

Chapter 26. Exercises for Critical Thinking and Assumption Checking

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We can think about “exercises” two ways, as skill-building and as simple movement. We know that reflective writers need deliberate practice to improve: after all, writing doesn’t happen with just one big swoop of words landing on a page, but with deliberate moves and approaches assembled over time. Practicing writing shares many characteristics with other kinds of practice: like shooting free throws, drawing faces, piping frosting, calculating cosines, or identifying cells, writing practice requires guidance, focus, repetition, and connection to a larger goal. Writers gain confidence and insight when we practice particular skills, either skills we most need for our work at the moment or skills we struggle with most.

Solve writing problems reflectively

As reflective writers, we also know that when we’re stuck, we don’t have “writer’s block”—instead, we just have a problem we need to figure out. The exercises in this section are designed to support that problem-solving process. They can help writers DEAL with being stuck, by

- Defining a problem,



- Exploring some options for addressing it,
- Acting by trying out a new approach for 20 minutes or so, and
- Learning how to apply that new idea where it's helpful.

When we take deliberate, reflective, writing-focused action (rather than checking our messages or staring at the cursor blinking on the screen), we can lower our stress, gain a fresh perspective or increased energy, and move forward to new and productive insights.

Avoid high expectations

Practice may “make perfect,” but practice work should never strive to *be* perfect. When you exercise as a writer, try to ignore small errors in word choice or punctuation, and try not to worry about whether you're getting the “right” answers. Just keep writing answers.

Practice persistence

You need to persist in a single exercise long enough to prompt your brain to release or create ideas you weren't aware you had. You might set a timer, and work as hard as you can for 20 or 30 minutes. You also need to persist across time, whether you repeat the same exercise multiple times or engage in different exercises at multiple points during a writing project.

Whether you use these exercises to strengthen your skills or to build more flexible processes, you can improve your current project and gain more fluency as a writer overall.

26.1 Assumption Inspection



Define your goal

Use this exercise to identify any assumptions that you hold, or that your readers may hold, that you need to consider as you create your arguments.

Background

Instructors sometimes caution writers to “avoid bias,” but the truth is that all writers have biases: we assume certain things about our world and the people in it. Your goal as a writer is always to *know* what your assumptions are, often to *anticipate* what your readers' assumptions are, and decide whether you need to *state* those assumptions, *change* those assumptions, or *limit the effect* of those assumptions by presenting additional information.

Take action

Identify key assumptions. Check the list of common assumptions or biases below—or do a quick internet search for “common biases”—and choose *two* that you think you might be susceptible to in the case of your current writing project.

- **Familiarity bias:** “I like what I know.” We are inclined to believe, trust, or value ideas or options that are familiar to us over ones that are new to us.
- **Isolation bias:** “I seek what I already know.” When we set off to learn something “new,” we often select news sources, social settings, or inquiry paths that keep us inside our familiar “information bubble.”
- **Confirmation bias:** “I believe what I already know.” When we encounter new information, we trust ideas that reinforce or match our current thinking, even if they come from dubious sources, and doubt ideas that seem strange, even when presented by a source we trust.
- **Fundamental attribution error:** “I know they’re jerks, unlike me.” When someone shocks or annoys us, we believe they are acting badly, even if we sometimes do the same thing with reasonable cause (“That idiot is going too fast” vs. “I’m late for work so it’s ok to speed up a bit.”)
- **First-impression bias/anchoring:** “I already know what I need to know.” We are reluctant to let go of the way we first thought about a person, event, or idea.
- **Stereotyping:** “I know one so I know them all.” We hold opinions about all lawyers, jocks, cities, motorcycles, or rutabagas and don’t pay attention to how individuals may differ.

Explain your biases. Now write a brief “if/then” scenario for each bias you chose about your own ideas about your current project. To help yourself as much as possible, try to identify examples that *you might actually think*, at least sometimes, rather than picking outlandish claims you’d never make.

