

Tools for Generating Questions

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Overview

The following tools will help students come up with essential questions that are powerful, by breaking the process into several small steps. Teachers may choose to use all or just some of the tools, adapting them where needed to work with their classes.

A blackline master for each tool is available at the end of this document. PDF versions for projection are available on the companion website. Click on “Colour Tools For Projection” at:

http://www.openschool.bc.ca/testmedia/Gr4_My_Seasonal_Round/teacher_area.html

Throughout this document, examples are given for the unit, *My Seasonal Round*, but these tools could also be used for other subjects and grades.

Tools

Question Cue – a card game to use with the class to help students come up with many questions, based on a given set of vocabulary words.

Sort Circle – a flowchart, available as a handout or online projection, to provide students with a process to sort through their generated questions.

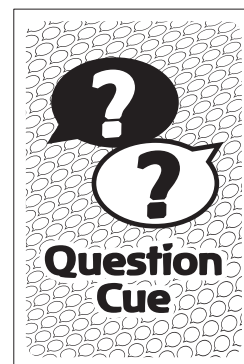
Strengthening Strategies – four flowcharts, available as a handout or online projection, for students to use to refine questions into powerful questions.

Question Rater – a handout template for a rating system to help students narrow down their choice of questions.

Question Cue

This is a game to help students brainstorm questions. Students can play as a class or in groups. To play, each group will need a dice and set of vocabulary cards.

Cards to cut out and add vocabulary words to are available at the end of this document. It may be helpful to include both the word and a definition of the word on the card; however, students should be familiar with the vocabulary, otherwise it will be difficult for them to come up with questions.



Vocabulary cards for several lessons in the *My Seasonal Round* unit are included in *Blackline Masters*. Online, interactive versions of these are also available on the companion website.

To play

To start, a student or teacher randomly chooses from a selection of vocabulary cards. This will contain the word or words that students will use in their questions.

Each student has a turn to ask an open-ended question about the chosen vocabulary word. To do so, the student rolls the dice to determine what kind of question to ask:

- 1 = why
- 2 = what
- 3 = how
- 4 = where
- 5 = when
- 6 = teacher's or student's choice:
 - a "what if" question, any other question type, add on to an existing question, or choose a new topic and ask any question type

As each question is asked, the student, teacher or a chosen scribe writes down the question on the board or large piece of paper visible to the group. An alternative is to write all the questions down on paper to make copies for each student later.

Some vocabulary cards have one word and some have two. If given two, students should use both words in their question. At any time they can choose to ask for help from the audience. Students indicate they can help by raising their hand.

After a student asks his/her question, it is another student's turn. They roll the dice to determine question type, and ask the question using the same vocabulary card.

Play continues (dice-roll and question) for as long as students can ask questions without making a statement or repeating a previous question. When this happens a new vocabulary card is chosen. Play continues until all the vocabulary cards have been questioned.

An alternative way to play would be for each student to pick a vocabulary card and roll the dice. In this case the same card can be used more than once. Play continues until each student has had a turn or turns, depending on the size of the group.

Example questions

Vocabulary word: plants

- Why are plants important?
- What do plants need to survive?
- How can we help plants grow?
- Where do plants grow best?
- When do plants flower?
- What if all the earth's plants became extinct?

As an option, teachers may choose to add a theme to be included in all the questions, such as a First Nation, a seasonal round, or a region of BC.

For example:

Theme: Haida Nation

Vocabulary word: plants

- Why are plants important to the Haida people?
- What plants do the Haida use for food?
- How do the Haida harvest plants?
- Where do the Haida find the plants they use for shelter?
- When do the Haida preserve plants?
- What would happen if the plants the Haida used for food were no longer available?

This game is an ice-breaking activity to generate many questions. After the game is finished, teachers may want to narrow down the number of questions by asking students to choose the one question that interests them the most for each vocabulary word. Teachers may choose to assist students in combining two or more questions into one question before students make their choice.

Sort Circle

This tool helps students sort a collection of many questions down to a few that could be refined to become powerful questions. Students can use the tool in small groups, or individually. Sort Circle is available as a blackline master at the end of this document and as a PDF to project (on the companion website).

http://www.openschool.bc.ca/testmedia/Gr4_My_Seasonal_Round/teacher_area.html

How it Works

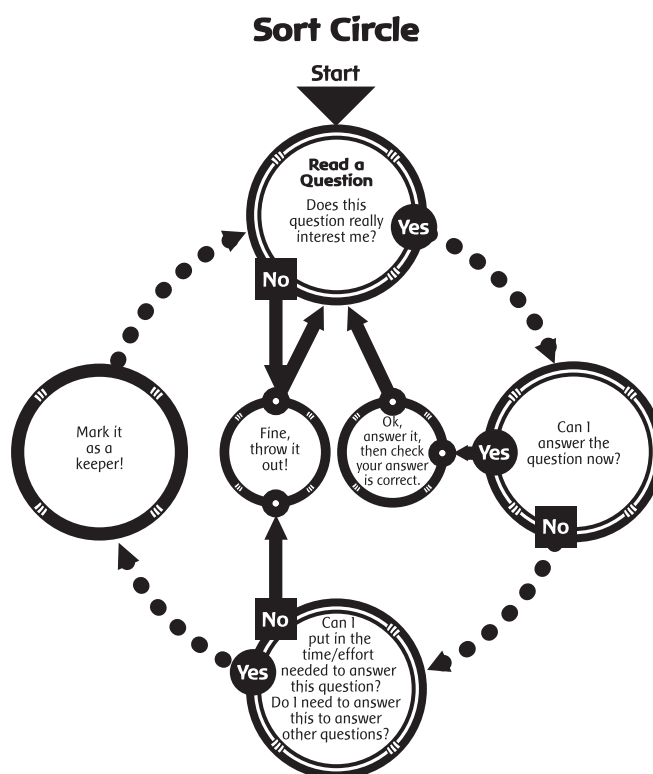
Provide or have students write out their questions. Students can either cut the questions into strips (each strip containing one question) to physically sort them into piles, or make a mark beside each question to identify its status. Students can come up with three marks and put one beside each question when sorting to identify it as a: Toss, Maybe, or Keeper.

For example:

- x = Toss
- ? = Maybe
- * = Keeper

Students then go through the Sort Circle flowchart with each question to identify its status. Teachers may want to limit how many questions students work with if students are overwhelmed by the number they have. Students may also need assistance from their teacher or peers the first few times they go through the sorting process.

