LADDER OF INFERENCE

The Ladder of Inference describes an individual's internal process of making observations, selectively filtering data, drawing conclusions based on assumptions, and taking action based on those conclusions. The Ladder of Inference is a tool for making this internal thinking process more visible. This is important because, by allowing others to explore our thinking process, we may reveal flaws in our reasoning and ultimately improve the quality and impact of our decisions.

The "rungs" of the ladder (adapted from the original) are presented here in reverse order (lowest rung first):

Step On The Ladder	Process
1. Data is presented (e.g. through dialogue or classroom presentation)	External actions or events that can be objectively validated
2. The coach selects data from what is presented	Internal—data are filtered through inferences and assumptions in the coach's mind
3. The coach adds meaning to the data (makes assumptions)	Internal—data are filtered through inferences and assumptions in the coach's mind
4. The coach draws conclusions based on the assumptions	Internal—data are filtered through inferences and assumptions in the coach's mind
5. The coach takes actions based on these conclusions	External actions or events that can be objectively validated

Running through these steps quickly is something that everyone does almost instinctively—so much so that the process of slowing down and thoughtfully checking our inferences at each level of our ascent seems unnatural. The ever-present danger is that by running up the ladder quickly, we leave ourselves open to great misinterpretation.

By making the internal mental processes more explicit at each stage we can avoid rushing to action based on faulty conclusions. Deliberately asking questions such as the following can help slow the process down in order to allow more thoughtful reflection:

- ? What data do you select and why?

- ? What assumptions do you make to give meaning to the data? How do you test these assumptions?

? Are the conclusions that are reached supported by the data?

? Are there other interpretations/conclusions that might be possible?

? How can you validate your conclusions?

A Sample Coaching Scenario

Here is a more detailed example of the Ladder of Inference mental model applied to a coaching situation:

> A 6th grade English teacher and a Literacy Coach met to discuss the way in which they would work together to ensure that the think-aloud procedure was being used to maximum instructional advantage in class. At that time, they agreed that the teacher would research the think-aloud and observe one of the best practitioners in the school. Then the coach would observe her teaching think-aloud to her own class, and they would discuss how it went. (The coach was already skeptical that this teacher was taking the think-aloud strategy seriously, because the teacher made several negative comments about what she perceived as the artificiality of the strategy.)

When done properly, the read-aloud/think-aloud looks like this:

What The Teacher is Doing	What The Students Are Doing	Other Observations
✓ Reads aloud from a book chosen as a key part of the curriculum ✓ Pauses to define new words in context ✓ Pauses periodically to "think aloud," expressing observations or questions about the text ✓ Teacher does not engage class in questioning or discussion at this time	✓ Students follow along in their copies of the same book ✓ Students do not attempt to ask questions or make comments during the think-aloud	✓ The teacher is not explicating the text in any way, nor is using a recorded audio version of the book ✓ Students are focused solely on reading along

> On the day in question, the teacher arrived just in time to teach her class. There was no time for a with the coach as they had previously agreed. The focus of the pre-conference was going to be on the teacher's use of think-aloud for some new science articles that related to the work of fiction that the class is currently reading.

The teacher apologized to the coach but didn't stay to talk. She took her place at her desk.

During the class, the coach observed that during the think-aloud the teacher invited students to pose questions and then generated a lot of classroom discussion around the questions posed by the students.

In the view of the coach, the think-aloud didn't go well. Multiple conversations were occurring around the room, and these drifted well off topic. The teacher seemed to sense this and quickly brought the think-aloud to a close sooner than planned and directed the students to move into their designated places for the work period. In summary, the series of events was in direct opposition to the plan set previously during the meeting between the coach and teacher.

The coach was bothered by what she observed. As the students broke into small groups at work stations or turned to individual work, the teacher came over to the coach, smiled and shrugged her shoulders, but didn't say anything. The coach simply said, "Well, I don't know what you want me to say. I'm not sure that I can help you if you don't want to take this seriously. But I do think that I have to raise this issue with the team during our next meeting. You know that we've made a commitment to adopting certain strategies across the curriculum, so I cannot understand why you're so resistant." The teacher looked hurt but didn't say anything.

The coach left the classroom.

Applying the Ladder of Inference to this Example

Using the Ladder of Inference model, we can sort the observable data from the internal processes of interpretation. The observable data are often described in management and coaching literature as the data that a video recorder would capture. The internal processes of interpretation are those steps on the ladder that include selecting data for consideration, giving meaning to the data (based on assumptions), and drawing conclusions.

Observable data includes the following:

- The teacher comes in late
- The teacher invites the students to pose questions during the think-aloud

- The think-aloud session is cut short (allotted less time than planned); the teacher seems to bring it to an abrupt close
- The teacher smiles and shrugs her shoulders

Observable data also includes the actions taken by the coach:

- The coach expresses her thoughts to the teacher
- The teacher remains silent
- The coach leaves the classroom

Let's get inside of the coach's thoughts:

Selected Data Observed	Coach's Assumption	Coach's Conclusion
1. The teacher comes in late.	This is avoidance of meeting with the coach.	Since she clearly has no intention of implementing the strategy, the teacher is not interested in meeting prior to the lesson.
2. The teacher allows the students to pose questions during the think-aloud.	The teacher is simply going to go back to what was comfortable; more of a traditional ELA instruction in getting the class to pose and answer questions about the text.	The teacher has no intention of learning new strategies.
3. The think-aloud session is cut short (allotted less time than planned); the teacher seems to bring it to an abrupt close.	The think-aloud session goes badly—according to the expectations of think-aloud. This is a direct result of having a teacher who uses the strategy incorrectly and who doesn't care.	This teacher is willfully ignoring the school's directives to adopt new practices.
4. The teacher smiles and shrugs her shoulders.	The teacher is indifferent to these innovations and is not taking it seriously.	The teacher is challenging the authority of the coach.

