

Experio Builder AI (Phase 1)

Definition and Text Guide	
User	User with educator role
Main page	When experio builder is opened
Welcome space	The initial interface for the AI sidebar that educators see when they open the Experio Builder. This will disappear once entered their first prompt / minimise the AI tool.
Chatbox conversation space	Display conversation between user and AI, similar to chatgpt
Chat bar	Text input field where educators can type messages or questions
Preset prompts	Ready-made keywords by BeED that users can choose to ask AI. In the system, this will be displayed as Prompts
Parameters settings	Users can set how the AI will generate results. This setting helps AI to understand what users want and generate relevant results based on that. Parameters include subject, topic, grade, and curriculum type.
Saved parameters	Educators can save their customised parameter settings as their preset. This function makes it easy for educators to quickly use AI without having to set them up from the beginning each use.
Regenerate	Asking AI to create a new answer or response (Similar to chatgpt)
Chat history page	Contains AI chat history of that specific LE
(phrases in green highlight)	Icons needed. All icons must be named with tooltip function

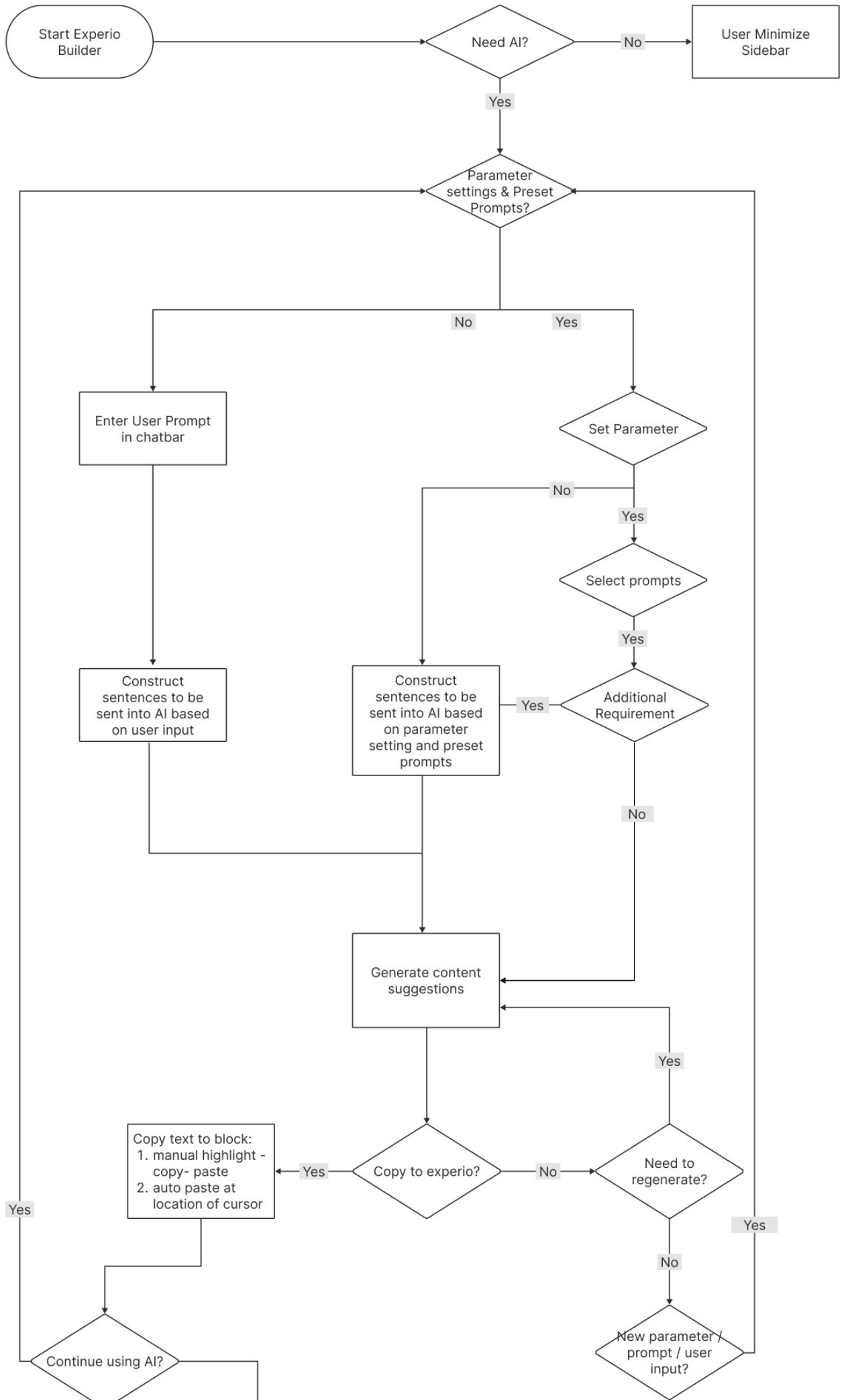
Purpose and Impact
Purpose

Allows educators to automatically generate and auto-populate content suggestions when they are writing lesson experiences directly side-by-side from Experio builder. For the first phase, the system will only integrate ChatGPT with minor add-on features.