Once students have gone through all their questions, they will have thrown some out and have two piles left, “Keepers” and “Maybes.”



Strengthening Strategies

This tool assists students in refining their questions into powerful inquiries by using one of four different strategies.

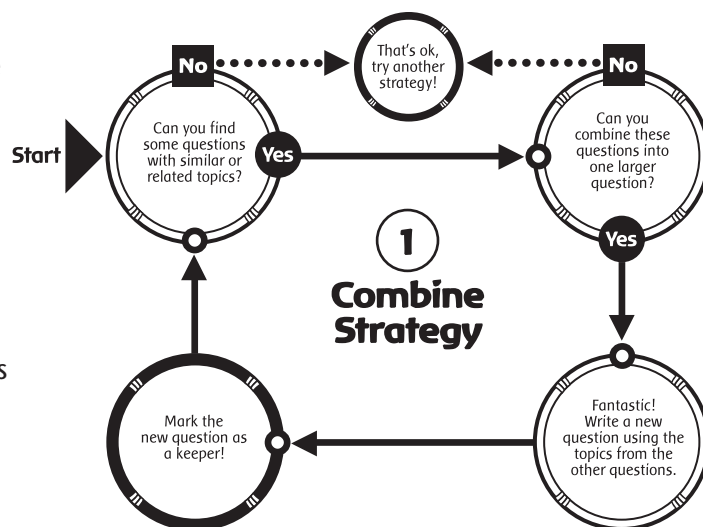
Students can use the tool in small groups or individually. Depending on the number and complexity of the questions, students may work to improve all or just their Maybe questions with the Strengthening Strategies tool. Strengthening Strategies is available as a blackline master at the end of this document and as a PDF to project (on the companion website).

http://www.openschool.bc.ca/testmedia/Gr4_My_Seasonal_Round/teacher_area.html

Most teachers will choose to demonstrate the Strengthening Strategies with their class to help students understand the concepts. Some students; however, may not be ready for implementing these strategies. In this case, students can skip the tool and move on to rate their Keeper and Maybe questions using the “Question Rater” template (*Blackline Masters*, pages 9–10).

Working with Strengthening Strategies will help students create more powerful questions by:

- Combining two or more questions with similar topics into one question
- Creating a comparing question
- Creating a why question
- Creating a what if question



Strengthening Strategies: 1 of 4

Question Rater

Question Rater

Step 1: Write Your Criteria
Write out three to five different sentences that describe what makes a question important for you. These will be the criteria that you'll use to evaluate your questions.

Example:
I really want to know the answer to this question.
I know where to look to find information to answer this question.
I think this question is important.

Criteria 1: _____

Criteria 2: _____

Criteria 3: _____

Criteria 4: _____

Criteria 5: _____

Step 2: Copy Your Questions
On the next page write down each of your questions.

Step 3: Rate Each Question
Read the first question. Then look at each of your criteria and circle the "no," "maybe," or "yes" to indicate what you think about that criteria in terms of that question. Then enter the number (0, 1 or 2) in the appropriate box. Do this for all your questions.

Step 4: Total Your Scores
When you've gone through each criteria for all your questions, add up the scores to get a total for each question.

Step 5: Find the Winner!
After you've evaluated all your questions, look at the totals.
Draw a big star beside the question (or questions) with the highest score.

If students have more than the number of inquiry questions their teacher would like them to pursue, they can use a rating scale to evaluate and reduce the number of questions. The "Question Rater" handout (*Blackline Masters*, pages 9–10) provides a template for creating a question rating survey. It is also included in at the end of this document.

As a class, group, or individually, students create three to five criteria for rating their questions. Each question has a rating of 0, 1, or 2. Once established, students individually rate each question against their criteria. The questions with the highest scores are the winners.

For example:

I really want to know the answer to this question

No = 0 Maybe = 1 Yes = 2

I know where to look to find some of the information I'll need to answer this

No = 0 Maybe = 1 Yes = 2

This question is important to me

No = 0 Maybe = 1 Yes = 2

I can think of other questions I'll need to answer to answer this question

No = 0 Maybe = 1 Yes = 2

Example of Tools Implementation

Step 1

Generate questions by playing “Question Cue” with given vocabulary (for this example Plants and their Habitats).

Vocabulary terms: *habitats* and *plants*

- Why do plants have habitats?
- What habitat do plants have?
- How does a plant grow in its habitat?
- Where do plant habitats come from?
- When can plants change their habitats?

Vocabulary terms: *plants* and *adapt*

- Why do plants need to adapt?
- What do plants adapt to?
- How do plants adapt?
- Where do plants adapt?
- When do plants adapt?

Vocabulary terms: *plants* and *depend*

- Why do plants depend on sunshine?
- What do plants depend on?
- How do plants depend on weather?
- Where do you find dependant plants?
- When do plants depend on humans?

Vocabulary terms: *plants* and *survive*

- Why do plants survive winter?
- What do plants need to do to survive?
- How do plants survive snow?
- Where do you find plants that survive well in snow?
- When do plants survive the best?

Vocabulary terms: *plants* and *non-living things*

- Why do plants need non-living things?
- What non-living things do plants need?
- How do plants and non-living things share a habitat?
- Where do plants and non-living things live?
- When do plants and non-living things share a habitat?

Vocabulary terms: *plants* and *seasonal change*

- Why does seasonal change affect plants?
- What do plants do to cope with seasonal change?
- How do plants cope with seasonal change?
- Where do plants go when the season changes?
- When do plants die because of seasonal change?

Step 2

Pick the most interesting question from each vocabulary term.

~~Why do plants have habitats?~~
What habitat do plants have?
~~How does a plant grow in its habitat?~~
~~Where do plant habitats come from?~~
~~When can plants change their habitats?~~

~~Why do plants need to adapt?~~
~~What do plants adapt to?~~
~~How do plants adapt?~~
~~Where do plants adapt?~~
~~When do plants adapt?~~

~~Why do plants depend on sunshine?~~
What do plants depend on?
~~How do plants depend on weather?~~
~~Where do you find dependant plants?~~
~~When do plants depend on humans?~~

~~Why do plants survive winter?~~
What do plants need to do to survive?
~~How do plants survive snow?~~
~~Where do you find plants that survive well in snow?~~
~~When do plants survive the best?~~

~~Why do plants need non-living things?~~
What non-living things do plants need?
~~How do plants and non-living things share a habitat?~~
~~Where do plants and non-living things live?~~
~~When do plants and non-living things share a habitat?~~

~~Why does seasonal change affect plants?~~
~~What do plants do to cope with seasonal change?~~
~~How do plants cope with seasonal change?~~
~~Where do plants go when the season changes?~~
When do plants die because of seasonal change?

