FREE FIRST CHAPTER

THE CRITICAL THINKING EFFECT

What It Means To Be A Critical Thinker In This Day And Age

Uncover The Secrets Of Thinking Critically And Telling Fact From Fiction — Chapter One. About a 24-minute read.

Have you ever wondered why there seems to be so much misinformation out there?

With fake news stories reaching a hundred times more users on Twitter than real news stories, perhaps it is no wonder we have a problem separating the facts from nonsense. That leads us to another question: who comes up with the facts, and how do they know what is real? Why do some people believe official or scientific explanations, whereas others prefer to believe alternatives?

Is deception an unavoidable part of human existence? Can we develop techniques to cope with this influx of potential deception and get to the truth?

We all learned critical thinking at school and college, but how often do we apply it in everyday life? Even more importantly, how often do we interact with others who fail to apply a critical thinking approach to their work and personal lives? Many people happily believe in nonsensical ideas, whether these be innocent misconceptions or (in some cases) dangerous misinformation. By developing your critical thinking skills even further, you can learn to deal with these difficult people and present a coherent case for why they should perhaps research their views further.

A critical thinking mindset also helps us be more efficient and effective at work, enabling us to focus on relevant information and discard unconnected or inaccurate information. This leaves more time for the things and people we enjoy. If you strive for balance, it is worth taking the time to hone these skills and learn to apply them in a broader range of situations.

Many of us are perfectionists, and there is nothing wrong with that. We know that perfectionists deliver better results due to their high standards, but why not streamline your perfectionism and do the same or better with less effort? That is where the techniques in this book come in.

This book walks you through the details of using critical thinking, to identify the truth from non-truth. It contains specific examples, illustrative stories, thorough explanations, and practice exercises; all backed up by a range of scientific studies conducted by experts in their fields.

Each chapter is self-contained and logically organized, meaning you do not have to read it all in one sitting to make sense of the contents. You will understand how to discern the truth in a variety of contexts, from online news to scientific claims, to personal interactions. You will learn more about the scientific method, including scientific skepticism and how to tell science from non-science.

You will also find out how your mind might block you from figuring out the truth with a discussion of common biases, heuristics, and fallacies, including ways to overcome them. Knowing more about these will also help you deal more effectively with difficult people, including those trying to sell you phony ideas or dodgy products.

By learning more about how to sort the truth from the lies, you can reach better conclusions and make better decisions. You can also help others who do not yet have this knowledge to feel more confident in themselves.

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processing, and judgment and decision-making. She is outstanding at statistics but does not want to bore you with that. She has also worked in retail, clinical research management, e-commerce, learning support, and (of course) freelance writing. Her interest in the illusions created by the eye and mind remained constant across each of these roles, and she very much enjoyed composing this text for you. The book is not a definitive guide on thinking critically, and it is not a philosophy text. Instead, it summarizes reliable research findings and experts' opinions and suggests techniques and practice exercises that you can use in your daily life. So, are you ready to explore what it means to be a critical thinker?

Dr. Camilla J. Croucher

What It Means To Be A Critical Thinker In This Day And Age

Chancellor Sham Anderson took a deep breath as she hung up the phone. Marvin Keller, the Chair of the University Finance Committee, was not answering her calls. That morning's big news was the resignation of the Director of Loofberger Inc., sparking the company's stock's sudden plummet.

Naturally, Anderson now had serious concerns about the University's multi-million dollar investment in that very company. The decision to invest in a new corporation touting a completely novel product was risky, of course. However, the University had the funds despite huge pressure from the science and technology faculty.

Building a new space research center would allow the University to build probes to look for life on various moons within our solar system. This would not be possible without a vast amount of money.

The company performed excellently from the outset, suggesting a low risk. The Finance Committee quickly decided the kudos was worth it. They would invest in Loofberger.

Soon, the first hints emerged that Loofberger was in trouble. The product was not selling as expected. The share price slowly declined. Nevertheless, Keller assured the Committee that this was a blip and that things would pick up soon.

Sham startled as her cell phone rang: an unknown number. A somber voice confirmed that Loofberger had gone bust: the University lost its entire investment.

Hindsight revealed several clues.

