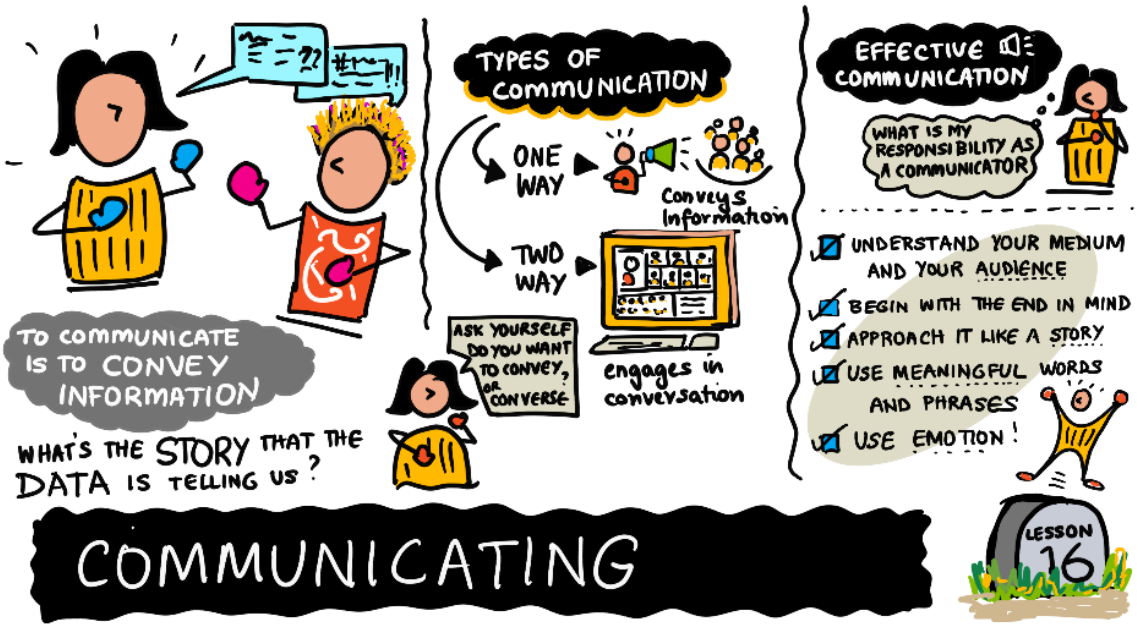
The Data Science Lifecycle: Communication



Data Science Lifecycle: Communication - *Sketchnote by @nitya*

Pre-Lecture Quiz

Test your knowledge of what's to come with the Pre-Lecture Quiz above!

Introduction

What is Communication?

Let's start this lesson by defining what is means to communicate. **To communicate is to convey or exchange information.** Information can be ideas, thoughts, feelings, messages, covert signals, data – anything that a ***sender*** (someone sending information) wants a ***receiver*** (someone receiving information) to understand. In this lesson, we will refer to senders as communicators, and receivers as the audience.

Data Communication & Storytelling

We understand that when communicating, the aim is to convey or exchange information. But when communicating data, your aim shouldn't be to simply pass along numbers to your audience. Your aim should be to communicate a story that is informed by your data - effective data communication and storytelling go hand-in-hand. Your audience is more likely to remember a story you tell, than a number you give. Later in this lesson, we will go over a few ways that you can use storytelling to communicate your data more effectively.

Types of Communication

Throughout this lesson two different types of communication will be discussed, One-Way Communication and Two-Way Communication.

One way communication happens when a sender sends information to a receiver, without any feedback or response. We see examples of one-way communication every day – in bulk/mass emails, when the news delivers the most recent stories, or even when a television commercial comes on and informs you about why their product is great. In each of these instances, the sender is not seeking an exchange of information. They are only seeking to convey or deliver information.

Two-way communication happens when all involved parties act as both senders and receivers. A sender will begin by communicating to a receiver, and the receiver will provide feedback or a response. Two-way communication is what we traditionally think of when we talk about communication. We usually think of people engaged in a conversation - either in person, or over a phone call, social media, or text message.

When communicating data, there will be cases where you will be using one-way communication (think about presenting at a conference, or to a large group where questions won't be asked directly after) and there will be cases where you will use two-way communication (think about using data to persuade a few stakeholders for buy-in, or to convince a teammate that time and effort should be spent building something new).