Step 3

Sort the questions using the Sort Circle tool.

x = Toss

? = Maybe

* = Keeper

? What habitat do plants have?

* Why do plants need to adapt?

x What do plants depend on?

? What do plants need to do to survive?

? What non-living things do plants need?

? When do plants die because of seasonal change?

Step 4

Refine the questions using the “Strengthening Strategies” tool.

What habitat do plants have?

Why do plants need to adapt?

What do plants need to do to survive?

What non-living things do plants need?

When do plants die because of seasonal change?

“Combine Strategy”

Why do plants need to adapt?

When do plants die because of seasonal change?

How do plants adapt to seasonal change so they don't die?

“Compare Strategy”

What non-living things do plants need?

What habitat do plants have?

Within the same habitat, how are non-living things and plants different and how are they similar?

“Why Strategy”

When do plants die because of seasonal change?

Why is seasonal change important to plants' life cycle?

“What if Strategy”

What do plants need to do to survive?

What would happen if plants could not survive a change in climate?

These refined question become the powerful Keeper questions for this topic:

How do plants adapt to seasonal change so they don't die?

Within the same habitat, how are non-living things and plants different and how are they similar?

Why is seasonal change important to plants' life cycle?

What would happen if plants could not survive a change in climate?

Step 5

Determine which question(s) to pursue using the "Question Rater" template.

Question 1: How do plants adapt to seasonal change so they don't die?

I really want to know the answer to this question.

No = 0 Maybe = 1 Yes = 2

I know where to look to find some of the information I'll need to answer this.

No = 0 Maybe = 1 Yes = 2

This question is important to me.

No = 0 Maybe = 1 Yes = 2

I can think of other questions I'll need to answer to answer this question.

No = 0 Maybe = 1 Yes = 2

Total: 4

Question 2: Within the same habitat, how are non-living things and plants different and how are they similar?

I really want to know the answer to this question.

No = 0 Maybe = 1 Yes = 2

I know where to look to find some of the information I'll need to answer this.

No = 0 Maybe = 1 Yes = 2

This question is important to me.

No = 0 Maybe = 1 Yes = 2

I can think of other questions I'll need to answer to answer this question.

No = 0 Maybe = 1 Yes = 2

Total: 2

Question 3: Why is seasonal change important to plants' life cycle?

I really want to know the answer to this question

I really want to know the answer to this question.

No = 0 Maybe = 1 Yes = 2

I know where to look to find some of the information I'll need to answer this.

No = 0 Maybe = 1 Yes = 2

This question is important to me.

No = 0 Maybe = 1 Yes = 2

I can think of other questions I'll need to answer to answer this question.

No = 0 Maybe = 1 Yes = 2

Total: 5

Question 4: What would happen if plants could not survive a change in climate?

I really want to know the answer to this question

I really want to know the answer to this question.

No = 0 Maybe = 1 Yes = 2

I know where to look to find some of the information I'll need to answer this.

No = 0 Maybe = 1 Yes = 2

This question is important to me.

No = 0 Maybe = 1 Yes = 2

I can think of other questions I'll need to answer to answer this question.

No = 0 Maybe = 1 Yes = 2

Total: 3

Rating each question is a way to determine which question or questions to pursue (highest to lowest interest):

1. *Why is seasonal change important to plants' life cycles?*
2. *How do plants adapt to seasonal change so they don't die?*
3. *What would happen if plants could not survive a change in climate?*
4. *Within the same habitat, how are non-living things and plants different and how are they similar?*

Next Steps

Working with Questions

Once students have chosen their questions, they'll need to consider:

What do I need to know to answer this question?

Why is this question important?

Students can use the "5W's + How" to generate questions they'll need to address to answer their questions. As they do this they may need to refine their questions.

For example:

Why is it important for the Haida to harvest plants?

- What tools do they use?
- How do they know what plants to harvest?
- Where do they store the plants?
- Who does the harvesting?
- When do they harvest?

Challenge Option

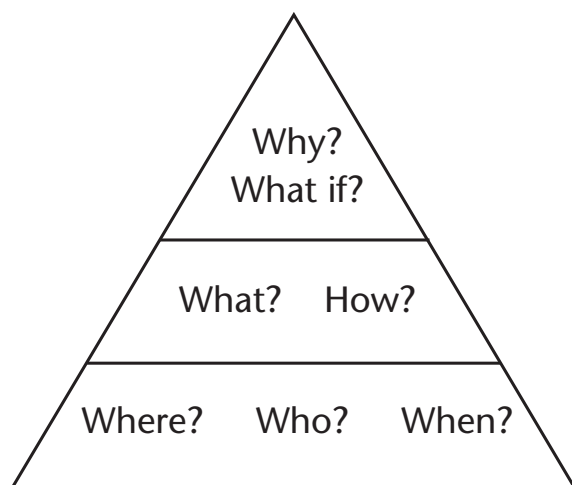
For students who want more of a challenge, teachers may suggest they think of a problem related to one of their questions and try and find a solution to it. ("What can I/we do to solve this?")

Younger Students

A goal in inquiry-based learning is having students develop questions that interest them to motivate their exploration to find answers. In working towards this goal it's important to remember that abilities of students vary. Younger students may have difficulty coming up with powerful questions on their own and require teacher assistance. A teacher may also choose to have a student investigate a less powerful question.

It's important that students not form negative connotations with less powerful questions. "Where," "who," or "when" questions are valid, to answer them just takes less effort and thought than more powerful questions, and are often necessary in answering the bigger questions. Teachers may wish to have their class come up with attributes for different levels of complexity in questions to help students understand the difference.

