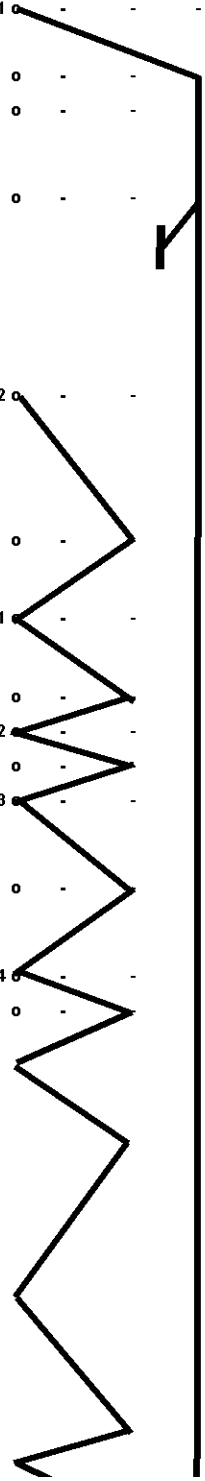
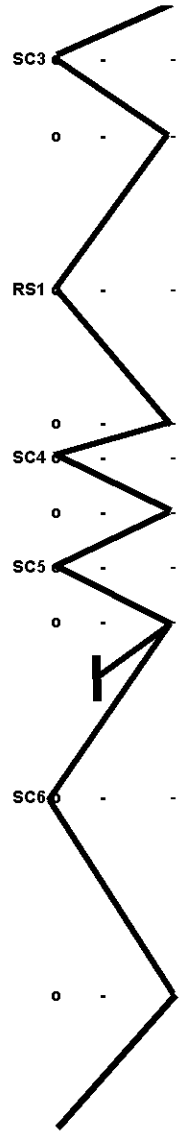
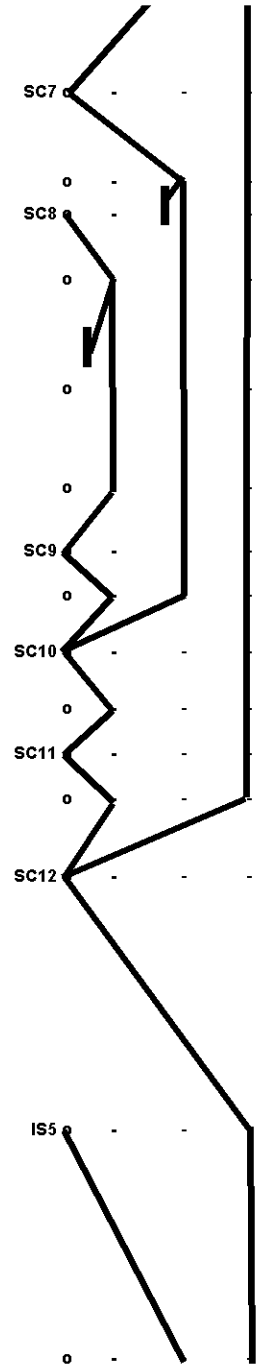
Student 23 -- Electronics Tutoring

Turn #	Speaker ID	Text by Student	Text by Tutor	Game Acts and Uni laterals	Game name		depth 3	depth 2	depth 1
		[Beginning is missing]	**[Beginning is missing]**						
1	Tutor:		**OK, let's think about this for a moment. Do you see any potential problem with how you just hooked up the voltmeter leads?**	bg SC	Socratic Challenge	**SC1**	-	-	-
2	Student:	**yes**		ag		**o**	-	-	
3	Tutor:		**Good, what problem do you see?**			**o**	-	-	
4	Student:	**they are both connected to the positive side.**		bt SC1		**o**	-	-	
5	Tutor:		**Actually they are not. What is considered the positive side or the negative side is relative to how you have the leads hooked up. The positive side is everything between the red lead and the positive terminal on the battery. The negative side is the rest of the circuit. So you don't have a problem with polarity. Can you identify any other potential problem?**	rt; uni: TELL; bg SC2	Socratic Challenge	**SC2**	-	-	
6	Student:	**no**		ag, bt		**o**	-		
7	Tutor:		**OK, I'll give you a hint then. Do you remember reading in the lesson about the two different types of components across which you can take a voltage reading?**	at, bg IS1	Info Seek	**IS1**	-	-	
8	Student:	**no**		ag, bt		**o**	-		
9	Tutor:		**Do you remember reading about sources and loads?**	at, bg IS2	Info Seek	**IS2**	-	-	
10	Student:	**yes**		ag, bt		**o**	-		
11	Tutor:		**Great. What do you remember about sources?**	ACK, bg IS	Info Seek	**IS3**	-	-	
12	Student:	**Sources are the places that provide energy through the system.**		ag, bt		**o**	-		
13	Tutor:		**Good. And do you know how they do that?**	ACK, bg IS	Info Seek	**IS4**	-	-	
14	Student:	**no**		ag, bt		**o**	-		