“If I were caught up in _____ bias, then I might rely too much on _____ and so I might erroneously think _____. To resist that kind of thinking, I could _____.”

Anticipate readers’ biases. Consider your target audience, and what an intelligent but cognitively biased reader might think about your issue or recommendations. Write two “if/then” scenarios from that person’s perspective, and include your responses:

“If my reader were caught up in _____ bias, then they might rely too much on _____ and so they might erroneously think _____. To respond to that kind of thinking, I could _____.”

Reflect to learn and connect

Conclude by writing your future self a sentence or two of advice: what biases are you most likely to hold, and how will you remember to check those assumptions in future projects?

Explore related exercises

Counterargument Generator, Reason Appallingly, Used to Think / Now I Think

26.2 Believing/Doubting

*Define your goal*

Use this exercise to explore multiple points of view about an issue and to uncover the “gray areas” of complicated questions.

Take action

Begin by writing a claim, argument, or hypothesis—your own or one from your reading—at the top of your document.

Write a “believing” paragraph. As enthusiastically as you can, give *specific* reasons why this claim is the most sensible, most feasible, most reasonable approach to the issue that can be imagined. Explain how someone who supports this idea has considered the short- and long-term effects and seen all the fantastic benefits, and identify what those are and who the beneficiaries are. If you haven’t completed much research on this issue yet but you’re pretty certain that there are studies that prove one merit or another, you can mention the likelihood that such research exists.

Switch gears and write a “doubting” paragraph about the *same* claim. As skeptically as you can, give *specific* reasons why this is the most foolish, most haphazard, most unreasonable approach to the issue that can be imagined. Explain how someone who supports this idea has clearly not begun to consider the terrible short- and long-term consequences; identify the various groups of people who are or could be adversely affected by any continuation of this proposal, and identify what those problems would be. If you haven’t completed much research on this issue yet, you can still raise serious questions that you believe thoughtful scholars must somewhere be investigating.

Reflect to learn and connect

Finish by writing a couple of sentences to yourself: what puzzles, gray areas, or possible resistances have you identified that you might want to investigate further?

Explore related exercises

Backtalk, Dialogue, Values Freewrite

26.3 Counterargument Generator



Define your goal

Use this exercise to anticipate points of resistance that a skeptical reader might raise so you can respond to those resistances.

Background

In order to write convincingly, you need to imagine, the best you can, how someone who is *not you* thinks. You need to go beyond stating facts that seem obvious to you, and begin replying to the toughest questions or denials that another educated reader could make.

Take action

Choose a key reader or stakeholder relevant to your argument; briefly describe them (see Audience Profile). Briefly list your main arguments or proposals.

Consider lack of knowledge, because resistances based on simple ignorance are the easiest to respond to. Perhaps your readers:

- Don't know about their options, or why one might be better than another
- Don't understand the range of options open to them in particular
- Don't know how generalized options could apply to this situation
- Can't imagine another way of thinking about their options
- Don't know the benefits of changing to another way of thinking/acting

Write out two or three statements from your reader's point of view: "I don't know how . . ." or "I think only ___ is possible."

NOTE: Do not imagine that your reader is a buffoon who thinks the world is flat; imagine an intelligent but misinformed reader who hasn't learned or observed all the details you have been carefully studying. What did *you* not know several months or years ago that you know more about now?

Consider emotional or intellectual commitment next, because most readers like the way they think now, and like most of us, they resist learning a new way to think or behave. Perhaps your readers:

- Have put a lot of time/energy/ego into current ideas/practices

- Are comfortable with research/analysis that gives them reason to stay with their beliefs
- Enjoy the results of their current ideas/practices
- Don't feel that your option is truly better than theirs
- Are worried that taking a new track would bring unfortunate consequences to themselves or others
- Are afraid of the risks of new thought/action
- Are tired of trying out new things that never work

Write out two or three statements that could seem quite reasonable (not just selfish or stubborn) from your reader's point of view: "I support the theory/view that ___ because ___" or "I benefit from the current situation because ___."