For example:



Third Level (Most Powerful)

- Could have many answers, depending on your point of view or opinion
- Takes research and thinking about to answer

Second Level

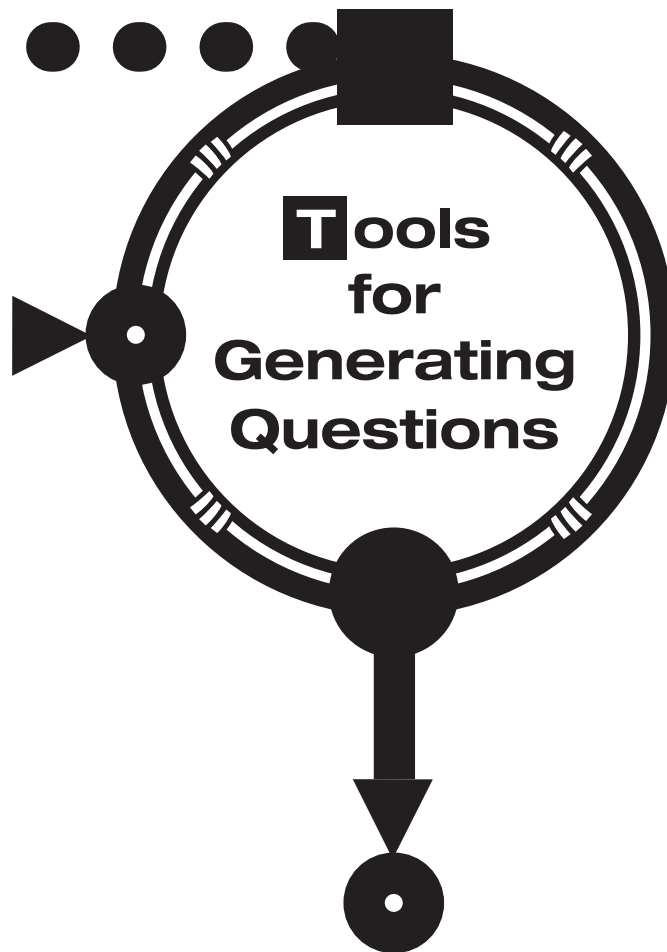
- Could have more than one answer
- Takes more research or effort and explanation to answer

First Level (Least Powerful)

- Easy to find the answer to
- Can be answered "yes" or "no" or in one sentence

For early grades, a teacher may want to pose an overarching unit question for the class and have students generate questions to answer this big question. This is the model used in the unit, *My Seasonal Round*.

Blackline Masters





How to Play Question Cue

Pick A Word

To start, a student or teacher randomly chooses from a selection of vocabulary cards.

This will contain the word or words that students will use in their questions.

Roll the Dice

