

A. My Appendix

A.1. Sample Dialogues

The examples of the three dialogue categories were given below.

Gap-clarified dialogue

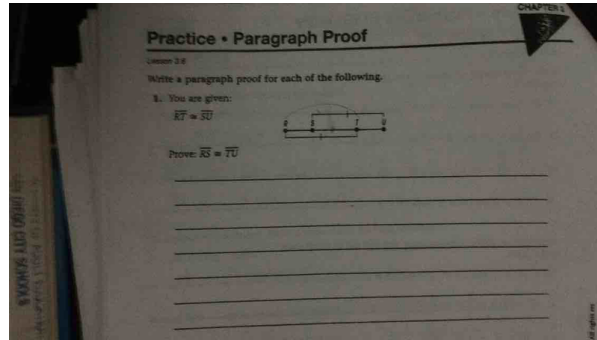


Figure 1: The Image sent by student in the Gap-clarified session.

Student: [Image Link] (as shown in Figure 1)

Tutor: Hi [Anonymized]! I'm [Anonymized] and I'll be your tutor for this session.

Tutor: How much progress have you made on that problem?

Student: Well, can you help me with this problem

Tutor: Don't worry:) I will guide you.

Tutor: What would be your best guess as to how we could possibly start the problem?

Student: I have no idea

Tutor: No problem; we will do it together.

Tutor: While solving the problem, we will work together, which will ensure that you are understanding the concept well and in future, you would be able to solve such problems independently.

Student: Ok

Tutor: What information is given here?

Tutor: Any idea?

Tutor: It's mentioned in the question.

Student: Rt ,su

Tutor: Yes

Tutor: $RT \cong SU$

Tutor: Well done!

Tutor: Which segment is common to both the parts (segments) RT and SU?

Student: Rs,tu

Tutor: I am asking about the part which is common to RS and TU.

Tutor: Does that make sense?

Tutor: Are you working on the problem?

Gap-explained dialogue

Student: [Image Link] (as shown in Figure 2)

Tutor: Hello, [Anonymized]!

Tutor: Welcome!

Tutor: This is [Anonymized]! I will be your math tutor for the session.

Tutor: Please give me a moment to go through your question.

Tutor: Given that $f(x) = 3x-2$ and we need to find $(f(x+h)-f(x))/h$. Right?

Student: Yes

$$\text{Simplify } \frac{f(x+h) - f(x)}{h} \text{ for the following function:}$$

$$f(x) = 3x - 2$$

$$\frac{(3x-2+h) - (3x-2)}{h}$$

Figure 2: The Image sent by student in the Gap-explained session

Tutor: Okay. Thanks for confirming the instructions.

Tutor: How far you have gotten on this problem?

Student: I think I solved it but it has to be wrong

Tutor: No worries! I appreciate your effort.

Tutor: Let's walk through it together and find where is the mistake so that we can correct it.

Tutor: $f(x) = 3x - 2$.

Tutor: So, $f(x+h) = ?$

Student: $(3x-2+h)$

Tutor: Not quite right. Let me give you an example.

Tutor: Suppose we have $f(x) = 2x+5$. To find $f(x+3)$, we replace x with $x+3$.

Tutor: $f(x+3) = 2(x+3) + 5$.

Tutor: Okay?

Tutor: Does the example make sense to you?

Student: No

Tutor: Let me show an image.

Tutor: [Image Link] (as shown in Figure 3)

Tutor: Please go through this image.

Tutor: We have $f(x) = 2x+5$. When we replace x with $x+3$ on both sides, we get

Tutor: $f(x+3) = 2(x+3) + 5$.

Tutor: Then we distribute 2 to get $2x+2(3)+5 = 2x+6+5 = 2x+11$.

Tutor: Do you have any doubt?

Gap-bridged dialogue

Student: [Image Link] (as shown in Figure 4)

Tutor: Hi [Anonymized], welcome!:)

Tutor: Please give me a minute to look over your problem.

Student: Ok thank you

Tutor: How much progress have you made so far? Or are you unsure of how to start?

Student: I know that I have to do 1450g divided by 7.12g but I'm a bit stuck after that

Tutor: You're nearly there! Looks like you just need some assistance with the unit conversion. I can certainly help you with that. Remember to participate as much as you can and we'll have this in no time.:)

Tutor: Tell me, how many grams are there in a kilogram?

Student: 1000

Tutor: Excellent! So, how many grams would be 14.5kgs?

