

Lesson: Comparing the structures and functions of crayfish and land snails
Teacher: Kim Nickerson
Video URL: http://education.ucsc.edu/ellisa/case_studies/comparing_structures.html
Clip: Part 2 Cognates and Venn Diagrams

Abbreviations:

T = Teacher

S = Student

Ss = Students

Transcript

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[00:00]

T: So as I said earlier ... today we will be comparing and contrasting the two organisms, the crayfish and the land snail. We will be using a Venn diagram to do that. One thing I wanted to do before, is review some of the vocabulary. We have been having this discussion a lot lately, especially in readers' workshop, but how important it is to find chunks that we know in order to figure out the meaning of a word. So I want us to back and point out that many, many of you have schema, or your prior knowledge, for Spanish. And how important it is in lots of what we call academic words especially in science to be able to use that knowledge of Spanish to help you figure out some of these science words. We have already talked about this. We are going to review: organism in Spanish is organismo and if you notice it's almost exactly the same. And, structure and I'm going to need some help from Spanish speakers. Is ...

[1:52]

Ss: Estructura

T: Estructura? Am I close? Now notice it starts with "E" but you can see there's structure in there and function? Funcion very, very similar. And this although it's different now summer is different in Spanish.

[2:07]

T: Summer in Spanish is verano? Verano. This one is actually a Latin root and I'm introducing that because as 4th graders you and all throughout your college career, you are going to be learning a lot about Latin and Greek roots prefixes suffixes. Roman is Latin. To help us with snails it helps us to aestivate it helps to think as aestivo means summer so summer sleep we compared that yesterday to what a bear might do, right?

[3:07]

S: I just want to say something about the ... it doesn't really have to have the protection it can also have camouflaging.

[3:21]

T: So you are thinking of how the snail uses that structure, so the function of it .. how it uses it and remember how animals use their structure and the behaviors like the moving like we have talked about the crayfish using the tail flap to move quickly or the snail retracting into its shell.

[3:51]

T: Organisms use their structure behaviors as adaptations, right? To survive. Let's just go over ... we have one focus question today. Will you read this with me?

Ss & T: How do the structures of the crayfish and the snail compare?

T: I just used the word compare for our focus question, okay? And at the end we will have a discussion about how they compare. Let me go over the Venn diagram. And you

40 have lots of experience with Venn diagrams. You have been ... you have used them in
41 reading now you will use them in writing for your non-fiction research books. Let me just
42 go over and give you some examples with crayfish [and snail.]

43 [5:02]

44 T: Let me go over the crayfish and the land snails and how the Venn diagram will work.
45 And give you just a few examples. So you know that we use the Venn diagram to
46 compare and contrast and when we are comparing we are finding similarities. We are
47 finding what they have in common and how they are alike. And we know that similarities
48 go right in here where the two circles overlap. And when we contrast, we are finding the
49 differences. And we know the differences are how they are not like each other how
50 unlike each other. And the differences would in the circle just for the crayfish or just for
51 the land snails. So for example, crayfish have pincers and we know that land snails do
52 not. And we know that land snails, a difference here is that the land snails have coiled
53 shell.

54 [6:33]

55 T: Thank you. Something they have in common or they are similar is, eyes. They both
56 have eyes. They both have structure that helps them see, they both have eyes. So, what
57 you are going to do is ... you are going to get a copy of this Venn diagram. It will be a
58 notebook page, it will go in your notebook. And you will have about 10 minutes to make
59 your comparisons and write the differences and similarities. But, I first want remind you
60 about the resources you can use. I have Natalie's notebook here to remind you. This why
61 scientists use a science notebooks. Because, when scientists are asked to do something
62 like compare and contrast, when they have to make inferences and write hypothesis about
63 something .

64 [7:45]

65 T: Or draw conclusions they go back to their notebook and look at their notebook and
66 look at their evidence. You have two pages in here that you can use to help you when
67 you're comparing. You have the crayfish diagrams that you have already used. And you
68 also ... this one was in our chapter crayfish structures. You also have our Crayfish
69 Structure notebook page. Now if you remember there were some different ... I should say
70 more structures if you look at both. For examples, bristles is on this one but,
71 swimmerettes is on this one.

72 [8:43]

73 T: You also have you notebook from this week the structure of the snail. So you can use
74 both of these resources when you are comparing and contrasting the structures of these
75 two organisms. Now, when you are somewhat finishing, I'm going to put the signal and
76 I'll give you the next instruction. So this first, alright? Team Captain's stay and
77 everybody else can get their science notebook out.

78 [9:29]

79 T: I know that Leo seems to have a lot of schema for this already, but don't forget ...
80 where's your science notebook. Don't forget your science notebook you need to have it
81 open so if you need to refer back to it you can. Also, your snail diagram.