Each student has a turn to ask an open-ended question about the chosen topic.

To do so, the student rolls the dice to determine what kind of question to ask:

- 1** = why
- 2** = what
- 3** = how
- 4** = where
- 5** = when
- 6** = Your choice!
 - *add on to an existing question*
 - *ask a "what if" question*
 - *ask any kind of question*
 - *or choose a new topic and ask any kind of question*

Ask a Question

Now that you know what kind of question to ask, use the chosen vocabulary word(s) and ask your question. If you need help from the audience, just ask!

Write Down the Question

As each question is asked, the teacher or chosen scribe writes it down.

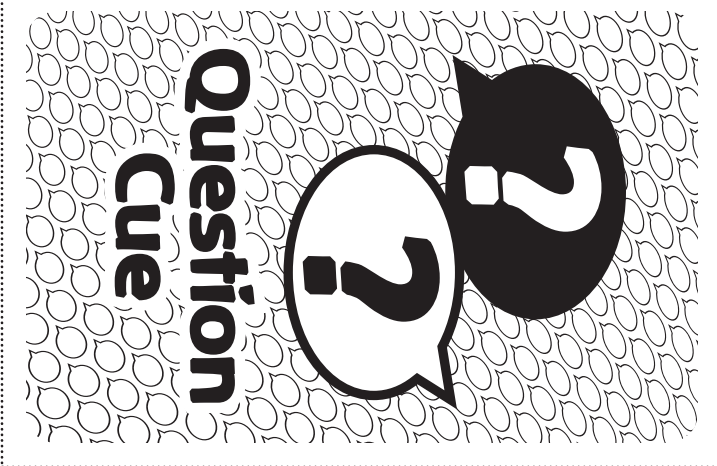
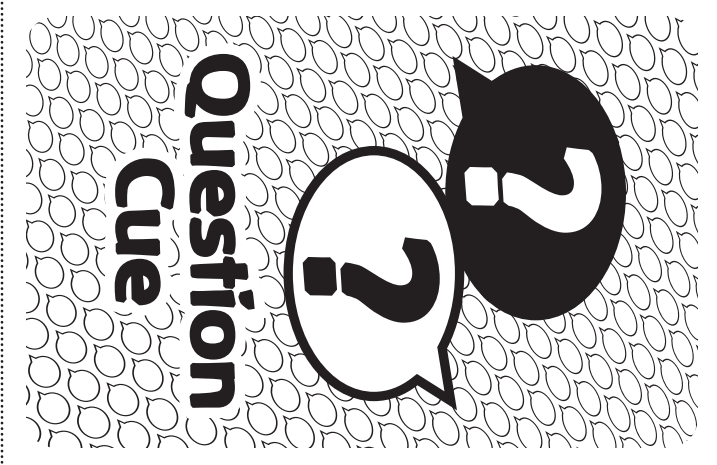
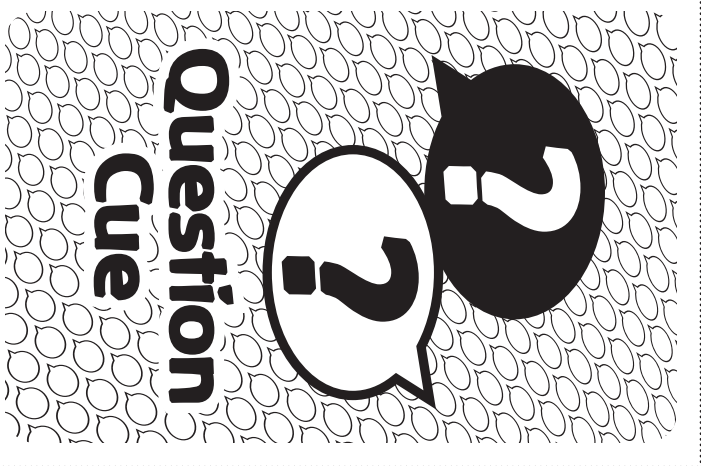
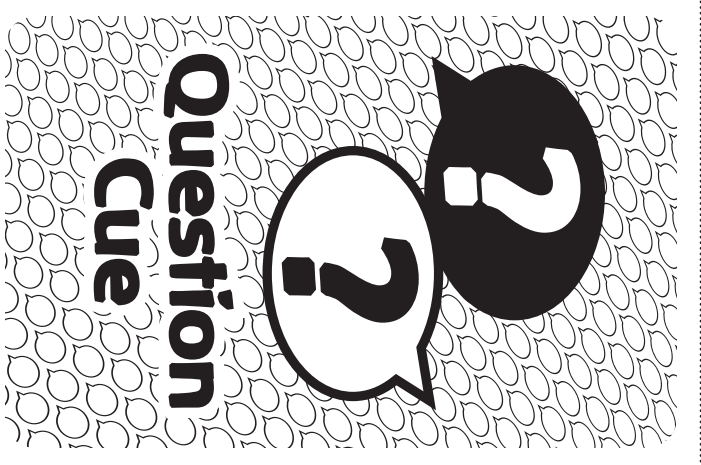
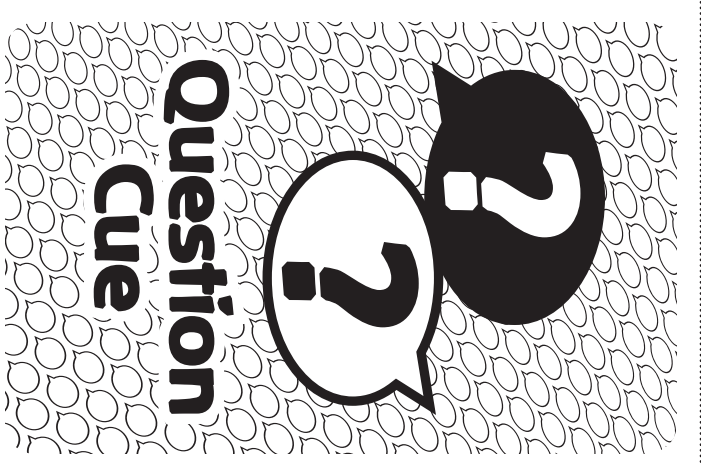
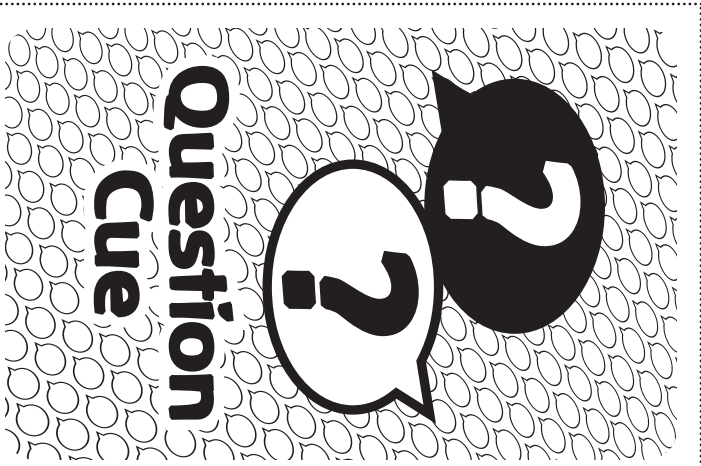
Next Person's Turn