Impact

- This feature will only apply to educator's account type. No impact on admin and student's account
- Experio builder module add-on (educator should be able to use current experio builder as usual)

Flowchart



1. System startup: Main page

- Default page of experio builder is with the AI sidebar. User should be able to hide the AI sidebar using **Hide AI** (tooltip: Hide AI name)
- Users should be able to instantly access the AI sidebar after hiding by clicking the **Unhide AI** (tooltip: Unhide AI name)
- **Phase 2: BeED Ai Mascot will be used to unhide AI**
- Upon the system startup, the AI sidebar will show
 - Welcome message (will be replaced by Question and Answer after
 - "Hey there! I'm [AI name], your trusty virtual assistant, here to sprinkle some digital magic and make your day a breeze!" Ready to dive in? Awesome! Just follow these steps:
 1. Enter your selected parameters - let's set the stage for success!
 2. Choose from suggested prompts or type your own requirements in the chatbox
 - Where user will fill in:
 - Learning Objectives
 - Place  (information icon) beside the prompt so user will be able to hover for additional context and clarification "You may use key phrases or directly copy your learning objectives here."
 - Insert this as grayed out text in the input box that users can overwrite when they type: *Understand properties of light, Build predictive models*
 - Subject
 - Insert this as grayed out text in the input box that users can overwrite when they type: *Science, Machine Learning*
 - Age
 - Insert this as grayed out text in the input box that users can overwrite when they type: *7-9, 12*
 - Curriculum
 - Insert this as grayed out text in the input box that users can overwrite when they type: *KSSM, IB, IGCSE*
 - *Language of instruction*
 - Insert this as grayed out text in the input box that users can overwrite when they type: *English, Mandarin*
- **Add to saved parameters** (Tooltip: Saved to Favourite)
- List of saved parameters
- Remove specific favourite (Tooltip: Remove Favourite) - may not need a separate icon for this. Can use the same concept as bookmark function in Google
- Preset prompts table
 - Three preset prompts will be displayed. (can consider using tab function)
 - ◦ Question (a table with 4 column)
 - ◦ Form : MCQ (Single correct answer), MCQ (Multiple Correct Answer), Short Answer. *Open-Ended Essay, Fill in the blanks, Text input block with grayed out text 'Others'*
 - Type : Factual, Conceptual, Debatable, Real Life Application, *Text input block with grayed out text 'Others'*
 - No of questions : 5 *question*, 10 *questions*, 15 *questions*, 20 *questions*, *Text input block with grayed out text 'Others'*

- Level : Easy, Moderate, Hard, Text input block with grayed out text 'Others'
- Lesson Plan (a table with 2 columns)
 - ○ Duration: 20 minutes, 40 minutes, 60 minutes, 80 minutes, Text input block with grayed out text 'Others'
 - Phases : Engage, Explore, Explain, Elaborate, Evaluate, Text input block with grayed out text 'Others'
- Content
 - ○ Format : Text based, Explanatory Videos. Infographics and Diagrams, Case studies and Real-World Examples, 3D models and simulations, Text input block with grayed out text 'Others'
- Phase 2: Create new chat (tooltip: New Chat)
 - User to be prompted "Message Here" before a new chat is started
- Chat bar
 - In the chat bar, display the phrase " Additional requirements to make your search result better " When the user clicks on the field, the displayed text will vanish, and a typing cursor will replace it.
 - Tooltip : Generate (icon to grey out
- Phase 2: Save chat as PDF (tooltip: Save) ("grey out" / disappear when there is no chat)
- Copy chat to block (tooltip: Copy to) (icon to "grey out" when there is no chat)

Phase 2: Folder of chat history page (tooltip: History) (where user can view and manage chat history)

2. Parameter settings page & requirement

- When a user clicks the 'SETTING icon' on the main page, the setting block is activated.
- List of functions that user can do in 'SETTING' block,
 - Set up new custom parameters
 - Edit custom parameters
 - Save a custom parameter as preset (in FAVOURITES)
 - If "FAVOURITES" is full, there will be a pop up message asking user to delete one of the favourites before they save. "Your favourites list has reached the limit. To add a new item, please remove one of the existing ones."
 - Manage saved parameter (Edit, delete, rename, use preset)
 - By default, names of presets saved will chronologically be Preset 1, Preset 2, etc.
 - List sorting sequence: the most recently saved preset will appear at the top, followed by its prior version
 - Phase 1 : All saved parameters (Tooltip: Saved to Favourite) will be tied to user profile
 - phase 2 : Saved parameter will be auto populated from basic info of LE but users can choose to overwrite and save as favourites
 - Apply to current AI setting after changes done
 - Parameter settings should remain on parameter even if user click "FAVOURITES"
- List of functions that user can do when user click 'FAVOURITES' button
 - When user hover over a selection, icons for edit, rename, and delete will appear

