

## Creating Developmental Questions

### Preview

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#### Introduction

Instructors must often determine whether or not learners have learned the information in the lesson just taught.

An effective way to evaluate learning is to ask questions.

If instructors expect to develop learners' thinking beyond recall of knowledge, they need to ask the learners developmental questions.

Such questions stimulate thinking skills that process information, not merely recall it from long-term memory.

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#### Purpose

Use “Creating Developmental Questions” to —

- understand the concept of developmental questions.
  - create developmental questions.
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#### Description

“Creating Developmental Questions” —

- defines what developmental questions are.
  - lists the steps for creating developmental questions.
  - lists model questions at six developmental thinking levels.
  - shows key words that elicit thinking skills beyond recall of knowledge.
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#### Definition — developmental question

A *developmental question* is a question that requires the learner to process information, not simply recall it from a lecture, a handbook, or other source.

*Note:* “Developmental” suggests that the instructor uses this question to *develop* the learner’s thinking beyond simple recall of knowledge.

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More...

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### Procedural action

Follow these steps to create a developmental question.

*Notes:*

- Example “a.” supports one sequence of steps.
- Example “b.” supports a separate sequence of steps.
- Italics style emphasizes key words or skills learned earlier.

Step	Action	Example
1	Review key words and model questions for the recall of knowledge.	<p>a. <i>What</i> are the individual elements of the equation for improving intelligence?</p> <p>b. <i>How many</i> M’s does the Ishikawa fishbone management tool display?</p>
2	Process in some way the information you have recalled.	<p>a. <i>Judge</i> the consequences of omitting one critical element of the equation for improving intelligence.</p> <p>b. <i>Rank order</i> the top three M’s of the Ishikawa fishbone management tool.</p>
3	Identify and tag which thinking skill(s) you used to process the recalled information.	<p>a. <i>Evaluating</i> is judging the significance, value, or worth of information.</p> <p>b. <i>Prioritizing</i> is ranking elements according to one or more personal values.</p>
4	Select a key word or model question for any thinking skill, besides the recall of knowledge.	<p>a. <i>What would happen if</i> you ignored one element of the equation for improving intelligence?</p> <p>b. <i>Which three</i> of the M’s of the Ishikawa fishbone management tool <i>are the most important</i> for managing instructional tasks?</p>

More...

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### Bloom's developmental levels

Benjamin Bloom's taxonomy of educational objectives provides the basis for creating a developmental question on one of six different levels. This table displays the six levels of Bloom's taxonomy of educational objectives for the cognitive domain. The lowest level appears first.

Developmental Level	Knowledge Process	Playing Games
1 = lowest	Recall	<ul style="list-style-type: none"> <li>• "Jeopardy" focuses players on the Recall level only.</li> <li>• "Wheel of Fortune" focuses players on all six levels.</li> <li>• Which game is more fun for players?</li> <li>• Which appeals more to you?</li> </ul>
2	Comprehension	
3	Application	
4	Analysis	
5	Synthesis	
6 = highest	Evaluation	

### Results

When you create developmental questions, you can expect these results:

- Your developmental questions will stimulate your learners to use thinking skills that process the information in some way, beyond simply recalling it from memory.
- Learners' responses will indicate how well learners have processed the information contained in the instructional phase of your lesson.

### Finder

You can find the following contents on the pages shown.

Each of the developmental levels includes:

- Description,
- model questions, *and*
- key words.

Page	Information
4-5	<a href="#">Recall of knowledge</a>
4-6	<a href="#">Comprehension of knowledge</a>
4-7	<a href="#">Application of knowledge</a>
4-8	<a href="#">Analysis of knowledge</a>
4-9	<a href="#">Synthesis of knowledge</a>
4-10	<a href="#">Evaluation of knowledge</a>

## Recall of Knowledge

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**Description**      *Recall of knowledge* is the lowest level of thinking.

At this level, learners recall knowledge merely by bringing to short-term memory some data or information stored in long-term memory.

*Note:* Thinkers store in long-term memory such knowledge from listening to a lecture, reading a text, or observing an actual or recorded event, *only* if they associate the knowledge with strong feelings about its value for them.

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**Model questions**      Model questions to elicit responses that recall knowledge include:

- Who?
- What?
- Where?
- When?
- Why?
- How?
- How many?
- How much?