Now it's someone else's turn. This person rolls the dice, and asks a question using the same vocabulary card.

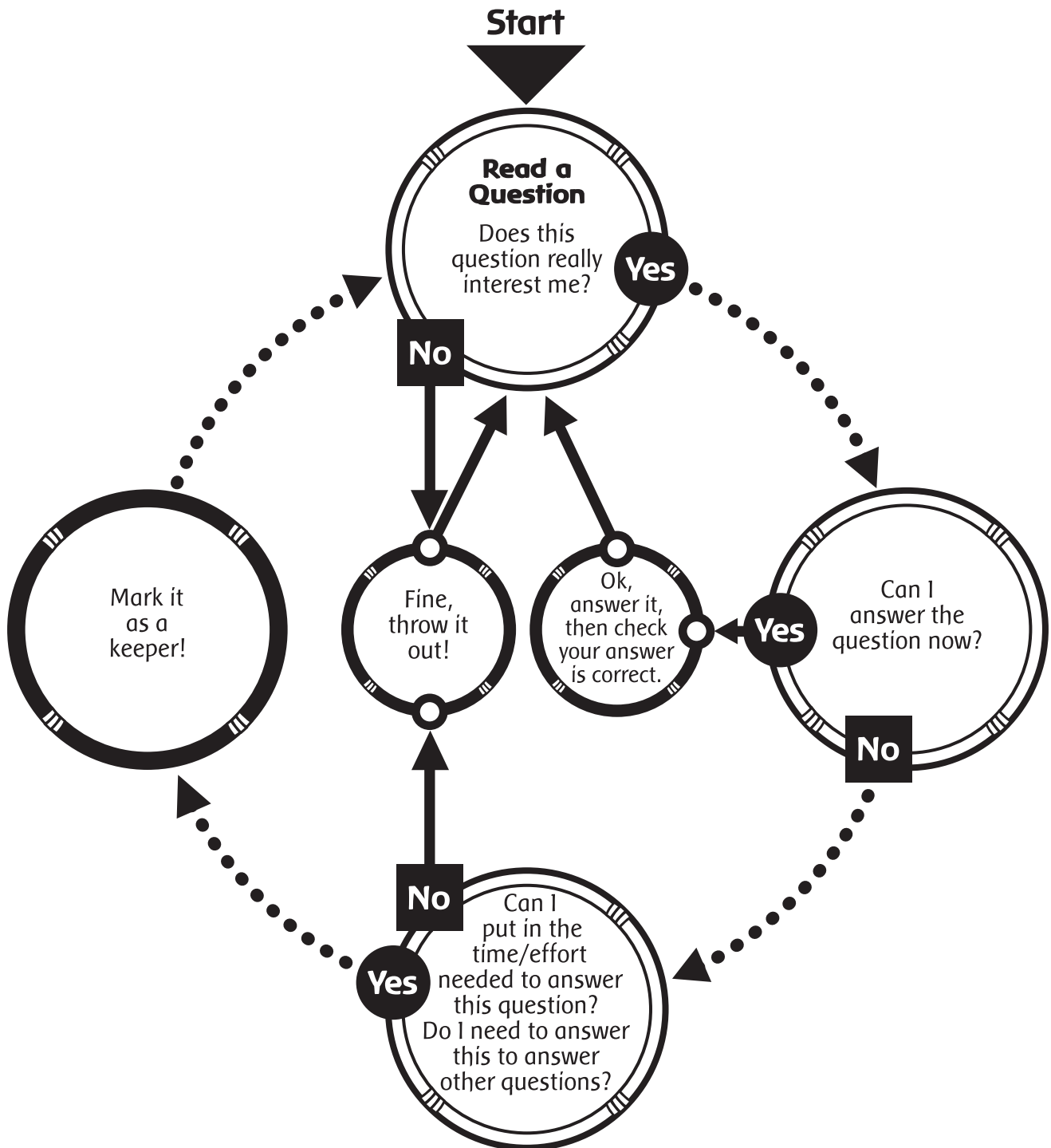
Keep Playing

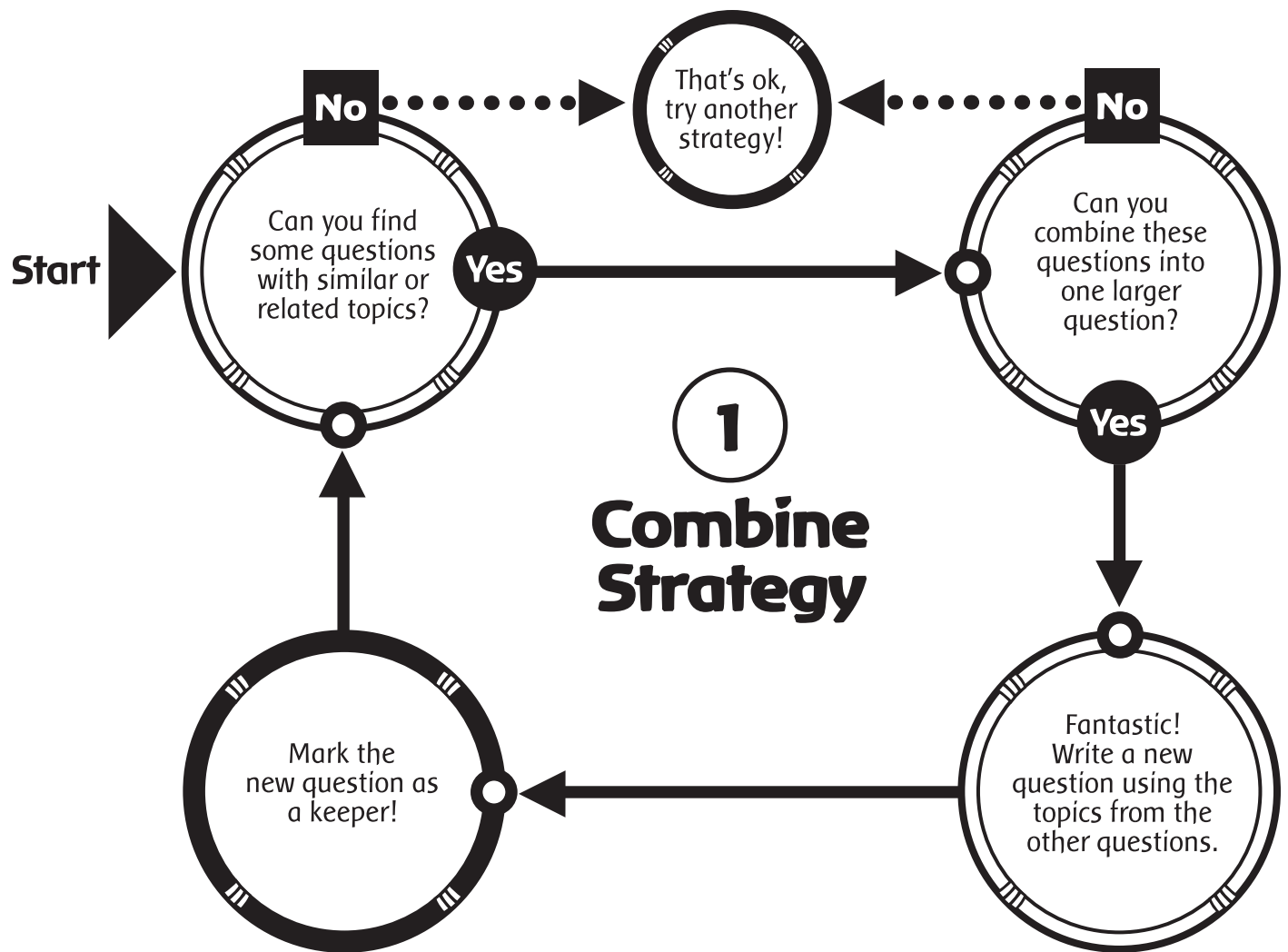
Play continues (dice-roll and question) for as long as players can ask questions without making a statement or repeating a previous question. When this happens choose a new vocabulary card.

Continue playing until all the vocabulary cards have been questioned and/or every player has had a turn.