- Chosen parameters should be made visible at all times, even when users are using the chatbox.
- Users can choose whether or not to provide this information; it's not mandatory **except for "Learning Objective"**. Users who input these data will feed the data into AI as part of the inquiry in each request done in chatbox.
- Saved parameters are available to the educator whenever experio builder is opened (when new experios are created)
- When user key in value for parameter 'age', BACKEND: it should be included with 'years old' at the end of the number

3. Prompts requirement

- When one prompt is chosen, the other prompts will be greyed out.
- Question (table will have 4 column)
 - Form
 - ◦ ◦ User can choose more than one option
 - If MCQ (Single correct answer) and MCQ (Multiple Correct Answer) is chosen, row 2 'debatable' should be disabled
 - Text input block with the display the word 'Others'. When the user clicks on the field, the displayed text will vanish, and a typing cursor will replace it.
 - Level
 - ◦ User can choose one option only
 - Text input block with the display the word 'Others'. When the user clicks on the field, the displayed text will vanish, and a typing cursor will replace it.
 - No of Question
 - ◦ User can choose one option only
 - Text input block with the display the word 'Others'. When the user clicks on the field, the displayed text will vanish, and a typing cursor will replace it.
 - Type
 - ◦ User can choose more than one option
 - Text input block with the display the word 'Others'. When the user clicks on the field, the displayed text will vanish, and a typing cursor will replace it.
- Lesson plan
 - Duration
 - ◦ User can only choose one option for duration
 - Text input block with the display the word 'Others'. When the user clicks on the field, the displayed text will vanish, and a typing cursor will replace it.
 - Phases
 - ◦ ~~User can choose more than one option~~
 - ~~Text input block with the display the word 'Others'. When the user clicks on the field, the displayed text will vanish, and a typing cursor will replace it.~~
- Content
 - Format
 - ◦ User can choose more than one option
 - Text input block with the display the word 'Others'. When the user clicks on the field, the displayed text will vanish, and a typing cursor will replace it.

3. Sending text to AI

- There are 3 ways users can send their queries.
 - Type in the chatbar and click send,
 - Type in parameter and chatbar, and click send,
 - Type in parameter and select preset prompt(s) from list, and click send,
- After the user sends in their queries, their text (from preset prompt, if any, and chatbox input, if any) will be visible in the chat box conversation space replacing welcome space. Preset prompts should remain for the selection of next query.
- The AI will produce relevant responses to the user's queries based on inputs from Parameter setting, preset prompts or/and chatbar. During the loading process, the system should display "loading gif", signifying that the system is presently in the process of generating an answer.
- System will regenerate responses at an interval of 5 seconds
- Regenerate button remain 'grey' for 5 seconds after each click
- During that 5 seconds, if user hover over the regenerate button, the following message will appear . "The "Regenerate" button is taking a power nap. Give it 5 zzzzzs."
- When "Regenerate" button is clicked, the following message will appear before the system give out responses. "Regenerating wipes the slate clean! Only click it if you are ready to replace the current responses."
- The system should support multilanguage input.
- Phase 2: the system should be able to automatically create a new content/question block and copy generated results to the content/question block. In phase 1 (this phase), the system will ask the user to specify the block number to copy. Maps, points, stages, remain as per the current page they are viewing.
- The chat will remain in the sidebar until user exit experio builder. Saved chat will remain when users re-enter experio builder after exiting. Chat will remain even when users move around from various maps and points.
- When the system generates responses after the input text are entered, additional features will become available, such as:
 - Regenerate answer (tooltip: regenerate answer)
 - Copy text to block "... " (tooltip: copy to block) > system track location of cursor in experio builder block and input copied text there
 - Users should also be able to manually select and copy desired text
 - Users should be able to drag the answer box to maximize the view
 - Phase 2: AI to auto populate into Question / Content / Answer blocks
 - Phase 2: To allow users to rate responses they received for machine learning (thumbs up and down from chatGPT)
 - Save chat
 - Rename chat
 - Delete chat
 - Create new chat
 - Phase 2: Automatically save current chat into the "saved chat" page when "create new chat" is clicked or leave experio builder. Smart naming by system based on the queries inserted (refer to chatgpt).

o Phase 2: Browse previous responses (refer to chatgpt)

Frontend	BACKEND
Learning Objectives:	Learning Objectives: [user input] {next line}
Subject:	Subject: {next line}
Age:	Age: years old {next line}
Curriculum:	Curriculum: curriculum {next line}
Language of instruction :	Language of instruction : {next line}
MCQ (Single correct answer)	create multiple choice questions (single correct answer), { }
MCQ (Multiple correct answer)	create multiple choice questions (multiple correct answer), { }
Fill in the blanks	create fill in the blank questions, { }
Short answer	create short answer questions, { }
Essay	create essay questions, { }
Factual	factual, { }
Conceptual	conceptual, { }
Debatable	debatable, { }
Real-life application	with real-life application, { }
Easy	easy, { }
Moderate	moderate, { }
Hard	hard, { }
5	5 questions, { }