Effective Communication

Your Responsibilities as a communicator

When communicating, it is your job to make sure that your receiver(s) are taking away the information that you want them to take away. When you're communicating data, you don't just want your receivers to takeaway numbers, you want your receivers to takeaway a story that's informed by your data. A good data communicator is a good storyteller.

How do you tell a story with data? There are infinite ways – but below are 6 that we will talk about in this lesson.

1. Understand Your Audience, Your Medium, & Your Communication Method
2. Begin with the End in Mind
3. Approach it Like an Actual Story
4. Use Meaningful Words & Phrases
5. Use Emotion

Each of these strategies is explained in greater detail below.

1. Understand Your Audience, Your Channel & Your Communication Method

The way you communicate with family members is likely different than the way you communicate with your friends. You probably use different words and phrases that the people you're speaking to are more likely to understand. You should take the same approach when communicating data. Think about who you're communicating to. Think about their goals and the context that they have around the situation that you're explaining to them.

You can likely group the majority of your audience them within a category. In a *Harvard Business Review* article, "How to Tell a Story with Data," Dell Executive Strategist Jim Stikeleather identifies five categories of audiences.

- **Novice**: first exposure to the subject, but doesn't want oversimplification

- **Generalist**: aware of the topic, but looking for an overview understanding and major themes
- **Managerial**: in-depth, actionable understanding of intricacies and interrelationships with access to detail
- **Expert**: more exploration and discovery and less storytelling with great detail
- **Executive**: only has time to glean the significance and conclusions of weighted probabilities

These categories can inform the way you present data to your audience.

In addition to thinking about your audience's category, you should also consider the channel you're using to communicate with your audience. Your approach should be slightly different if you're writing a memo or email vs having a meeting or presenting at a conference.

On top of understanding your audience, knowing how you will be communicating with them (using one-way communication or two-way) is also critical.

If you are communicating with a majority Novice audience and you're using one-way communication, you must first educate the audience and give them proper context. Then you must present your data to them and tell them what your data means and why your data matters. In this instance, you may want to be laser focused on driving clarity, because your audience will not be able to ask you any direct questions.

If you are communicating with a majority Managerial audience and you're using two-way communication, you likely won't need to educate your audience or provide them with much context. You may be able to jump straight into discussing the data that you've collected and why it matters. In this scenario though, you should be focused on timing and controlling your presentation. When using two-way communication (especially with a Managerial audience who is seeking an "actionable understanding of intricacies and interrelationships with access to detail") questions may pop up during your interaction that may take the discussion in a direction that doesn't relate to the story that you're trying to tell. When this happens, you can take action and move the discussion back on track with your story.

2. Begin With The End In Mind

Beginning with the end in mind means understanding your intended takeaways for your audience before you start communicating with them. Being thoughtful about what you want your audience to takeaway ahead of time can help you craft a story that your audience can follow. Beginning with the end in mind is appropriate for both one-way communication and two-way communication.

How do you begin with the end in mind? Before communicating your data, write down your key takeaways. Then, every step of the way as you're preparing the story that you want to tell with your data, ask yourself, "How does this integrate into the story I'm telling?"

Be Aware – While starting with the end in mind is ideal, you don't want to communicate only the data that supports your intended takeaways. Doing this is called Cherry-Picking, which happens when a communicator only communicates data that supports the point they are tying to make and ignores all other data.

If all the data that you collected clearly supports your intended takeaways, great. But if there is data that you collected that doesn't support your takeaways, or even supports an argument against your key takeaways, you should communicate that data as well. If this happens, be upfront with your audience and let them know why you're choosing to stick with your story even though all the data doesn't necessarily support it.

3. Approach it Like an Actual Story

A traditional story happens in 5 Phases. You may have heard these phases expressed as Exposition, Rising Action, Climax, Falling Action, and Denouncement. Or the easier to remember Context, Conflict, Climax, Closure, Conclusion. When communicating your data and your story, you can take a similar approach.

You can begin with context, set the stage and make sure your audience is all on the same page. Then introduce the conflict. Why did you need to collect this data? What problems were you seeking to solve? After that, the climax. What is the data? What does the data mean? What solutions does the data tell us we need? Then you get to the closure, where you can reiterate the problem, and the proposed solution(s). Lastly, we come to the conclusion, where you can summarize your key takeaways and the next steps you recommend the team takes.