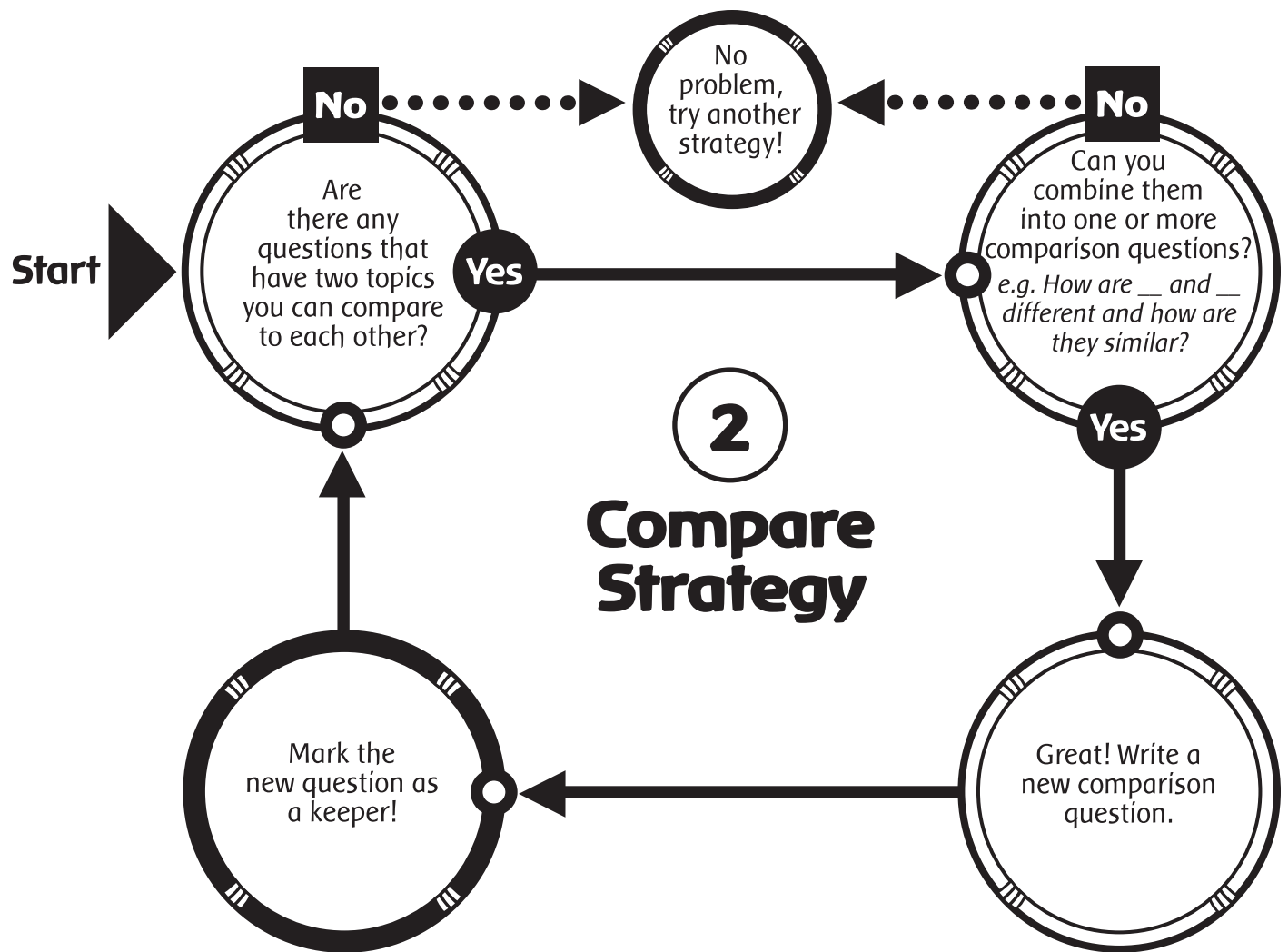


Sort Circle

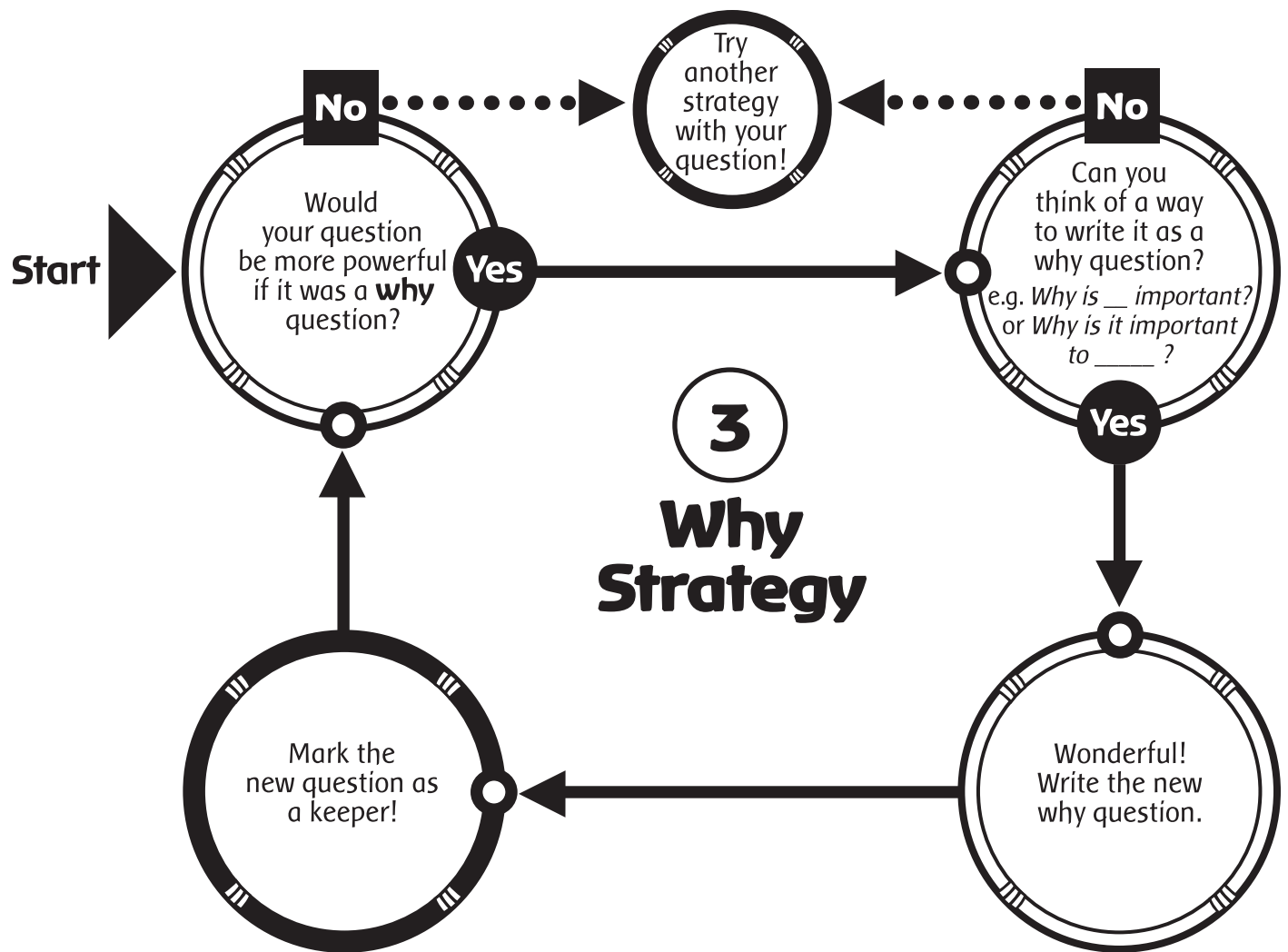




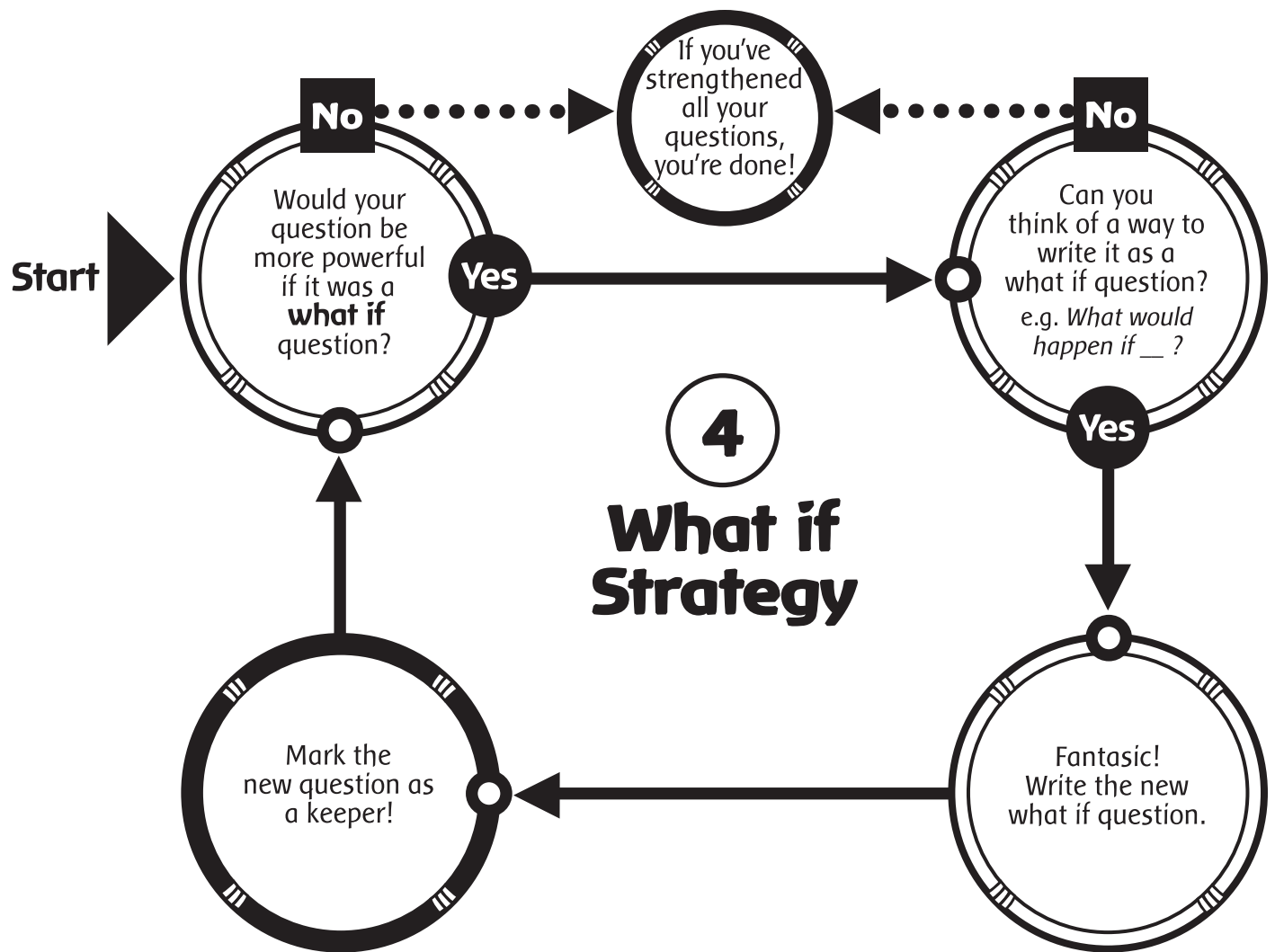
Strengthening Strategies: 1 of 4



Strengthening Strategies: 2 of 4



Strengthening Strategies: 3 of 4



Strengthening Strategies: 4 of 4

Question Rater

Step 1: Write Your Criteria

Write out three to five different sentences that describe what makes a question important for you. These will be the criteria that you'll use to evaluate your questions.

Example:

I really want to know the answer to this question.

I know where to look to find information to answer this question.

I think this question is important.

Criteria 1: _____

Criteria 2: _____

Criteria 3: _____

Criteria 4: _____

Criteria 5: _____

Step 2: Copy Your Questions

On the next page write down each of your questions.

Step 3: Rate Each Question

Read the first question. Then look at each of your criteria and circle the "no," "maybe," or "yes" to indicate what you think about that criteria in terms of that question. Then enter the number (0, 1 or 2) in the appropriate box. Do this for all your questions.

Step 4: Total Your Scores

When you've gone through each criteria for all your questions, add up the scores to get a total for each question.