10	10 questions, { }
15	15 questions, { }
20	20 questions, { }
20 minutes	to create lesson plan for a duration of 20 minutes, { }
40 minutes	to create lesson plan for a duration of 40 minutes, { }
60 minutes	to create lesson plan for a duration of 60 minutes, { }
80 minutes	to create lesson plan for a duration of 80 minutes, { }
Engage	that contains engage phase, { }
Explore	that contains explore phase, { }
Explain	that contains explain phase, { }
Elaborate	that contains elaborate phase, { }
Evaluate	that contains evaluate phase, { }
Text based	text based content, { }
Explanatory videos	provide explanatory video links, { }
Infographic and Diagrams	provide infographic and diagram links, { }
Case studies and Real world examples	provide case studies and real world examples, { }
3D models and Simulations	provide 3D models and simulation links, { }

Testing in Prompts & Parameter in Bard AI

Gemini supports 40 languages include English, Malay, Japanese, Korean, Arabic, Bahasa Indonesia, Bengali, Bulgarian, Chinese (Simplified / Traditional), Croatian, Czech, Danish, Dutch, Estonian, Farsi, Finnish, French, German, Gujarati, Greek, Hebrew, Hindi, Hungarian, Italian, Kannada, Latvian, Lithuanian, Malayalam, Marathi, Norwegian, Polish, Portuguese, Romanian, Russian, Serbian, Slovak, Slovenian, Spanish, Swahili, Swedish, Tamil, Telugu, Thai, Turkish, Ukrainian, Urdu and Vietnamese.

Parameter & Prompts	Input	Results
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- Learning Objectives
- Subject
- Age
- Curriculum
- Language of instruction

- Question
- MCQ (Single Correct Answer)
- Factual
- Easy
- 5

Learning Objectives: [Understand the structure and function of the main organs in respiratory system]

Subject: [Biology]

Age:[13-18 years old]

Curriculum: [IB]

Question[to create question with answer],

MCQ (Single Correct Answer)

[multiple choice questions (single correct answer) with answers],

Factual[Factual],**Easy** [Easy],**5**[5 questions],

Understand the structure and function of the main organs in respiratory system

Biology

13-18 years old

IB

to create question with answer, multiple choice questions (single correct answer) with answers, Factual,Easy,5 questions

1. Which of the following structures is NOT part of the upper respiratory system?

- a) Nose
- b) Larynx
- c) Bronchi
- d) Sinuses

Answer: c) Bronchi (These belong to the lower respiratory system)

2. What is the main function of the alveoli?

- a) Filter air
- b) Produce sound
- c) Exchange gases
- d) Protect the trachea

Answer: c) Exchange gases

3. What helps prevent the trachea from collapsing?

- a) Muscles
- b) Cartilage rings
- c) Lungs
- d) Sinuses

Answer: b) Cartilage rings

4. Which organ connects the nasal passages to the pharynx?

- a) Trachea
- b) Larynx
- c) Nose
- d) Pharynx

Answer: d) Pharynx (It is the pharynx itself!)

5. What waste product does the respiratory system remove from the body?

- a) Oxygen
- b) Nitrogen
- c) Carbon dioxide
- d) Water vapor

Answer: c) Carbon dioxide

- LO
- Subject
- Age

- Question
- MCQ (Single Correct Answer)
- Factual
- Easy
- 5

Learning Objectives: [Understand the structure and function of the main organs in respiratory system]

Subject: [Biology]

Age:[13-18 years old]

Question[to create question with answer],

MCQ (Single Correct Answer)

[multiple choice questions (single correct answer) with answers],

Factual[Factual],**Easy** [Easy],**5**[5 questions],

1. Which organ filters dust and debris from the air?
 - a) Trachea
 - b) Pharynx
 - c) **Nose**
 - d) Lungs
2. What structure vibrates to produce sound?
 - a) Bronchi
 - b) **Larynx**
 - c) Alveoli
 - d) Pleura
3. Where does gas exchange between air and blood occur?
 - a) Bronchioles
 - b) **Alveoli**
 - c) Trachea
 - d) Pharynx
4. Which muscle plays the primary role in breathing?
 - a) Biceps
 - b) Triceps
 - c) **Diaphragm**
 - d) Intercostal muscles
5. What waste gas does the respiratory system remove from the body?
 - a) Nitrogen
 - b) Helium
 - c) **Carbon dioxide**
 - d) Oxygen

Bonus Fact: The average adult breathe

- LO

- Question
- MCQ (Single Correct Answer)
- Factual
- Easy
- 5

Learning Objectives: [Understand the structure and function of the main organs in respiratory system]

Question[to create question with answer],

MCQ (Single Correct Answer) [multiple choice questions (single correct answer) with answers],

Factual[Factual],**Easy** [Easy],**5**[5 questions],

Structure and Function of Main Organs in the Respiratory System:

Question 1: Which of the following organs filters incoming air and warms it up?