Marvin Keller had failed to disclose that his brother-in-law was also Loofberger's Director. As a lifelong friend as well as a colleague, Anderson had not thought to question his recommendation. A few months after finalizing the deal, Keller took an extended sabbatical to work on special projects at his lake house.

What about Loofberger's initial promising market data? It turned out to be too good to be true — a fairly clever fake.

The University never got its space center, and many of those staff relocated to other, less embarrassing organizations. Anderson's peers advised her to take early retirement, which she did. The student body voted to paint the canteen ceiling black in memory of the loss, and little paint chips flaked off, making it look like the night sky.

The finance expert in this scenario had questionable motives, but nobody had thought to question them. Expert advice is often trustworthy, but we should not take everything at face value. Question how you know that source is an expert and how they know what they know.

Making complex decisions is difficult when we have limited information, but it is still important to investigate its source and content by gathering evidence to support our decisions and conclusions.

Critical thinking is a powerful approach that can help you to make better decisions. Critical thinkers do not passively receive information. Instead, they apply the rules of logic and their own experience to interpret the messages they hear and see properly[1].

Getting Started With Critical Thinking

Our intuitive reasoning processes work well for everyday purposes, but they may lead us in the wrong direction when applying them in more complex situations. This is because our

brains love a good shortcut. In contrast, critical thinking reduces shortcuts and automatic processing: it is a self-disciplined process.

That is not to say that critical thinking is completely different from intuitive thinking and reasoning; it may be more effortful, but anybody can think critically. The principles are fairly simple, but we know that people do not apply them consistently.

Faulty reasoning is commonplace. People smoke, despite the known health dangers. They gamble to excess, selling property and losing loved ones to feed their addiction.

Critical thinking is vital to avoid faulty reasoning pitfalls, as it helps us become better at solving problems. Unfortunately, faulty reasoning can become habitual. For instance, if somebody reasons to themselves that 'astrology is just a bit of fun, we do not need to prove it like a science,' that is fine, but what if they apply the same reasoning to the next pseudoscientific idea? This 'slippery slope' can make us vulnerable to more unproven ideas and even manipulation[2].

Even though critical thinking is composed of simple principles, you must practice getting better. The best critical thinkers share several common traits[3]:

They ask questions

They identify relevant information and pair it with abstract ideas. They draw valid conclusions and then test them.

They never assume that they got it right the first time

They try different approaches and ways of framing the problem.

They conclude by reasoning, as opposed to rationalizing

Reasoning means using logic to conclude, whereas rationalizing means finding a logic that fits the conclusion[4]. In other words, rationalizing is reasoning done backward.

They are superb at connecting with others

This is not only about sharing their ideas clearly; it is about listening and co-operation. You can even enhance your critical thinking by working with people with highly developed critical thinking skills[5].

So why is critical thinking important? For one thing, it helps us to distinguish between facts, opinions, claims, and evidence. We must delineate these four closely connected concepts because others may use them to persuade, misinform, or even manipulate us.

Facts

What exactly is a fact? More importantly, how do you know something is a fact? What if it is merely an opinion or a claim?

A fact is a piece of information that we can verify. We can observe it, or we can find out it is true from a reliable source. For example, the atomic number of carbon is six; the US Civil War took place between 1861 and 1865; Armstrong was the first to walk on the Moon. These are all facts.

Without diving deep into philosophy, we can note here that 'truth' is an abstract idea. Nobody can say for certain what is real (or fake, come to that). Later, when we look at scientific skepticism, we will examine this in more detail. For now, let's assume that truth can exist and that critical thinking at least brings us closer to it.

As a critical thinker, you should inspect any so-called fact you encounter. How do you know it is a fact and not an assumption? Try to verify the 'fact' yourself; it may be an assumption if it cannot be verified. On investigating, you may find the assumption is incorrect.

In some cases, assumptions are the best we can do. For example, if you were designing a novel product, at first, you might assume that it would appeal to customers who buy related products. Later, you could gain evidence using market research.

When you investigate a given fact, you might find that it is outdated or even a total misconception. Scrutinize facts, and learn to recognize the good facts and reject the bad

ones.

Opinions

Opinions may resemble facts, but they are subjective judgments. People often misrepresent opinions as facts, perhaps because strongly held opinions may even feel factual. Opinions are always evaluative or comparative, even if they use the same form as a fact by stating that something 'is' something. Saying that something is the best must, therefore, be an opinion.

