Atjeh (St Anthony's Primary School)
4. Sim Hwee Daphne (St Anthony's Primary School)

We would also like to thank YOU for reading the guide to the very end (which is a big encouragement to us!) and for being a champion in eliciting the voices of students with diverse learning needs.

Thank You!

Explore our edtech innovations and
share your thoughts with us at
<https://for.edu.sg/cotf>



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OF THE FUTURE**
Redesigning Learning