- A) Larynx
- B) Lungs
- C) Diaphragm
- D) Nose

Answer: D) Nose

Explanation: The nose filters dust and other particles from the air and also warms and humidifies it before it enters the lungs.

Question 2: The trachea, also known as the windpipe, is made up of what material?

- A) Muscle
- B) Cartilage
- C) Bone
- D) Tissue

Answer: B) Cartilage

Explanation: The trachea is made up of rings of cartilage to keep it open and prevent it from collapsing when you breathe.

Question 3: Where does the exchange of oxygen and carbon dioxide take place in the lungs?

- A) Bronchi
- B) Pharynx
- C) Alveoli
- D) Trachea

Answer: C) Alveoli

Explanation: Alveoli are tiny air sacs in the lungs where oxygen from the air enters the bloodstream and carbon dioxide from the blood enters the air to be exhaled.

Question 4: Which muscle plays the most important role in breathing by expanding and contracting the chest cavity?

- A) Biceps
- B) Diaphragm
- C) Intercostal muscles
- D) Abdominal muscles

Answer: B) Diaphragm

Explanation: The diaphragm is the main muscle of respiration and works with the intercostal muscles to expand and contract the chest cavity, creating the pressure changes needed for air to flow in and out of the lungs.

Question 5: What is the primary function of the respiratory system?

- A) Digestion

- LO
- Subject
- Age
- Curriculum
- Short answer
- Conceptual
- Moderate
- 5

Learning Objectives:

[Menerangkan lokasi zaman prasejarah Sejarah]

Subject: [Sejarah]

Age:[13]

Curriculum: [KSSM] curriculum

Question[to create question with answer],

Short Answer

[short answer], **Conceptual**

[Conceptual], **Moderate** [Moderate],

5[5 questions],

Menerangkan lokasi zaman prasejarah Sejarah,Sejarah,13,KSSM curriculum,to create question with answer,short answer,Conceptual,Moderate,5 questions

BARD

Does not support Bahasa Melayu. Supports 40 other languages including Indonesia

CHAT GPT

Menerangkan lokasi zaman prasejarah Sejarah,13years old, KSSM curriculum, to create short answer questions with answer,conceptual,moderate,5 questions,

Certainly! Here are five short answer questions related to the prehistoric period for a 13-year-old following the KSSM curriculum. Each question is designed to be conceptual and of moderate difficulty.

1. Question: *Lokasi Zaman Prasejarah merangkumi kawasan geografi yang luas. Nyatakan tiga jenis lokasi utama Zaman Prasejarah dan berikan contoh terkini untuk setiap jenis.*

Answer: Lokasi Zaman Prasejarah termasuk gua, lembah sungai, dan dataran tinggi. Contoh terkini termasuk Gua Niah di Sarawak, Lembah Sungai Nil di Mesir, dan Dataran Tinggi Andes di Amerika Selatan.

2. Question: *Apakah perbezaan utama antara zaman Paleolitik dan Neolitik? Jelaskan dengan merujuk kepada cara hidup manusia dan perkembangan penting yang berlaku.*

Answer: Perbezaan utama ialah cara hidup manusia. Paleolitik melibatkan gaya hidup pemburu-pengumpul, manakala Neolitik melibatkan pertanian dan pemukiman tetap. Perkembangan penting termasuk penemuan pertanian dan domestikasi haiwan.

3. Question: *Apakah peranan api dalam kehidupan manusia Zaman Prasejarah? Berikan tiga cara bagaimana penggunaan api memberi impak kepada kemajuan manusia.*

Answer: Api penting dalam memasak makanan, memberikan perlindungan dari hewan buas, dan

- Learning Objectives
- Subject
- Age
- Curriculum
- Language of instruction

- Essay
- Debatable
- Easy
- 5

Learning Objectives: Identify and demonstrate understanding of the physiology of respiratory and circulatory systems during volleyball.

Subject : Physical health education

Curriculum: IB curriculum

Language of instruction: English
create essay questions with answer, debatable. easy, 5 question

Debate-able Essay Questions on Volleyball Physiology:

1. **Should volleyball training prioritize anaerobic or aerobic capacity development? Provide physiological evidence to support your argument.**
(Debate centers on training focus: explosive power vs. endurance)
2. **During a spike jump, does a volleyball player rely more on oxygen-driven ATP production in their leg muscles, or on the stored phosphate energy system? Consider the timing and intensity of the movement.** (Focus on energy sources and their roles in specific actions)
3. **In volleyball, is it more advantageous to have a low resting heart rate or a high VO₂ max? Explain your answer with regards to cardiovascular adaptations for performance and recovery.** (Compares two key physical fitness indicators)
4. **Does the importance of lung function differ significantly between setters and attackers in volleyball? Analyze the respiratory demands of each position and justify your position.**
(Examines specialization and role-specific physiological needs)
5. **To optimize performance in volleyball, should athletes focus on maximizing lung capacity or increasing**

- Learning Objectives
- Subject
- Age
- Curriculum
- Language of instruction

- Short Answer
- Debatable
- Easy
- 5

Learning Objectives: Identify and demonstrate understanding of the physiology of respiratory and circulatory systems during volleyball.