Consider how limited access to resources can lead to resistance. These barriers are sometimes the most difficult to overcome because you as the writer may have no ability to affect them directly. (But note that sometimes readers just *think* they have no resources, in which case, you can use the strategies above to persuade them.) Perhaps your readers:

- Don't have the **time** to learn a whole new way or try out a new or more complicated option, especially in a crisis
 - or don't think they have the time (knowledge/emotion)
 - or don't think it's worth spending time this way (knowledge/emotion)
- Don't have the **personnel** to take on a new project
 - or don't think they have what it will take (knowledge)
 - or think personnel are more productive elsewhere (knowledge/emotion)
- Don't have the **money** to spend on new processes
 - or prefer spending the money elsewhere (knowledge/emotion)
 - or don't think they have as much as they'll need (knowledge)
- Have no **control** over resource allocation
 - or think they can have no effect (knowledge/emotion)

Write out two or three statements about resources from your reader's point of view. "The ___ of this recommendation would cost too much," or "The ___ is a good idea but we need all our people working on ___ instead." (Notice that some resistances about resources may also be linked to readers' lack of knowledge or their personal or professional beliefs about priorities.)

Reflect to learn and connect

Write yourself a few sentences: Which of these statements can you respond to with clear facts? Which with reasoned arguments or examples? Which resistances

will require you to gather more information, and which might you need to concede as serious problems that everyone should consider?

Explore related exercises

Dialogue, Evidence Garden, Six Structures

26.4 Evil Genie



Define your goal

Use this exercise to consider arguments, approaches, or solutions beyond what is immediately obvious.

Take action

Briefly describe the top three reasons, resources, or recommendations that support the argument in your writing project using direct language: “X should happen or Y will continue to be the case,” “P is the ultimate cause of Q,” or perhaps “In order to improve, we need A, B, and C.”

Now imagine that you’ve encountered an Evil Genie. Instead of granting you three wishes, the genie takes away your options: *all* the options you just listed. X will never happen, and A, B, and C are forbidden. From here on out, you are not allowed to stay in the current situation, with all its problems, or simply to give up and provide no further analysis on the issue. Neither are you allowed to argue for any of the causes, changes, resources, or supports that you have just asked for or recommended. All of those possibilities have been moved off the table. But like any protagonist facing down an Evil Genie, you will not be intimidated. You can begin to rummage through your pockets, open the cabinets and drawers of the room you’re in, ask your faithful companions for ideas, and brainstorm a new plan. (If you want some more inspiration, do a web search to learn about the TV hero MacGyver.)

Revise your plan: What approaches, resources, or reasoning might still help you persuade your readers? Your new strategies may not be plans that solve the whole problem, make everyone blissfully happy, address all the complications, or last for more than a few months, but they should be plans that still move you toward your goal of engaging with the problem at hand in a way that will intrigue and perhaps satisfy your readers. You may need to write some notes about additional inquiry you need to complete in order to make good on these new approaches: are there facts you would need to check, sources you would want to consult, data you would need to analyze? If you can think of more than one “Plan Z,” note that down, too.

Reflect to learn and connect

Take two minutes at the end of your writing to circle or highlight any idea that

might be worth considering even if the Evil Genie’s spell wears off and you can have your original ideas back. Research shows that often, people get caught up in “either/or” thinking that too-narrowly frames a problem, and your expedition to “and/and” thinking here might have broken you out into productive new ground.

Explore related exercises

Cousin Topics, Gray-Area Finder, Magic Three Choices

26.5 Gray-Area Finder



Define your goal

Use this exercise to uncover complications in a topic area, question, or issue that can help you choose a focus or wrestle with an advanced concept in depth.