Take this statement:

> *"Joseph Bloggs is the best downhill skier because they have won the most gold medals."*

This sentence is an opinion based on a fact. You can verify or falsify the fact that they won most medals by reading medals tables. The opinion that such a fact makes Joseph Bloggs the best downhill skier cannot be verified: it is somebody's perspective.

A new skier may be the best, even when they have not won anything yet. They might be able to beat Joseph Bloggs in every race, but if medal count is the best measure of skiing ability, the new skier cannot be said to be the best.

Our motivations, attitudes, and emotional states have huge effects on our opinions[6, 7]. This renders opinions vulnerable to all sorts of biases; not surprisingly, two people with identical information can very easily hold opposite opinions. Of course, opinions can change completely over time and need not be based on facts at all.

Claims

Like opinions, claims are often wrongly presented as facts. Claims may be factual, but the definition of claim is an assertion presented without proof. Therefore, distinguishing claims from facts is easy; you just need to check whether the source supplies any evidence for the claim.

Claims can be implied rather than stated. 'Before and after' photos in beauty adverts are a good example. The adverts may or may not overtly claim that the treatment improves the skin, but the skin certainly looks healthier in the 'after' photo.

Companies produce adverts to make viewers spend money rather than showing them the truth, resulting in advertisers presenting claims as facts. But claims crop up in the wild, too.

Conspiracists claim that mankind did not land on the Moon in 1969, but NASA faked the mission using camera tricks in a television studio. We can say this is a claim because there is no evidence of the proposed fakery.

A fake Moon landing would entail faking a lot of evidence. Fake technical data and fake filmed footage are only the beginning. NASA would have had to have persuaded their entire staff to give fake testimony, not to mention fake paperwork.

Evidence

It is not just conspiracy nuts who persist even when faced with overwhelming evidence against their beliefs[8]. We all do it. At times, we are all guilty of ignoring or misunderstanding evidence. This leads us to an important question: what exactly is evidence, and how should we use it?

Evidence is an everyday term, but as critical thinkers, we need a more technical definition. Evidence refers to a body of information that supports a given position.

We typically use evidence to prove or disprove a belief or decide whether a judgment or opinion is valid. Of course, you need evidence from different sources.

A good body of evidence comes from multiple reliable sources. Imagine overhearing a conversation at a party. Somebody claims that 'investments are a great way to make money.' A successful investor is listening; he nods enthusiastically and starts bragging about the huge profits he has made. Wouldn't you want to hear the other side?

The more evidence supports a conclusion, the more likely that conclusion is to be true. You might collect evidence from pre-existing sources or decide to gather your own.

Picture a range of experts who are interested in why people fall into problem gambling. The medic does not agree that sociology surveys are the best way to research this, but the sociology professor thinks they are the only way that makes sense.

However, the two researchers would examine different aspects of addiction. The medic in this example decides to look at physical differences in the bodies and brains of addicts and non-addicts; perhaps pre-existing variation predicts who can gamble casually without becoming addicted. In contrast, the sociologist wants to look at socioeconomic factors like gamblers' family situations, housing issues, and poverty.

The gambling study could involve neuroscience, interviews with gamblers, big data science, and more, in addition to surveys and clinical studies. All these approaches are helpful because they look at the problem at different levels. The resulting body of evidence, taken together and processed according to good logic, could generate more robust data than the medic or the professor alone. The group can investigate all potential causes of gambling and compare how well all the different factors predict who becomes a problem gambler.

In conclusion, uncertainty is a good thing because it drives us to examine problems in more depth. You can never gather all the facts or examine all the evidence. The best you can do is test your ideas and beliefs and improve them as you go along, based on a wide range of evidence.

Facts Versus Non-Facts

Critical thinkers evaluate everyday information rather than simply absorbing it. You must be clear about the division between facts and opinions, fiction, and emotions.

Facts Versus Opinions

Firstly, discerning facts from opinions is vital. Remember, we can prove facts, whereas we cannot prove opinions (subjective points of view). Alleged facts bombard us daily, but these are often opinions in disguise.

