

A Supplementary material

A.1 Crowdsourcing details

Figure 2 shows the instructions that crowdworkers were given at the beginning of each question writing task. Figure 3 shows the interface they used to write unanswerable questions for each paragraph. In the interface, workers first write an unanswerable question, then highlight a plausible answer in the paragraph.

A.2 Plausible answers as distractors

As mentioned in Section 5.4, we measured how often systems were fooled into answering the plausible answers provided by crowdworkers for our unanswerable questions. For each system, we first isolated their false positive errors—cases where they predicted an answer to an unanswerable question—on the development set. Within this set of examples, we measured exact match and F1 scores between the system predictions and plausible answers. These numbers are shown in Table 5. Plausible answers account for roughly half of the false positive errors made by each of the computer systems, as well as by human answerers. We conclude that the plausible answers in our dataset do indeed serve their purpose of being distracting spans that could be mistaken for the correct answer.

	EM	F1
BNA	48.6	63.0
DocQA	55.0	69.9
DocQA +ELMo	54.9	69.2
Human	46.4	60.6

Table 5: Exact match (EM) and F1 scores between system predictions and plausible answers, in cases where the system made a false positive error.

Ask Impossible Reading Comprehension Questions

Instructions

In this article about Geology, you will be asked to pose and answer reading comprehension questions based on the paragraph. There is a twist! The question you pose must be impossible to answer based on the paragraph alone, but should be about the same topic and same people/places/things! Additionally, the paragraph must contain a phrase/word that seems like a plausible answer to the question. Read each paragraph, pose an impossible question, and then highlight a phrase from the paragraph that looks like a plausible (but of course, incorrect) answer. We'll clarify the task with the help of an example below.

Estimated Time For Task Completion - 3.2 hours

This article consists of 25 paragraphs. We recommend a time of 7 minutes per paragraph. Submit each paragraph after you are done to save partial progress. Feel free to take breaks -- if you come back to the task, you do not need to resubmit paragraphs already submitted in an earlier session. After completing all paragraphs, click the submit task button at the end of the page.

The processes of decentralization redefines structures, procedures and practices of governance to be closer to the citizenry and to make them more aware of the costs and benefits; it is not merely a movement of power from the central to the local government. According to the United Nations Development Programme it is "more than a process, it is a way of life and a state of mind." The report provides a chart-formatted framework for defining the application of the concept 'decentralization' describing and elaborating on the "who, what, when, where, why and how" factors in any process of decentralization.

Prompt Questions

What is decentralization according to the United Nations Development Programme?

it is "more than a process, it is a way of life and a state of mind."

What is a way of life and state of mind, more than a process?

The processes of decentralization

What does the report from the United Nations Development Programme show?
a chart-formatted framework for defining the application of the concept 'decentralization'

What does the report from the United Nations Development Programme go into

Task Tutorial

1. On the left, you'll see a reading passage and 'prompt questions' underneath it. First read the passage, and skim over the questions.
2. Now, based on what you've read in the passage, your task is to come up with questions that don't have a correct answer in the passage, but have feasible answers.
3. Start by picking a question from the prompt questions. For the purposes of this example, let's pick **What is decentralization according to the United Nations Development Programme?**
4. Note that this question does have an answer in the passage. We're going to modify it so that it doesn't have an answer. For instance, we can modify the question to **What is decentralization according to the local government?** Note that this question doesn't have an answer in the passage, but still contains entities present in the passage such as **local government**.
5. You will also be asked to pick a *plausible* answer for our question. This is an answer that looks possibly correct if someone hadn't read the passage. You select the plausible answer by highlighting a segment of the passage. For our example question, we would highlight **it is "more than a process, it is a way of life and a state of mind."**
6. Let's come up with another example. This time, we will use the inspiration question **What is a way of life and state of mind, more than a**

Figure 2: The instructions shown to crowdworkers at the beginning of each question writing task.

Paragraph 2 of 25

Spend around 7 minutes on the following paragraph to ask 5 **impossible** questions! If you can't ask 5 questions, ask 4, but do your best to ask 5. Select a plausible answer from the paragraph by clicking on 'Select Plausible Answer', and then highlight the smallest segment of the paragraph that is a plausible answer to the question.

In the 1960s, a series of discoveries, the most important of which was seafloor spreading, showed that the Earth's lithosphere, which includes the crust and rigid uppermost portion of the upper mantle, is separated into a number of tectonic plates that move across the plastically deforming, solid, upper mantle, which is called the asthenosphere. There is an intimate coupling between the movement of the plates on the surface and the convection of the mantle: oceanic plate motions and mantle convection currents always move in the same direction, because the oceanic lithosphere is the rigid upper thermal boundary layer of the convecting mantle. This coupling between rigid plates moving on the surface of the Earth and the convecting mantle is called plate tectonics.

Questions for inspiration

What was the most important discovery that led to the understanding that Earth's lithosphere is separated into tectonic plates?
seafloor spreading

Which parts of the Earth are included in the lithosphere?
the crust and rigid uppermost portion of the upper mantle

What is another word for the Earth's upper mantle?
asthenosphere

Plate tectonics can be seen as the intimate coupling between rigid plates on the surface of the Earth and what?
the convecting mantle

In what decade was seafloor spreading discovered?
the 1960s

Scroll down the questions to hit 'Submit Paragraph' once you're done with the paragraph.

Ask a question here. Use your own words, instead of copying from paragraph

Select Plausible Answer

Ask a question here. Use your own words, instead of copying from paragraph

Select Plausible Answer

Ask a question here. Use your own words, instead of copying from paragraph

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Select Plausible Answer

Figure 3: The interface crowdworkers used to write unanswerable questions and annotate plausible answers.