Background

A “gray area” is a concept that is open to interpretation, or that could involve several valid stances or outcomes. You’re looking for moments of instability or change which could be interpreted different ways by different stakeholders (glass-half-full or glass-half-empty, for instance). If “it’s complicated,” then there’s no easy answer, and that means that there’s room for further discussion. And that means that there’s a reason to write about it. You also want to find a “gray area” that matters to the overall conversation. (If it’s debatable whether the flood waters rose to 12 feet or 13 feet, but either way was a disaster for the residents of Smallville, that’s not a good place to focus your attention.)

Take action

List as many complicated or “gray” areas in each category below as you can think of that are related to your issue, even if you think they might be too insignificant or not directly connected. Briefly explain why each item in your list is “gray” or complicated.

- **Switch viewpoints:** What is a “good thing” for some people (e.g., bosses) that could be harmful or cause problems for other people (e.g., workers), at the same or a different location?
- **Time travel:** What is an action that helps a situation now that might have negative long-term effects? What decision that causes initial harm might have eventual benefits?
- **Change lenses:** What is a situation or choice viewed through one set of criteria (financial or environmental gain, greatest benefit for all, one set of religious or cultural values, speed or duration of solution) that might look different if viewed with a different set of priorities or values?

- **Check patterns:** Where do expected patterns break down? What outlying data or behaviors call the pattern itself into question? What old patterns have been stretched too far, and what new patterns have not yet been explored?
- **Who's missing?** Who is affected by the situation but does not have their perspectives included in the reports, stories, or general information usually presented about this issue? Additional views often complicate our understanding.
- **What's surprising?** When you (or others involved) first encountered this issue, or became familiar with the situation, what was surprising? The difference between expectations and reality often is tied to a complication.
- **What's unknowable?** In many situations, we face variables—human and environmental—that we cannot measure or predict accurately. How do unknown or unmeasurable factors create complications?

Reflect to learn and connect

Star two or three of the gray-areas you listed that you might investigate further. Take two minutes to freewrite about one of them: what are the various possible “sides” (often there are more than two) you can identify? what additional inquiries can you make to learn more?

Explore related exercises

[Counterargument Generator](#), [Keyword Bingo](#), [Off on a Rant](#)

26.6 Mind The Gap



Define your goal

Use this exercise to ask questions and use strategies that help you fill in the gaps in your knowledge: ideas that may be outside your expertise, behind your assumptions, underneath your confirmation bias, or beyond the edge of your “filter bubble.”

Background

London subway riders may recall the phrase “mind the gap,” reminding preoccupied riders not to trip as they step from a car to the platform. Writers also need to address the gaps in our minds and our research. For instance, even when we know the general terms of an opposing or alternate view, we don’t usually know how or why others hold that view. On top of that, as Eli Pariser has noted, the algorithms of online search engines and social media track our preferences and so often direct us to ideas we already believe, blocking anything that might disrupt our comfortable “filter bubble.” Just like modern cars that have a special camera

that surveys the roadway outside drivers' field of vision and regular mirrors, writers and researchers need strategies to see what we're missing, especially if we don't even know we're missing it.

Take action

Set the context: Write a sentence at the top of your page describing the focus and/or goal of your current writing project, and follow with a sentence about the most interesting or important research you have found so far.

Identify gaps in your knowledge. From the list below, identify three ways to find out what you don't know that you don't know. Use the search strategy in relation to your current project and then write a note about two sources that show up that you hadn't seen before: why would or wouldn't they help you gain a fuller picture of your issue?