82 [9:48]

83 T: Alright, I know some of you have so much schema for these structures that you think
84 I'm going to do this without my notebook, but remember that your resource to help you
85 make your comparisons as complete as possible. So notebooks should be out; it can also

86 help you with spelling if you need help with spelling. Thank you. I'll just set it here.
87 We'll just do it in writer's workshop.
88 [10:24]
89 S: Want me to cut it?
90 T: We'll do it in writer's workshop. Papers? Did your table captain leave?
91 S: Yes.
92 T: Thank you for solving that problem, responsible. How's it going here? Nice.
93 S: So what do we do in the middle? What they both have?
94 T: Yes, how they are similar. We say that how they are similar, but it's what they both
95 have. It's how they are alike, because sometimes it's not exactly the same but it's close.
96 How's it going Sam?
97 [11:14]
98 S: Good.
99 T: Can you explain to me real quick what you are thinking here? Do you remember how
100 the Venn diagram works? So on this side this is only what the crayfish have and you put
101 eyes here. So do they both have eyes? So this one, you don't put here, because you put it
102 here, okay? So on this side only what the crayfish have. You remember seeing that? Why
103 don't you check your diagram of the crayfish. It shows you all of the structures. Nice job.
104 I'll come back and check.
105 [12:09]
106 S: But they crayfish have ... and the snails have the ones under the big ones.
107 T: So question, so let's talk about the antenna tentacles thing then we can go back to your
108 question. Let's use, remember what we observed. The tentacles on the snail, what
109 happened when you got close to it?
110 S: It .. antenna up.
111 T: It retracted huh?
112 [12:50]
113 S: The crayfish can't do that so that should go here.
114 T: So I think you are correct that they ..
115 S: But they don't do the same thing.
116 T: They don't do the same thing. So it could go something that's similar but definitely
117 different. The function is a little bit different.
118 S: Yeah because, theirs just move back and theirs just go in.
119 T: Right, does that make sense?
120 S: But the cool thing we can ...
121 [13:44]
122 T: Where can we look to see if they have it?
123 S: ...
124 T: They have an egg pore or a breathing hole but not a respiratory hole. That was your
125 question right, Anthony? Do you notice what this team is doing? Do you notice?
126 S: Yes
127 T: They have both their science notebook, diagram of a crayfish right next to their
128 diagram of a snail so they can look and use all the data.
129 S: I don't have the page ...
130 T: If you don't have the diagram you should have the investigation before which was this
131 Crayfish Structures that also has a list of structures.

132 [14:37]
133 T: Let's think back to our experiments, when you went to, can I use your fingers has a
134 tentacle? If this was the snail's tentacle and we went to touch it what happens? It would
135 droop. If you go to touch the crayfish antenna what happens?
136 S: Goes back.
137 T: So it's kind of similar, but it's also different, huh? And I think that's why they call
138 them different things. Tentacles retract where the antennae don't, they just move. So that
139 could almost be a difference too.
140 S: Do snails have legs?
141 T: Ask the group do snails have legs?
142 S: They have one big foot!
143 T: Ask your team have that discussion, okay?
144 [15:27]
145 T: So where did you put the antennae or the tentacles?
146 S: We put in the middle.
147 T: And why did you put it the middle?
148 S: Because they are both the same. They use it for the same thing.
149 T: For sensing? JJ we need your help real quick.
150 S: Do you think crayfish actually have feet instead of just legs? We think the one
151 difference is that Snails have one foot and crayfish has lots of legs. I don't know if
152 crayfish have feet. It's kind of like when we are doing the structures paper it asked if land
153 snails have feet? It said no. Do they have walking legs we said no it only had a foot.
154 [16:35]
155 T: So the function of the foot and the walking leg is the same that's how they are similar
156 they both use them for moving. But the structures are different, the crayfish have walking
157 legs and the land snail have a foot. Question about the antenna. JJ can I use your finger?
158 Lets pretend that's the snails, when you went to touch it what happened? It retracts, it
159 goes in, right? What happens when we did that with the crayfish? They might have just
160 moved it. So they both have these antennae-type structures to help sense. But it's also a
161 difference because the tentacles retract and the antennae don't. So maybe that's
162 something else you can add.
163 S: The eye comes up and then it come back a little ...
164 [17:55]
165 T: Do snails have bristles? So bristles would go here right? Do crayfish have tentacles?
166 No, they have antennae. Tentacles here and antennae here. So, one other thing if you had
167 your notebook open it would help you see the differences. Okay, just to tell you this is a
168 3-minute warning. 3 minutes.
169 S: How many ...
170 As many as you can think of. Think a little bit about what you might know about other
171 organisms.
172 [18:44]
173 T: So, those of you who have been working on this for about 10 minutes are getting close
174 to being done. I know some of you need a little bit more time. I have had the same
175 conversation with several teams. So I thought, maybe we could have a group discussion
176 before I give instructions for the next part. And I'll wait until all eyes are on me. So, one

177 of things that several of you are noticing is that the crayfish and the snail have a lot of the
178 same functions but think about the structures. Do they look the same?

179 [19:26]

180 T: For example, several of the teams thought: 'Yup, they both have antenna.' Because
181 they have a structure that helps them sense, but think of how those structures work. If
182 you think about the snail and if this is the tentacle what happens when you bring your
183 finger close to the tentacle. It goes in or retracts. What happens when you brought your
184 finger close to the antenna of the crayfish? It retracted?

185 S: ...

186 T: It might have moved the antenna but it didn't retract. So that is the structures are
187 different.

188 [20:20]

189 T: The crayfish have antennas; the snails have tentacles. The functions of those are the
190 same. Similar.