Business documents, and even scientific reports, sometimes report opinions as facts. Authors may commit this error while chasing positive results to persuade others to agree with them. Sometimes, they may misunderstand how to verbalize the information. For example, it is incorrect to present opinions based on data as though the opinions were the data.

The same facts presented differently can lead to opposite conclusions. The danger is that readers then treat the opinions as facts.

Facts Versus Fiction

Secondly, we need to separate fact from fiction. This is more difficult than it sounds. Labeled fiction is not a concern, although fantasists may claim that it is somehow real. The internet is full of people who believe in unlikely things.

One such unlikely belief is that aliens have left Stargates all around the universe, including on Earth. These Stargates allow beings to travel instantly from one planet to another. You might recall a long-running TV drama on this theme.

There are many more examples of people taking science fiction as fact. However, subtler categories of fiction do exist. Conspiracy theories are good examples of probable fictions presented as facts, whether due to error, lies, wishful thinking, or confusion[9, 10].

Facts Versus Emotions

It is also vital to distinguish facts from emotions. Just as we can feel so confident in opinions that we report them as factual, our emotions can seduce us into behaving as

though they too are real[11]. We also believe that arguments that support our pre-existing attitudes are stronger[12].

Telling facts and emotions apart may seem easy, especially if you regard yourself as a rational thinker, but it is not always obvious.

Let's consider a married couple having a heated argument. One yells at the other:

> *"I hate you! You're always telling me what to do. I wish we'd never met!"*

These ideas feel vivid and extremely real at the time, but once the speaker has cooled off and reconciled with their partner, they will regret saying these words. They realize that the ideas were expressions of emotions rather than the truth about their relationship.

Attraction forms the basis of many relationships, and attraction is another emotion that colors our perceptions. Earlier in the relationship just mentioned, the partners might have said things like:

> *"You are the most beautiful person I have ever seen. You're not like other people; you're better."*

Again, these ideas feel concrete and factual at the time, but they are simply angry words from the argument in reality. Positive emotion may be more enjoyable, but it is no more real than negative emotion.

So, how can we tell the difference between facts and emotions?

First, let's draw a line between emotional quality and emotional state[13].

Emotional quality is the emotion that somebody wants to convey in a picture, article, advert, or other messages. Usually, charity adverts show people or animals in a pitiful state, perhaps crying children, to make the viewer feel sad and guilty. In this case, sadness is the emotional quality of the advert.

Your emotional state is how you feel right now: calm, excited, wistful, or nervous.

You may feel the intended emotional quality in response to the charity ad or not. That is irrelevant. To critically assess the message, you only need to appraise what emotion you are supposed to feel and be aware of it as you process the message.

When assessing a claim or message, note whether the author is mistaking their own emotions for facts. People often feel strongly about causes, and we know that emotions drive us to justify our decisions and actions.

We are all affected by our emotional states and past experiences. The tricky thing is that emotions feel urgent at the time. Realizing that emotions affect your cognition is only the first step.

To compensate for this, we should try to step back from our own core affect (how we feel when we take in information), instead viewing the information objectively. Pause and recognize the emotion for what it is, a separate entity from the information you are processing. Similarly, a message's emotional quality is separate from its meaning.

We need to compensate for emotions like this because our emotional states affect our reasoning processes significantly. Moreover, we use our emotions to rationalize our decisions and behavior.

Shopping is a good example. Consumers often buy things they do not want or need, which is not a problem itself, as it supports a healthy economy. Excessive spending can become an issue, though. For example, if somebody cannot resist spending $300 on a new pair of sneakers when they also need to pay their rent, but they justify buying the sneakers because they really want them.

Research suggests that clinical staff, such as nurses and doctors, regularly make decisions biased by emotions[14].

Ideally, medical reasons, not emotional ones, should inform choices like whether to discontinue treatment. Therefore, medics educate their trainees to be as objective as possible, even in the face of highly emotive situations.

Emotional intelligence is hugely important for these clinicians. They must not let their emotional responses drive their decisions, but at the same time, they must be empathic and kind to patients and their families. Nevertheless, the study shows that decisions remain biased even under these conditions.

Whether you are a doctor or not, you probably make important decisions every day, so be mindful of your emotional state in reading or receiving a message. Your emotional brain might be biasing you towards noticing consistent information if you agree or disagree very strongly. We are more liable to agree with arguments that support what we already feel[15]. This emotional bias means you could miss important details and facts.