Subject : Physical health education

Curriculum: IB curriculum

Language of instruction: English
create short answer questions with answer, debatable. easy, 5 question

1. **During a spike in volleyball, is it more advantageous to hold your breath momentarily for more explosive power, or to continue breathing to maintain oxygen supply to muscles? Explain your reasoning.** (Debatable: both strategies have benefits and drawbacks, depending on factors like individual fitness and intensity of effort.)
2. **Is sweat production during a volleyball game primarily due to muscle heat generation, or the body's attempt to cool itself through evaporation? Justify your answer.** (Debatable: both factors contribute, but the relative importance may vary depending on environmental conditions and activity level.)
3. **Do you think volleyball players benefit more from focusing on building cardiovascular endurance for prolonged games, or maximizing anaerobic capacity for short bursts of explosive movement? Explain your perspective.** (Debatable: both are important, with the optimal balance depending on playing positions and game strategies.)
4. **Does wearing a tight compression shirt during volleyball improve blood flow and muscle performance, or does it hinder performance?**

Lesson Plan: Expanding Linear Algebraic Expressions

Target Age: 13-18 years old

Duration: 40 minutes

Learning Objectives:

- Students will be able to expand linear algebraic expressions using the distributive property.
- Students will be able to identify like terms and combine them.
- Students will be able to simplify their expanded expressions.

Materials:

- Whiteboard or projector
- Markers or pens
- Handouts with practice problems (provided at the end)
- Optional: Algebra tiles (physical or virtual)

Phases:

Engage (5 minutes):

1. **Warm-up activity:**

Show students a real-world scenario involving combining quantities, such as calculating the total cost of several items with different prices. Ask them how they would solve the problem, encouraging the use of arithmetic operations.

2. **Introduce the**

problem: Present a simple linear algebraic expression with parentheses, like $2(x + 3)$. Ask students what "expanding" the expression means in this context.

3. **Elicit prior knowledge:**

Briefly review the concept of the distributive property. Ask students if they remember how it applies to multiplication.

Explore (15 minutes):

1. **Discovery activity:**

Divide students into small groups and give them manipulatives like

- Learning Objectives
- Subject
- Age
- Curriculum
- Language of

Learning Objectives :

Expansion of Linear Algebraic Expressions

Subject : Maths

Age : 13 -18

Curriculum :

Learning Objectives: Properties of Magnets

Age: 13-18 years old **Subject:** Science **Curriculum:** IB Curriculum
Language of Instruction: English
Overall Goal: By the end of this lesson, students will be able to:

- Define magnetism and the magnetic field.
- Explain the difference between magnetic and non-magnetic materials.
- Identify the two poles of a magnet and their properties (attraction and repulsion).
- Describe the directive property of magnets and its connection to the Earth's magnetic field.
- Explore the practical applications of magnets in various fields.

Key Concepts:

- Magnetism
- Magnetic field
- Magnetic poles (north and south)
- Attraction and repulsion of magnets
- Directive property
- Earth's magnetic field
- Applications of magnets

Content:

1. Magnetism and the Magnetic Field:

- **Text:** Briefly introduce the concept of magnetism as the force that attracts certain materials and creates an invisible field around the magnet. Explain that this field is responsible for the magnetic interactions we observe.
- **Video:** This short video provides a good animation of the magnetic field around a bar magnet:
<https://m.youtube.com/watch?v=bBKYZFtcWHc>
- **3D Model:** Explore the interactive 3D model of a bar magnet and its magnetic field here:
<https://www.coolmagnetmap.com/>

Testing in Bard AI (Lesson plan with suggested activities)

Understand the structure and function
Biology
13 - 18 years old
IB curriculum
to create lesson plan for 60 minutes and include
entry/exit ticket activity

Understand the structure and function
Biology
13 - 18 years old
IB curriculum
to create lesson plan for 60 minutes

Learning Objectives:

- Students will be able to identify and describe the main organs of the respiratory system: lungs, airways (nose, mouth, trachea, bronchi), and diaphragm.
- Students will be able to explain the structure and function of each organ in the respiratory system.
- Students will be able to understand how the organs work together to facilitate gas exchange (oxygen and carbon dioxide).
- Students will be able to compare and contrast different respiratory systems (e.g., human vs. fish).