The resulting action taken by the coach (the coach's statement and exit from the classroom) is based upon the multiple conclusions reached during the lesson observation.

The brief analysis presented here may or may not represent the correct conclusions, but the point is that this is a typical process of interpreting data and reaching conclusions that all of us put into play many times every day. This process is so second-nature that it occurs subconsciously.

The purpose of the Ladder of Inference is to make these subconscious processes more conscious and to slow them down so that our conclusions are correct. The Ladder of Inference process recommends the following steps:

- ✅ Double check the data we select and make sure that we are not ignoring other available data.

- ✅ Test all assumptions through a process of inquiry (check your reasoning and assumptions around your interpretation of data through clarifying questions).

- ✅ Validate all conclusions through a process of checking (check your conclusions by asking questions—the questions asked at this stage will often be closed-ended questions, requiring a "yes" or "no" answer).

So, following these recommendations, is there an alternate way to view this scenario? Consider the following additional information, gleaned from the simple process of testing the coach's assumptions:

1. **Selected Data Observed:** The teacher comes in late.

- ✅ **Coach's Earlier Assumption:** This was avoidance at not wanting to meet with the coach.

  - **Testing that Assumption:** "We didn't have time to meet today before class to talk through our goals for today. I had this meeting down on my calendar but just want to double check—were we supposed to meet here 15 minutes before the start of the class? (Note: this is an appropriate use of a closed-ended question—i.e., in order to check on specific information.)

  - **Clarifying Information:** The teacher researched the read-aloud/think-aloud by searching the World Wide Web as agreed but while doing so found some unrelated but fascinating information on Socratic questioning that she got excited about. He or she decided to incorporate this into her think-aloud strategy. Because he or she spent extra time developing today's lesson plan, she ended up having to shift a student conference and didn't have enough time to get to the pre-conference. (Note: the teachers' strategy was not effective; however, the important point here is that her motivation and reasoning were very different than what the coach deduced from the teacher's actions.)

2. **Selected Data Observed:** The teacher allows the students to pose questions during the think-aloud (which is not in line with the think-aloud strategy).

✅ **Coach's Earlier Assumption**: The teacher is simply reverting to her comfort zone by using a traditional mode of ELA instruction in getting the class to pose and answer questions about the text.

- **Testing that Assumption:** "I noticed that you got the students to pose questions and answer each other during the think-aloud. Can you tell me more about why you chose this approach?"

- **Clarifying Information:** The teacher is excited by the possibilities of this Socratic questioning style and was hoping to really impress the coach with her "refinement" of the think-aloud strategy.

3. **Selected Data Observed:** The think-aloud session is cut short (allotted less time than planned); the teacher seems to bring it to an abrupt close.

✅ **Coach's Earlier Assumption:** The think-aloud session goes badly— according to the expectations of think-aloud. This is a direct result of having a teacher who uses the strategy incorrectly and who doesn't care.

- **Testing that Assumption:** "Tell me how you felt the think-aloud went. What went well? What needs improvement?" As a follow-up question, the coach might ask, "How do you see the think-aloud supporting your instructional objectives?"

- **Clarifying Information:** The teacher didn't think it went well at all. He or she felt that she had lost control from almost the beginning, and she became flustered. Becoming nonplussed, he or she lost control of the class and thus moved quickly into the work period.

4. **Selected Data Observed:** The teacher smiles and shrugs her shoulders.

✅ **Coach's Earlier Assumption:** The teacher is indifferent to these innovations and is not taking it seriously.

- **Testing that Assumption:** "Let's talk about the usefulness of the think-aloud. What is the value you see in this technique?"

- **Clarifying Information:** The teacher is embarrassed. Rather than having impressed the coach with a sophisticated approach to the think-aloud, she knows that it didn't go well. Being a shy person by nature, she doesn't say anything but waits for the coach to reassure her.

In all cases, the additional clarifying information is likely to influence the coach's processes more conscious and to slow them down so that our conclusions are correct.

- ✅ Double check the data we select and make sure that we are not ignoring other available data.

- ✅ Test all assumptions through a process of inquiry (check your reasoning and assumptions around your interpretation of data through clarifying questions).

- ✅ Validate all conclusions through a process of checking (check your conclusions by asking questions—the questions asked at this stage will often be closed-ended questions, requiring a "yes" or "no" answer).

Ladder of Inference Chart

We can use this chart to analyze our metacognitive process—"think about our thinking." The analysis may give us more confidence in our decision, or it may illuminate flaws in our thinking.

Step on the Ladder	Points to Consider	Notes
Available data	Is better, more useful data available? Do we have time to collect additional data?	
Selected data	Why are we selecting this data? Are we making assumptions about its value?	
Interpreting data	What assumptions are we making in interpreting the data?	
Conclusions	Are our conclusions supported by the data? Are there other plausible conclusions?	
Planned action	Is our action plan consistent with our conclusions? Have we selected the best course of action from a number of reasonable alternatives?	