In contrast to our innate emotions, we can deliberately learn critical thinking and logic[16, 17]. As intelligent animals, we have the power to figure out new ways of thinking, develop these throughout civilization, and pass the techniques down to future generations.

Compare this to learning a language. We are born with the capacity for it but need to acquire the pieces (letter sounds, words, and so on) and put them together into something meaningful and useful.

To assess information rationally and avoid mingling facts, opinions, fictions, and emotions, we need to practice and use our critical thinking skills. Then, we can make informed judgments and decisions that are more likely to be effective.

The Message Behind The Message

Before we can make sense of the information we receive, we must fully understand the entire message. We cannot evaluate the information successfully if we do not investigate who made it and why: the content is only part of the story.

Source Of Message

Firstly, find out about the source. Sources are individuals or organizations, and the following advice applies to both.

A source may be an expert on some topics and naive about others. Sources may be biased, have special interests in certain topics, or pet theories. They may be more or less reliable, more or less trustworthy. Think about the following aspects of the source:

Is it an academic or government publication?

We have to assume these are more trustworthy than commentators. This is because their vested interest lies in providing accurate information for the population, whereas commentators' motivation is more variable.

Is the source paid (or rewarded in some other way) for conveying the message?

Publishers can and do pay experts to communicate specific information.

Where do they get their information?

Is it a primary or secondary source? Secondary sources can misquote primary sources. They might even treat other secondary sources as if they were primary sources. This magnifies errors and misconceptions. Find the original information if you want to assess it fairly.

What does your expertise tell you?

If the source is somebody you know, perhaps you know that they make outlandish claims quite often. This could factor into your assessment.
When analyzing messages, especially from people you know, remember that people's reasoning skills vary. The source may not be aware of all the aspects just described, and they may feel that they have made a very good case. Perhaps with a good debate, you can help them to improve.

At times, we all forget our deep-seated assumptions and motivations. Do not forget that critical thinking takes practice.

Purpose Of Message

Next, examine why the source composed the message. Knowing a message's purpose may alert you to possible distortions and half-truths. What was their real motivation?

Here, you need to view the message's fine details. If it is on a website, what kind of website? For example, somebody's private blog has a different purpose from a government website. See whether they have declared any interest in the products or topics they discuss; like influencers, blog writers are often given 'freebies' in exchange for promoting the product.

A message might not be an obvious advert, but still be a promotional text. For example, companies often feature blogs about their products and services; you would not necessarily take these texts at face value. Instead, think about what interest the company might have in the topic: web traffic, affiliate links, direct purchases, or simply to get you reading more about pet insurance.

People make persuasive messages for many reasons, and they can be subtle. Analyze the language to detect whether the message might be covert persuasion rather than unbiased information. Persuasive texts may feature many adjectives and adverbs, chatty language, and high-school rhetorical devices like alliteration and the 'rule of three.'

Word choices also reveal the author or speaker's biases and opinions. Say you are reading reviews of a scientific book about climate change. One reviewer refers to the 'climate scare,' whereas the other calls it the 'climate emergency.' They have a different opinion, but in the context, both phrases mean the same thing.

Another aspect of purpose is that the source may prefer one conclusion or decision from the outset. They might then filter out and distort the evidence to support the position they have already chosen. You can tackle this issue by using alternative sources to research the topic and filling in those gaps yourself.

Field Of Work

As well as the source's motivation and the message's purpose, you must understand at least something about their field of work. This is even more important if it is not your specialty. You need to get to grips with the basics.

Firstly, what are the fundamental goals? Imagine a hospital where radiographers and nurses work together to produce and analyze magnetic resonance images. Radiographers aim to produce the best images possible, whereas nurses aim to keep patients comfortable and well-informed about the procedure. Sometimes these goals might clash since the scanning procedure is uncomfortable and noisy. Specialist staff at all workplaces need to work together in this way to be effective.

Similarly, to assess the truth or falsehood of a message, you must understand the sphere the source of the message works in. This contextual information enables you to judge the message on its own merits. Further, there is no point judging the quality of a radiographer's work in the same way you would judge nursing care.