Materials:

- Whiteboard or projector
- Markers or pens
- Diagrams or models of the respiratory system
- Worksheets with labeled diagrams of the respiratory system (one per student)
- Short video clip on the respiratory system (optional)
- Construction paper (optional, for activity)

Entry Ticket Activity (10 minutes):

1. **Question:** Ask students to write down what they already know about the respiratory system.
2. **Think-Pair-Share:** Have students share their responses with a partner, then share their partner's response with the class.
3. **Discussion:** Briefly discuss the common themes and misconceptions that emerged.

Instructional Activities (40 minutes):

1. **Presentation (15 minutes):**
 - Use diagrams, models, or a video clip to introduce the main organs of the respiratory system: lungs, airways, and diaphragm.
 - Briefly explain the structure and function of each organ, highlighting key features like the spongy tissue of the lungs, the branching structure of the airways, and the muscular action of the diaphragm.
 - Emphasize the role of each organ in gas exchange (oxygen in, carbon dioxide out).
2. **Interactive Activity (15 minutes):**
 - Divide students into small groups and provide each group with a labeled diagram of the respiratory system.
 - Ask students to work together to color-code the diagram, assigning

Learning Objectives:

- Students will identify and describe the structure and function of the main organs in the respiratory system.
- Students will explain the process of gas exchange in the lungs.
- Students will analyze the adaptations of the respiratory system for its function.
- Students will relate the structure and function of the respiratory system to real-world applications and potential health issues.

Materials:

- Large whiteboard or projector
- Markers/pens
- Diagrams or models of the respiratory system
- Inflatable lung model (optional)
- Microscopes and prepared slides of lung tissue (optional)
- Worksheets with diagrams and activities (provided below)
- Access to the internet for research (optional)

Lesson Plan:

Introduction (10 minutes):

- **Engage:** Begin by asking students to perform a brief breathing exercise, focusing on the physical sensations involved. Ask them what organs are involved in breathing and their overall function.
- **Explore:** Introduce the respiratory system and its main organs. Use diagrams or models to visualize the system's layout. Briefly discuss the importance of respiration for human life.

Activity 1: Organ Exploration (20 minutes):

- Divide students into small groups and assign each group a major organ of the respiratory system (e.g., nose, trachea, lungs).
- Provide each group with worksheets containing information about their assigned organ's structure, function, and any interesting facts. Encourage them to research online for additional details.
- Have each group prepare a short presentation (5-7 minutes) summarizing their findings to the class.

Activity 2: Gas Exchange Journey (15 minutes):

- Briefly demonstrate the process of gas exchange using the inflatable lung model or a diagram. Explain how oxygen enters the bloodstream and carbon dioxide leaves it.
- Divide the class into two groups: "Oxygen molecules" and "Carbon dioxide molecules."
- Have the "oxygen molecules" move through the respiratory system simulation (following the correct path) and enter the bloodstream (represented by another designated area)

Learning Objectives : Expansion of Linear Algebraic Expressions
Subject : Maths
Age : 13 -18
Curriculum :
Language of instruction : English
to create lesson plan for a duration of 40 minutes, that includes problem based learning

Learning Objectives : Expansion of Linear Algebraic Expressions
Subject : Maths
Age : 13 -18
Curriculum :
Language of instruction : English to create lesson plan for a duration of 40 minutes,

Learning Objectives:

- Students will be able to expand linear algebraic expressions involving single and double brackets.
- Students will be able to apply the distributive property to simplify expanded expressions.
- Students will be able to solve real-world problems involving expanding linear expressions.

Materials:

- Whiteboard or projector
- Markers/pens
- Worksheets with practice problems (differentiated for various levels)
- Real-world scenario problem cards (optional)

Procedure:

Introduction (10 minutes):

1. **Start with a real-world scenario:** Present a relatable situation involving basic algebra, for example, calculating the total cost of buying apples and oranges at different prices. Introduce the problem without mentioning expansion initially.
2. **Guide students towards needing to expand an expression:** Ask leading questions to help students recognize the need to manipulate an expression with brackets to solve the problem.
3. **Introduce the concept of expanding expressions:** Briefly explain what expanding means and introduce the distributive property in simple terms. Use visuals like area models or diagrams if helpful.

Activity: **Problem-Based Learning (20 minutes):**

1. **Divide students into small groups:** Encourage collaboration and discussion.
2. **Present the real-world scenario problem cards (optional):** Each card can have a different scenario requiring expansion of expressions. Alternatively, provide general practice problems on worksheets.
3. **Challenge students to solve the problems:** Encourage them to discuss different approaches and explain their reasoning.
4. **Facilitate discussion:** Briefly check in with

Learning Objectives:

- By the end of the lesson, students will be able to:
 - Define what expanding linear algebraic expressions means.
 - Identify when an expression needs to be expanded.
 - Apply the distributive property to expand expressions with single and double sets of parentheses.
 - Combine like terms to simplify the expanded expression.