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**Key words**      Key words to elicit responses which recall knowledge include:

- Define,
- Describe,
- Report,
- Select, *and*
- Tell.

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## Comprehension of Knowledge

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### Description

*Comprehension* is a cognitive skill that is more complex than recall of knowledge. Learners comprehend knowledge when they —

- grasp the meaning of it.
  - understand the relationship of the whole concept to its parts, *and* the relationship among the parts of the whole.
- 

### Model questions

Model questions to elicit responses about the comprehension of knowledge include:

- What does this mean, in your own words?
  - What is the purpose of this?
  - How does this work?
  - What part doesn't fit?
  - What exceptions exist?
  - What is the writer saying in this section?
- 

### Key words

Key words to elicit responses about the comprehension of knowledge include:

- Explain,
  - Interpret,
  - Omit,
  - Outline,
  - Summarize, *and*
  - Translate.
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## Application of Knowledge

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**Description**      *Application* is a thinking skill that depends upon both the learner's recall and comprehension of knowledge.

Learners apply knowledge when they —

- take it from the setting in which they originally learned it.
  - fit it into a new setting.
  - maintain the same relationships among the critical elements.
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**Model questions**      Model questions to elicit responses about application of knowledge include:

- What would happen if ...?
  - What other ways could you use this?
  - How much change would result when ...?
  - How would you use this when you return to your work site?
- 

**Key words**      Key words to elicit responses about the application of knowledge include:

- Apply,
  - Estimate,
  - Guess,
  - Predict,
  - Pretend, *and*
  - Try
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## Analysis of Knowledge

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### Description

*Analysis* is a thinking skill that depends upon the learner's recall and comprehension of knowledge. Learners analyze knowledge when they break up any whole into its parts to find out their —

- nature: what the parts are.
- proportion: how much of the whole each part makes up.
- function: how the parts work with each other.
- relationship: how the parts fit with each other along various dimensions.

*Note:* Some examples of relationships include —

- spatial,
  - temporal,
  - logical,
  - psychological,
  - social,
  - political, *and*
  - financial.
- 

### Model questions

Model questions to elicit responses about the analysis of knowledge include:

- What is the relationship between this part and that part?
  - What are the essential elements of this whole?
  - Which ideas justify the writer's conclusion?
  - In what different ways can you examine this database/knowledge base?
  - What categories or classes can you use to group the data?
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### Key Words

Key words to elicit responses about the analysis of knowledge include:

- Break down,
  - Break apart,
  - Classify,
  - Categorize,
  - Decompose,
  - Distinguish,
  - Partition, *and*
  - Separate.
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## Synthesis of Knowledge

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### Description

*Synthesis* is a thinking skill that depends upon the learner's recall and comprehension of knowledge. Learners synthesize knowledge when they form a whole by bringing together separate parts.

*Note:* The whole that results from synthesizing may be an —

- entirely new creation.
  - improved version of a familiar whole.
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### Model questions

Model questions to elicit responses about the synthesis of knowledge include:

- What input does this task require?
  - What new ways could you put this together?
  - How would you test whether this design is valid?
  - What steps do you follow to plan for this task?
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### Key words

Key words to elicit responses about the synthesis of knowledge include:

- Build,
  - Compose,
  - Create,
  - Design,
  - Make,
  - Plan,
  - Propose, *and*
  - Synthesize.
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## Evaluation

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### Description

*Evaluation* is a thinking skill that depends upon both the learner's knowledge recall and comprehension.

Learners evaluate knowledge when they judge the significance, value, or worth of information, *after* an action sequence.

*Note:* Judging *during* an action sequence is a type of evaluation that we more accurately tag, *monitoring*.

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### Model questions

Model questions to elicit responses about the evaluation of knowledge include:

- What is wrong with this?
  - What inconsistencies appear?
  - What steps do you follow to evaluate the results of ...?
  - Which is better, more ethical, important, logical, or valid?
  - How could you improve this process? ...this product?
- 

### Key words

Key words to elicit responses about the evaluation of knowledge include:

- Appraise,
  - Choose,
  - Compare,
  - Criticize,
  - Critique,
  - Defend,
  - Judge,
  - Prioritize, *and*
  - Rank order.
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