Student: 14500

Tutor: Exactly! Now, you have got it right. Why do you think we would now divide 14500 by 7.12?

Student: Because one 2p coin weighs 7.12g and we want to find out how many 2p's are 14500g

Example

$$f(x) = 2x + 5$$

When we replace
 x with $x+3$,
 we get

$$f(x+3) = 2(x+3) + 5$$

$$= 2x + 6 + 5$$

$$= 2x + 11$$

Figure 3: The Image sent by tutor in the Gap-explained session

Eric has been collecting 2p coins for years and now has a pile that weighs 14.5 kg. A 2p coin weighs 7.12g. How much money does Eric have?

Figure 4: The Image sent by student in the Gap-bridged session

Tutor: Very good! Alright, so how many 2p coins would be there?

Student: Well 14500 divided by 7.12 is 2036.52 so 2036?

Tutor: Absolutely correct! This is the number of coins that Eric would have.

Tutor: You can also find the equivalent amount of money in pounds, do you have any ideas on how we can do that?

Student: I'm not sure maybe multiplication???

Tutor: Yes, there can be multiplication. How many pounds do you think equal to 1p?

Student: Well there is 100 pennies on a pound so £20.36

Tutor: Awesome! Good job there.:)

Tutor: Thanks for participating. Is there anything else that I can help you with?

Student: Thank you for your help that's all for now but maybe later

Tutor: Sure, thanks for using our service! Have a good one.:)

Table 6. The ten instructional strategies identified in our dataset (sorted according to the fraction of utterances associated with a specific DA in the whole dataset in a descending order, i.e., the column **All**).

Strategy	Politeness Groups	Examples
1. Evaluation Question	Direct	<i>Do you understand what I mean?</i>
	Weak Direct	<i>Does that make sense?</i>
	Neutral	<i>Would that make sense?</i>
	Weak Polite	<i>Any doubts with this solution?</i>
	Polite	<i>I hope this make sense?</i>
2. Negative Feedback	Direct	<i>Not exactly!</i>
	Weak Direct	<i>Not quite.</i>
	Neutral	<i>You made one slight mistake.</i>
	Weak Polite	<i>There is a small mistake in the simplified form.</i>
	Polite	<i>Sorry, I saw the wrong numbers.</i>
3. Probing Question (Closed question)	Direct	<i>1g SiO₂ = ??</i>
	Weak Direct	<i>How about x₂ - x₁?</i>
	Neutral	<i>If x=85, what will be x - 20 = ?</i>
	Weak Polite	<i>Have you included the y intercept at y = -3?</i>
	Polite	<i>How can we simplify square root 27?</i>
4. Open Question	Direct	<i>What is the next step?</i>
	Weak Direct	<i>What would be the first step here?</i>
	Neutral	<i>What do you think is the next step?</i>
	Weak Polite	<i>What can we do next?</i>
	Polite	<i>What do you think we could try first?</i>
5. Observation (Hint)	Direct	<i>You'll not get exact answer</i>
	Weak Direct	<i>It is given in the problem.</i>
	Neutral	<i>There are 4 25's in 100.</i>
	Weak Polite	<i>That will now be our slope.</i>
	Polite	<i>We have (x, y) = D(1, 2)</i>
6. Explanation	Direct	<i>That's why it is negative</i>
	Weak Direct	<i>That's 8/4, which is 2</i>
	Neutral	<i>So the units are equivalent</i>
	Weak Polite	<i>Because we are taking the difference of these two terms</i>
	Polite	<i>That's the value we want to put in</i>
7. Information (Hint)	Direct	<i>Remember the service charges is 0.51 per therm!</i>
	Weak Direct	<i>Now plot the second point (2,4.5)</i>
	Neutral	<i>It is P= Force/Area</i>
	Weak Polite	<i>Let's take the number 1728</i>
	Polite	<i>We need to try all the possible rational roots.</i>
8. Elaborated Positive Feedback	Direct	<i>Right, that's exactly what you should get.</i>
	Weak Direct	<i>Yes, 695 divided by 25 is 27.8</i>
	Neutral	<i>That's the correct first step</i>
	Weak Polite	<i>Yes, you've got the point!</i>
	Polite	<i>Awesome! We just need to find 1/3 of 60!</i>
9. General Positive Feedback	Direct	<i>Exactly as what I got</i>
	Weak Direct	<i>Exactly</i>
	Neutral	<i>You are right</i>
	Weak Polite	<i>You're doing well!</i>
	Polite	<i>Great job!</i>