- **Change the bubble:** Switch between search engines (e.g., from Google to Bing) or databases (e.g., from a general one such as ProQuest Research Library to a specific one focused on Middle Eastern and Central Asian Studies); alternately, try an internet search on a computer or device that you don't own, to see if search engines tuned to someone else's "filter bubble" algorithms let in different information.
- **Reverse directions:** Search directly using terms that emphasize disagreement: add a term such as "oppose," "alternative," "anti," or "critic" to your search keywords, and skim several sources.
- **Alter the genre:** Switch between news, opinion, reports, and research study sources: if you have been finding mostly short, factual news reports, try adding a word such as "analysis," "commentary," or "editorial" to your search; if you have mostly seen general opinions, try adding a phrase such as "research study," "legislation," or "scientific analysis."
- **Counter the bias:** Algorithms reinforce the social biases and systemic discrimination of the culture they were built in, so you may need to search directly for perspectives that have been suppressed or overlooked, such as those from "Indigenous leaders," "college students with disabilities," or "Black women doctors."
- **Explore a new thought trail:** Choose a source that includes references or citations; pick one reference that seems the *least like* your current research trail while still being at least tangentially relevant, and track it down.

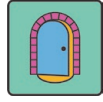
Reflect to learn and connect

Finish with an overall sentence or two about plans for your current project: what invisible, uncomfortable, or unexpected ideas could be helpful for you to identify and include?

Explore related exercises

Cousin Topics, Keyword Bingo, Question Ladders

26.7 Reason Appallingly



Define your goal

Use this exercise to use the easy task of writing illogical arguments to gain awareness of an issue and generate more logical supporting arguments.

Background

You may recognize some of the faulty argument strategies listed below—also known as “logical fallacies”—from the language of infomercials, political attack ads, or your younger sibling’s reasons why they should get to stay out late. But most of us make these faulty arguments now and then, when we are tired or think nobody will hold us to a higher standard. A good way to sensitize yourself to this poor logical behavior—and to write something easier than your *real* arguments for a while—is to deliberately behave badly and then reform your ways.

Take action

Write illogically: Choose three or four of the faulty argument styles described below, and write a claim related to your current project that uses that faulty style. You may write a claim supporting your view and/or a claim that opposes your view. Feel free to be as outlandishly illogical as you can.

- **Either-or argument:** Represent a complex problem or its solution as having only two options, both of which are at the extreme ends of the scale of possibilities, rather than having multiple options, some of which are better than others: “Either everyone buys hybrid and electric cars now, or we run out of fossil fuels in 50 years and nobody can drive.”
- **Hasty generalization:** Draw a sweeping conclusion based on too little evidence: “The success of Toyota’s Prius model shows that all car companies can convert to 100% hybrids or electrics in three years without difficulty.”
- **Slippery slope:** Claim (without convincing evidence) that one change will necessarily snowball into a series of increasingly drastic changes with no stopping point: “Legislation supporting ethanol-based engines rather than electrics will cause more and more of our valuable cropland to be devoted to fuel, increasing food prices and plunging the nation into recession from which we won’t be able to recover.”
- **Straw man or red herring:** Distract readers by describing a problem or opposing argument that isn’t really central to the main issues at hand. A “straw man” is an exaggerated or barely believable idea that sounds more

menacing than it really is, either to make the other side look bad or to make your side look good when you oppose them: “At least we won’t all be driving 6 MPG Humvees!” is a straw man point if almost no US residents own such vehicles. A “red herring” idea is like a stinky fish used to confuse hunting dogs: “You think government support of electric cars is bad? It’s part of the same plot to sell our national forests to the United Nations!”

- **Faulty causality:** Claim that two events occurring at about the same time are related causally without sufficient proof. (The fancy Latin phrase for this illogical thinking is *post hoc ergo propter hoc*: “After this, therefore because of this.”) “Smog in LA has gone down because more people are driving electric vehicles” links low smog to a single cause when there may have been multiple causes, or no link at all except the passage of time.
- **Ad hominem or bandwagon:** Appeal to human values, negative and positive. These approaches can be persuasive, but they are not logically sound. “*Ad hominem*” (“to the man”) indicates an attack on a person rather than an argument about the logic of their position: “Senator Brown supports electric cars but always flies a fuel-hogging charter jet between Washington and Oregon, so they can’t be trusted.” A “bandwagon” appeal asks for support based on the shared values of a peer community: “Hybrids will soon be the fastest growing niche of the car market, and you don’t want to be the last parents on the block driving your kids in a gas guzzling dinosaur.”