Secondly, what basic concepts or assumptions does the source employ? Individuals may not even be aware of their basic assumptions, but you, as a critical thinker, should be able to discern them.

In everyday life, a basic assumption might be that when you enter a table service restaurant, you wait in line, and then somebody shows you to a table. You do not have to ask somebody what to do; you just know. Similarly, physicists assume that light's speed is a universal constant; they do not attempt to measure it in every experiment.

Finally, what kinds of data do they use to expand their knowledge and inform their decisions? Whether you agree with the specific methods or not, try to assess them fairly rather than from a prejudiced position. Be flexible yet rigorous, like a scientist. Research the message behind the message you receive, and put your critical thinking skills to good use.

Reliability And Reputation Of Source

Critical thinking is an extremely powerful approach, which most people do not use most of the time. One way to dissect claims more effectively is to be aware of our psychological tendencies. A further strategy is gathering evidence from multiple sources and assessing the sources' reliability and reputation.

Additionally, we can use critical thinking techniques to assess the reliability and reputation of the information source. When a piece of information seems factual, the next step is to analyze its reliability.

Look at the source of information

Is it primary or secondary? Primary sources are the originators of the information, whereas secondary sources are based on primary sources.

If secondary, check whether they report accurately and completely

Sometimes, secondary sources can leave things out or report information selectively to support their own argument, which may differ from the primary source's argument. Find the primary source and see how different it is. You may observe that the secondary source reports their opinions about the facts.
Now, look for evidence of reputation. If the source claims they are a world authority on kidney tumors, find out more about them.

Where do they work?

University, hospital, or private company? You can then assess their employer's reputation as well.

What do other experts (or world authorities) say about them?

Are they mainstream or fringe? Accepted authority or controversial?

Have they won prestigious awards, grants, or contracts?

These all indicate that somebody is recognized and successful in their field.

What organizations do they belong to?

This could include overarching professional bodies (e.g., a therapist belonging to the American Psychological Association) or more niche bodies (e.g., the Society For Neuroscience).

What else have they written about?

If somebody has written a huge amount on diverse topics, they may be journalists or interested amateurs, rather than an expert on the particular topic.
By assessing the reliability of information sources, we can exclude those with weak foundations. An accepted authority on a subject is likely to be a more reliable source than a relatively inexperienced person who is new to the field.

Similarly, a person or organization with a sharp focus on the subject at hand is likely to be more reliable than a generalist since their experience and knowledge run so much deeper. They are also more likely to base their information on primary sources rather than secondary or tertiary sources.

Once you have determined the source's reliability and reputation, you can put this together with the other factors we have discussed. This framework enables you to interpret messages more actively, empowering you to make better decisions and arrive at more accurate conclusions.

Action Steps

Now that we have explored the features of critical thinking and how to interpret messages better, it is time to put some of these ideas into action. Try these suggested exercises.

1. The Fact Check. Identify a purported fact, either from your work or the media. This can be anything, as long as you can read it in context and research it to analyze it. Some suggestions: there is life on other planets in the universe; humans only use 10% of their brains; people with a college degree earn more money than people without.

Use critical thinking to evaluate your chosen fact systematically. Use these questions as guidance:

1. Where does the fact come from?
2. Is it a reliable source? How do you know?
3. What is the author's motivation for presenting this fact in this context?

4. What is the evidence for this fact?
5. Is the evidence presented objectively, or is there evidence of bias?
6. Is it a fact, or is it an opinion?
7. Has emotion influenced it?
8. Is the source using emotion to try to influence you (the reader)?

Feel free to ask any other relevant questions you can think of, based on what we have looked at in this chapter. Now that you have done this once, you have a framework for assessing messages you receive using critical thinking.

2. Observational Study. Firstly, visualize a person you think has good critical thinking skills. Write a few notes about them using the questions below, or make a mind map.

What kind of person are they? What have they said or done that makes you think they are great at critical thinking? What outcomes do they produce?

Examine the evidence you have written down, and conclude whether this person is a good critical thinker. Perhaps bring this exercise to mind next time you speak to them or witness their critical thinking, and make a few more observations.

Now repeat the same process for somebody you think has poor critical thinking skills, including what makes you think they are bad at critical thinking. Put your notes or mind maps side by side and compare them.