4. Use Meaningful Words & Phrases

If you and I were working together on a product, and I said to you "Our users take a long time to onboard onto our platform," how long would you estimate that "long time" to be? An hour? A week? It's hard to know. What if I said that to an entire audience? Everyone in the audience may end up with a different idea of how long users take to onboard onto our platform.

Instead, what if I said "Out users take, on average, 3 minutes to sign up and onboard onto our platform."

That messaging is more clear. When communicating data, it can be easy to think that everyone in your audience is thinking just like you. But that is not always the case. Driving clarity around your data and what it means is one of your responsibilities as a communicator. If the data or your story is not clear, your audience will have a hard time following, and it is less likely that they will understand your key takeaways.

You can communicate data more clearly when you use meaningful words and phrases, instead of vague ones. Below are a few examples.

- We had an *impressive* year!
    - One person could think a impressive means a 2% - 3% increase in revenue, and one person could think it means a 50% - 60% increase.
- Our users' success rates increased *dramatically*.
    - How large of an increase is a dramatic increase?
- This undertaking will require *significant* effort.
    - How much effort is significant?

Using vague words could be useful as an introduction to more data that's coming, or as a summary of the story that you've just told. But consider ensuring that every part of your presentation is clear for your audience.

5. Use Emotion

Emotion is key in storytelling. It's even more important when you're telling a story with data. When you're communicating data, everything is focused on the takeaways you want your audience to have. When you evoke an emotion for an audience it helps them empathize, and makes them more likely to take action. Emotion also increases the likelihood that an audience will remember your message.

You may have encountered this before with TV commercials. Some commercials are very somber, and use a sad emotion to connect with their audience and make the data that they're presenting really stand out. Or, some commercials are very upbeat and happy may make you associate their data with a happy feeling.

How do you use emotion when communicating data? Below are a couple of ways.

- Use Testimonials and Personal Stories
    - When collecting data, try to collect both quantitative and qualitative data, and integrate both types of data when you're communicating. If your data is primarily quantitative, seek stories from individuals to learn more about their experience with whatever your data is telling you.
- Use Imagery
    - Images help an audience see themselves in a situation. When you use images, you can push an audience toward the emotion that you feel they should have about your data.
- Use Color
    - Different colors evoke different emotions. Popular colors and the emotions they evoke are below. Be aware, that colors could have different meanings in different cultures.
        - Blue usually evokes emotions of peace and trust
        - Green is usually related to the nature and the environment
        - Red is usually passion and excitement
        - Yellow is usually optimism and happiness

Communication Case Study

Emerson is a Product Manager for a mobile app. Emerson has noticed that customers submit 42% more complaints and bug reports on the weekends. Emerson also noticed that customers who submit a complaint that goes unanswered after 48 hours are more 32% more likely to give the app a rating of 1 or 2 in the app store.

After doing research, Emerson has a couple of solutions that will address the issue. Emerson sets up a 30-minute meeting with the 3 company leads to communicate the data and the proposed solutions.

During this meeting, Emerson's goal is to have the company leads understand that the 2 solutions below can improve the app's rating, which will likely translate into higher revenue.

Solution 1. Hire customer service reps to work on weekends

Solution 2. Purchase a new customer service ticketing system where customer service reps can easily identify which complaints have been in the queue the longest – so they can tell which to address most immediately.

In the meeting, Emerson spends 5 minutes explaining why having a low rating on the app store is bad, 10 minutes explaining the research process and how the trends were identified, 10 minutes going through some of the recent customer complaints, and the last 5 minutes glossing over the 2 potential solutions.

Was this an effective way for Emerson to communicate during this meeting?

During the meeting, one company lead fixated on the 10 minutes of customer complaints that Emerson went through. After the meeting, these complaints were the only thing that this team lead remembered. Another company lead primarily focused on Emerson describing the research process. The third company lead did remember the solutions proposed by Emerson but wasn't sure how those solutions could be implemented.

In the situation above, you can see that there was a significant gap between what Emerson wanted the team leads to take away, and what they ended up taking away from the meeting. Below is another approach that Emerson could consider.