15	Tutor:		**Let's think of an example of a source. Can you identify the source in the circuit you are working on now?**	bg SC	Socratic Challenge	**SC3**
16	Student:	**The source is the battery**		ag, bt		**o**
17	Tutor:		**Very good. The battery has a positive and negative end. This is because there is a difference in charge between the two ends. It is this difference in charge that you measure when you measure voltage. This difference in charge creates a force which causes current to flow. Does all that make sense to you?**	ACK; uni TELL; at; bg RS	Response Seek	**RS1**
18	Student:	**sure**		ag, bt		**o**
19	Tutor:		**OK, now do you know what a load is?**	at, bg SC	Socratic Challenge	**SC4**
20	Student:	**In this case, it is the light bulb**		ag, bt		**o**
21	Tutor:		**Yes, and do you know what a load does?**	ACK; bg SC	Socratic Challenge	**SC5**
22	Student:	**It converts the energy into light**		ag, bt		**o**
23	Tutor:		**Well, a lightbulb converts electricity into light and heat, but difference sources might convert electricity into different other forms of energy, like maybe only heat, or maybe sound. Since a source is using the current produced by the difference in charge on the source, it has a complementary difference in charge. Knowing all this, what do sources and loads have in common?**	rt, Uni: TELL; at; bg SC	Socratic Challenge	**SC6**
24	Student:	**Both can be used to measure the difference in charge**		ag, bt		**o**



25	Tutor:		**You're very close, both have a difference in charge. And it is this difference in charge that you measure when you measure voltage. So now let's think about the switch. Is it a source or a load?**	at; bg SC	Socratic Challenge
26	Student:	**source**		ag, bt	
27	Tutor:		**Why do you say that?**	rt; bg SC	Socratic Challenge
28	Student:	**When it is turned off, no energy flows**		ag, bt	
29	Tutor:		**OK, that is true. But is it actually creating energy? Or is it merely letting what current was produced by the source flow through it to the rest of the circuit?**	ACK; rt;	
30	Student:	**It does not create energy**		bt	
31	Tutor:		**Good. So it is not a source. Would you say it is a load then?**	ACK; at; bg SC	Socratic Challenge
32	Student:	**no**		ag, bt	
33	Tutor:		**Good, it is neither a source nor a load. So does it have a difference in charge between its two ends?**	ACK; at ; bg SC	Socratic Challenge
34	Student:	**no**		ag, bt	
35	Tutor:		**Very good. So then can you measure voltage across a switch?**	ACK; at SC; bg SC	Socratic Challenge
36	Student:	**no**		ag, bt	
37	Tutor:		**Right. So how can you modify the way you have the leads hooked up now so that there will be a difference in charge between where the two leads are hooked up?**	ACK; at SC; bg SC	Socratic Challenge
38	Student:	**Since I know there is a third place to hook them up, is it possible to connect the one to the negative side of the battery and connect the other to the positive of the light bulb?**		ag; bg IS	
39	Tutor:		**Yes, that would be perfect. Go ahead and do that.**	ACK; ag; bt; two open;	
		Three minute gap; missing restart. Analysis ends.