Materials:

- Whiteboard or projector
- Markers or pens
- Worksheets with practice problems (differentiated for varying levels)
- Optional: Manipulatives like algebra tiles or counters

Lesson Procedure:

Introduction (5 minutes):

- Begin by asking students what they already know about algebraic expressions. Briefly review key concepts like variables, terms, and coefficients.
- Introduce the concept of expanding expressions by explaining that it means "removing the parentheses" and combining like terms. Give a real-world example, like finding the total cost of items with individual prices.

Presentation (15 minutes):

- Explain the distributive property using clear and concise language, with visuals if possible. Break it down into steps: multiply each term outside the parentheses by each term inside.
- Demonstrate how to use the distributive property with single-parenthesis expressions on the board, step-by-step. Encourage students to follow along and ask questions.
- Gradually increase the complexity by introducing double-parenthesis expressions. Emphasize the order of operations (PEMDAS).
- Briefly discuss combining like terms (e.g., terms with the same variable raised to the same power).

Activity (15 minutes):

- Divide students into pairs or small groups.
- Distribute differentiated worksheets with practice problems for expanding expressions. Encourage students to work collaboratively and help each other.
- Circulate around the room, providing individual support and answering questions.
- For additional challenge, offer bonus problems with more complex expressions or

Learning Objectives : To understand how did exploration affect early societies
Subject : Individuals & Societies
Age : 13 -18
Curriculum : IB
Language of instruction : English
to create lesson plan for a duration of 40 minutes, that includes role play

Learning Objectives : Expansion of Linear Algebraic Expressions
Subject : Maths
Age : 13 -18
Curriculum :
Language of instruction : English to create lesson plan for a duration of 40 minutes,

Lesson Plan: How Exploration Affected Early Societies (IB Individuals & Societies)

Subject: Individuals & Societies **Age:** 13-18 **Duration:** 40 minutes **Learning Objectives:**

- Students will analyze the positive and negative impacts of exploration on early societies.
- Students will understand the motivations for exploration.
- Students will develop empathy for different perspectives through role-playing.

Materials:

- Whiteboard or projector
- Markers/pens
- Handouts with information about different early explorers and their impacts (one per student)
- Props for role-playing (optional)

Lesson Outline:

Introduction (10 minutes):

1. **Start with a discussion:** Ask students what they know about exploration in history. What were some famous explorers? What motivated them? Briefly discuss the different types of exploration, like territorial expansion, trade routes, and scientific discovery.
2. **Present the learning objectives:** Explain that today, they will explore the impacts of exploration on early societies, looking at both the positive and negative consequences.

Activity 1: Information Station (15 minutes):

1. Divide the class into small groups (3-4 students).
2. Prepare stations around the classroom, each focusing on a different explorer and their impact on an early society (e.g., Vasco da Gama and the Spice Trade, Christopher Columbus and the Americas, Zheng He and Southeast Asia).
3. At each station, provide a handout with information about the explorer, their motivations, and the impacts of their exploration on the local society. Encourage students to take notes and discuss their findings within their groups.
4. After a set time, rotate the groups to different stations, ensuring they encounter all the explorers.

Activity 2: Role-Playing (10 minutes):

1. Explain that students will now participate in a role-playing activity to develop empathy for different perspectives related to exploration.
2. Divide the class into two groups: "explorers" and "local inhabitants." Provide each group with some background information and instructions on their roles.

Lesson Plan: Exploring the Impact of Exploration on Early Societies

Subject: Individuals & Societies (IB) **Age Group:** 13-18 years old **Duration:** 40 minutes

Learning Objectives:

- Students will be able to explain the motivations behind early exploration efforts.
- Students will be able to identify the different ways exploration impacted early societies (both positive and negative).
- Students will be able to analyze a specific case study of exploration and its consequences.

Materials:

- Whiteboard or projector
- Markers or pens
- Handouts with different historical exploration case studies (e.g., Polynesian voyages, Zheng He's expeditions, Age of European Discovery)
- Chart paper or sticky notes

Lesson Procedure:

Introduction (10 minutes):

1. **Warm-up:** Start with a brainstorming session. Ask students: "What do you think of when you hear the word 'exploration'?" List their answers on the board.
2. **Introduce the topic:** Briefly define exploration and explain its historical significance. Highlight the different motivations behind early exploration, such as trade, knowledge seeking, religious expansion, and conquest.

Activity 1: Exploring Motivations and Impacts (20 minutes):

1. **Group work:** Divide students into small groups and assign each group a different historical exploration case study (e.g., Polynesian voyages, Zheng He's expeditions, Age of European Discovery).
2. **Task:** Each group will analyze their assigned case study using the following guiding questions:
 - What were the main motivations for this exploration?
 - What were the positive impacts of this exploration on the societies involved?
 - What were the negative impacts of this exploration on the societies involved?
3. **Presentation and discussion:** Each group presents their findings to the class, highlighting the motivations and impacts of their assigned exploration. Encourage classmates to ask questions and engage in a discussion about

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Revision #23

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