How could Emerson improve this approach? Context, Conflict, Climax, Closure, Conclusion **Context** - Emerson could spend the first 5 minutes introducing the entire situation and making sure that the team leads understand how the problems affect metrics that are critical to the company, like revenue.

It could be laid out this way: "Currently, our app's rating in the app store is a 2.5. Ratings in the app store are critical to App Store Optimization, which impacts how many users see our app in search, and how our app is viewed to perspective users. And ofcourse, the number of users we have is tied directly to revenue."

Conflict Emerson could then move to talk for the next 5 minutes or so on the conflict.

It could go like this: “Users submit 42% more complaints and bug reports on the weekends. Customers who submit a complaint that goes unanswered after 48 hours are more 32% less likely to give our app a rating over a 2 in the app store. Improving our app's rating in the app store to a 4 would improve our visibility by 20-30%, which I project would increase revenue by 10%." Of course, Emerson should be prepared to justify these numbers.

Climax After laying the groundwork, Emerson could then move to the Climax for 5 or so minutes.

Emerson could introduce the proposed solutions, lay out how those solutions will address the issues outlined, how those solutions could be implemented into existing workflows, how much the solutions cost, what the ROI of the solutions would be, and maybe even show some screenshots or wireframes of how the solutions would look if implemented. Emerson could also share testimonials from users who took over 48 hours to have their complaint addressed, and even a testimonial from a current customer service representative within the company who has comments on the current ticketing system.

Closure Now Emerson can spend 5 minutes restating the problems faced by the company, revisit the proposed solutions, and review why those solutions are the right ones.

Conclusion Because this is a meeting with a few stakeholders where two-way communication will be used, Emerson could then plan to leave 10 minutes for questions, to make sure that anything that was confusing to the team leads could be clarified before the meeting is over.

If Emerson took approach #2, it is much more likely that the team leads will take away from the meeting exactly what Emerson intended for them to take away – that the way complaints and bugs are handled could be improved, and there are 2 solutions that could be put in place to make that improvement happen. This approach would be a much more effective approach to communicating the data, and the story, that Emerson wants to communicate.

Conclusion

Summary of main points

- To communicate is to convey or exchange information.
- When communicating data, your aim shouldn't be to simply pass along numbers to your audience. Your aim should be to communicate a story that is informed by your data.
- There are 2 types of communication, One-Way Communication (information is communicated with no intention of a response) and Two-Way Communication (information is communicated back and forth.)
- There are many strategies you can use to telling a story with your data, 5 strategies we went over are:
    - Understand Your Audience, Your Medium, & Your Communication Method

- Begin with the End in Mind
- Approach it Like an Actual Story
- Use Meaningful Words & Phrases
- Use Emotion

Recommended Resources for Self Study

The Five C's of Storytelling - Articulate Persuasion

1.4 Your Responsibilities as a Communicator – Business Communication for Success (umn.edu)

How to Tell a Story with Data (hbr.org)

Two-Way Communication: 4 Tips for a More Engaged Workplace (yourthoughtpartner.com)

6 succinct steps to great data storytelling - BarnRaisers, LLC (barnraisersllc.com)

How to Tell a Story With Data | Lucidchart Blog

6 Cs of Effective Storytelling on Social Media | Cooler Insights

The Importance of Emotions In Presentations | Ethos3 - A Presentation Training and Design Agency

Data storytelling: linking emotions and rational decisions (toucantoco.com)

Emotional Advertising: How Brands Use Feelings to Get People to Buy (hubspot.com)

Choosing Colors for Your Presentation Slides | Think Outside The Slide

How To Present Data [10 Expert Tips] | ObservePoint

Microsoft Word - Persuasive Instructions.doc (tpsnva.org)

The Power of Story for Your Data (thinkhdi.com)

Common Mistakes in Data Presentation (perceptualedge.com)

Infographic: Here are 15 Common Data Fallacies to Avoid (visualcapitalist.com)

Cherry Picking: When People Ignore Evidence that They Dislike – Effectiviology

Tell Stories with Data: Communication in Data Science | by Sonali Verghese | Towards Data Science

1. Communicating Data - Communicating Data with Tableau [Book] (oreilly.com)

Post-Lecture Quiz

Review what you've just learned with the Post-Lecture Quiz above!

Assignment

Market Research