Step 5: Find the Winner!

After you've evaluated all your questions, look at the totals.

Draw a big star beside the question (or questions) with the highest score.

Question: _____

Criteria 1									
<div></div>	+	<div></div>	+	<div></div>	+	<div></div>	+	<div></div>	= <div></div>
no=0 maybe=1 yes=2		no=0 maybe=1 yes=2		no=0 maybe=1 yes=2		no=0 maybe=1 yes=2		no=0 maybe=1 yes=2	

Question: _____

Criteria 1									
<div></div>	+	<div></div>	+	<div></div>	+	<div></div>	+	<div></div>	= <div></div>
no=0 maybe=1 yes=2		no=0 maybe=1 yes=2		no=0 maybe=1 yes=2		no=0 maybe=1 yes=2		no=0 maybe=1 yes=2	

Question: _____

Criteria 1									
<div></div>	+	<div></div>	+	<div></div>	+	<div></div>	+	<div></div>	= <div></div>
no=0 maybe=1 yes=2		no=0 maybe=1 yes=2		no=0 maybe=1 yes=2		no=0 maybe=1 yes=2		no=0 maybe=1 yes=2	

Question: _____

Criteria 1									
<div></div>	+	<div></div>	+	<div></div>	+	<div></div>	+	<div></div>	= <div></div>
no=0 maybe=1 yes=2		no=0 maybe=1 yes=2		no=0 maybe=1 yes=2		no=0 maybe=1 yes=2		no=0 maybe=1 yes=2	

Question: _____

Criteria 1									
<div></div>	+	<div></div>	+	<div></div>	+	<div></div>	+	<div></div>	= <div></div>
no=0 maybe=1 yes=2		no=0 maybe=1 yes=2		no=0 maybe=1 yes=2		no=0 maybe=1 yes=2		no=0 maybe=1 yes=2	