Practice better logic: When you’ve written several logically flawed statements, go back and try to rewrite one or two of them so that they represent stronger arguments.

Reflect to learn and connect

Where would you need to complete additional research to support a more logical claim, or to respond to a logical challenge from a resistant reader?

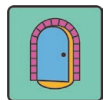
Explore related exercises

[Cause-Effect Map](#), [Question Ladders](#), [Rate My Source](#)

26.8 Source Synthesis Grid

Define your goal

Use this exercise to begin to map the overlapping contributions of your secondary sources to your project.



Take action

Set the context: Briefly describe the question you're investigating; what are some possible answers to it, and which answer are you thinking (so far) might be most persuasive? List the sub-issues or questions (at least three or four) that are connected to your question.

Create a grid or table that lists your sub-issues across the top and leaves room for you to list your sources—articles, websites, interviews—down the side. Fill in as many of the grid boxes or table cells as you can: you may be brief, but leave yourself as clear a note as possible so that you remember what you found and decided. For a project on how to support high school math teachers in their first five years of teaching, your grid might look like this:

	Classes for new math teachers	Peer mentoring for new math teachers	Alternate view: new teachers don't need help
Article by Brown	two examples	no description	no mention
Article by Samatar	says it's insufficient (p. 11)	two-year study of this (p. 15-21)	no mention
Book chapter by Brierova	strongly opposes this view (p. 221)	no description	argues for this (having field knowledge only is fine)
Interview with Espinosa	supports but worries about time/money	strongly supports: has been a peer mentor	strongly opposes

Reflect to learn and connect

When you have completed your grid, write yourself a note: which sub-topic column has the most information in it, and where do you see the most blank spots? If you have time, pick one of the rich columns, and try drafting a quick-and-dirty synthesis paragraph from it, even without double-checking the precise information from your sources, just to get a feel for the flow of your information.

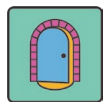
Explore related exercises

Assumption Inspection, Evidence Shopping List, Map the Terrain

26.9 Used to Think / Now I Think

Define your goal

Use this exercise to identify and develop habits of curiosity and flexibility of thought that can help you resist biases, connect with readers, and produce insightful or creative results.



Background

Academic, political, and professional settings encourage us to *defend the views we already hold*, but don't always help us *recognize and enhance how we change our own minds*. Writers need to argue persuasively, of course, but we also need to be ready to understand how readers with other views perceive the world, and we need to be able to offer ideas and solutions that don't follow standard expectations. "Creativity" isn't just something a few people have, but is a state of mind that all of us can practice.

Take action

Look back: Consider your whole lifetime, and write at least five sentences that identify a time when you changed your mind: "I used to think ____, but now I think ____." These can go back to when you were a child; they can refer to serious or frivolous beliefs. Then pick one of those sentences to expand: Try to identify the people, experiences, evidence, or contexts that helped you change your mind.

Look currently: Consider your current writing project, and write 5 more "Used to think / now I think" sentences. If you haven't exactly changed your mind (yet) or learned new information, you can look for places that might be open to change: "I used to be certain that ____, but now I wonder if ____." Pick one of those sentences to expand: What people, experiences, evidence, or context changed—or might be enough to change—your mind?

Look ahead: Imagine that you are 5, 10, or even 20 years into the future, and you're considering the same issues that are in your writing project now. Who knows what the future holds, right? Imagine that many things have changed around that future self, and so that future you has new ideas. Write at least two sentences explaining how that might happen, from your future perspective: "I used to think ____, but then ____ happened, and so now I think ____."

Reflect to learn and connect

When you imagine alternatives, even if you don't quite believe them yet, you create space to make recommendations or arguments that intrigue your readers. What one "now I think" idea that you wrote could you investigate further?

Explore related exercises

Emperor For a Day, Rate My Source, Subtopic Generator