This exercise will help you focus on the good (or bad) critical thinkers' traits and behaviors. It also starts you thinking about the real-world applications of critical thinking.

Summary

In the story at the beginning, the University relied on its staff to disclose conflicts of interest, and they trusted the market data that the company reported. However, multiple factors, including misplaced trust in Keller, led them to invest in a failing company.

A poor decision cost the University more than just money. Why? Could this have been prevented if the Finance Committee had applied what we had learned in this chapter? Perhaps.

Emotions played a role in the investment: the desire for success, trust in Keller. They appraised the company's success incorrectly due to inadequate evidence (they relied on the market data). Keller, the investment recommendation source, turned out to be unreliable due to having a personal interest in the company.

In the story, the University did not have all the information needed to make the correct decision. No doubt, you will have been in similar situations yourself. Hopefully, the techniques covered so far have equipped you with more tools to deal with information you encounter in the future.

Apart from features of the information we receive, what else keeps us from getting to the truth? The answer is complex, and we will delve into it very soon in the next chapter.

References

1. Novella, S. (2012) *Your Deceptive Mind: A Scientific Guide To Critical Thinking Skills*. Chantilly, Va.: The Teaching Company.
2. Gilovitch, T. (1993) *How We Know What Isn't So: The Fallibility Of Human Reasoning In Everyday Life*. New York: The Free Press.
3. The Foundation For Critical Thinking (2019) *Critical Thinking: Where To Begin*. Available at: https://www.criticalthinking.org/pages/critical-thinking-where-to-begin/796 (Accessed: 14th December 2020).
4. Novella, S. (2012) *Your Deceptive Mind: A Scientific Guide To Critical Thinking Skills*. Chantilly, Va.: The Teaching Company.
5. Novella, S. (2012) *Your Deceptive Mind: A Scientific Guide To Critical Thinking Skills*. Chantilly, Va.: The Teaching Company.
6. Gilovitch, T. (1993) *How We Know What Isn't So: The Fallibility Of Human Reasoning In Everyday Life*. New York: The Free Press.
7. Taber, C.S. and Lodge, M. (2006) 'Motivated skepticism in the evaluation of political beliefs,' *American Journal Of Political Science*, 50(3), pp. 755–769. doi: 1540-5907.2006.00214.x
8. Gilovitch, T. (1993) *How We Know What Isn't So: The Fallibility Of Human Reasoning In Everyday Life*. New York: The Free Press.
9. Novella, S. (2012) *Your Deceptive Mind: A Scientific Guide To Critical Thinking Skills*. Chantilly, Va.: The Teaching Company.
10. Gilovitch, T. (1993) *How We Know What Isn't So: The Fallibility Of Human Reasoning In Everyday Life*. New York: The Free Press.
11. Stanovich, K.E., West, F.R. and Toplak, M.E. (2013) 'Myside Bias, Rational Thinking, and Intelligence,' *Current Directions in Psychological Science*, 22(4), pp. 259–264. doi: 10.1177/0963721413480174

12. Taber, C.S. and Lodge, M. (2006) 'Motivated skepticism in the evaluation of political beliefs,' *American Journal Of Political Science*, 50(3), pp. 755–769. doi: 1540-5907.2006.00214.x
13. Russell, J.A. (2003) 'Core affect and the psychological construction of emotion,' *Psychological Review*, 110(1), pp. 145–172. doi: 10.1037/0033-295X.110.1.145
14. Kozlowski, D., Hutchinson, M., Hurley, J., Rowley, J. and Sutherland, J. (2017) 'The role of emotion in clinical decision making: an integrative literature review,' *BMC Medical Education*, 17(1), p. 255. doi: 10.1186/s12909-017-1089-7
15. Taber, C.S. and Lodge, M. (2006) 'Motivated skepticism in the evaluation of political beliefs,' *American Journal Of Political Science*, 50(3), pp. 755–769. doi: 1540-5907.2006.00214.x
16. Novella, S. (2012) *Your Deceptive Mind: A Scientific Guide To Critical Thinking Skills*. Chantilly, Va.: The Teaching Company.
17. Gilovitch, T. (1993) *How We Know What Isn't So: The Fallibility Of Human Reasoning In Everyday Life*. New York: The Free Press.