

Sex in a Cup

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A science curriculum activity for use in conjunction with the December 1999 HHMI Holiday Lecture DVD “2000 and Beyond: Confronting the Microbe Menace”

Science Unit

I came up with this idea several years ago as part of a unit about making choices, sex education, and AIDS, when I started teaching at a smaller school. Three of the high school girls got pregnant every year and I knew some of my 8th grade students were choosing to have sex. This activity could also be adapted to fit into a variety of units on immunology, cell biology, and/or disease. It is inexpensive, easy, and doesn't require much preparation.

Materials required

- Bathroom sized disposable plastic cups
- 25 ml of 1M sodium hydroxide
- phenolphthalein solution
- dropper
- water
- lollipop

Setup before activity

- Fill disposable bathroom cups about 1/3 with water. (You will need enough for each student to have one.)
- Fill one cup 1/3 full with the sodium hydroxide solution and keep it aside.

Activity

1. Prior to the activity the class has covered the background information to go with the unit (i.e., the Holiday lecture DVD, how the immune system works, how AIDS is spread, a little about consequences and personal choice). The day of the activity we review a little.
2. I unwrap the lollipop and take a few licks off of it. I usually try to drool on it a little and make it nice and gross.
3. I tell the students I will pass the lollipop around the room and want them each to have a lick. I don't really do it, it is just for effect. Usually the response is “EWW, that's gross!”. No one wants to lick it after someone else has.
4. I ask them if they would take the lollipop if they hadn't seen anyone lick it. I tell them germs are like that. We can't see them and we don't often think about who has been there before us.
5. I pass out a cup of water to each student.
6. We discuss using a model to demonstrate a biological concept. From a biological viewpoint, having sex is basically exchanging bodily fluid.

7. Call one student in front to demonstrate how to “trade” by pouring 1 cup into the other and then pouring back until each cup has an equal amount of fluid. This demo allows you to pour from your own cup, which has the NaOH in it. When the trade is demonstrated the student is know “infected”. I try to choose an outgoing student to demonstrate, who I expect will trade with numerous partners.
8. Explain the rules for trading:
 - Students may trade with as many or as few partners as they like. (I suggest they trade with as many people as they think the average person has sex with in a lifetime OR the number of partners they think they will have.)
 - Students may choose to NOT trade with anyone.
 - Students must not force a trade if someone does not want to trade.
 - For this activity, boys may trade with boys, and girls with girls.
 - When they are done trading sit down.
9. Students are told to begin trading. Usually they are a little cautious at first, but there are always a few that will trade and get the others going. It is interesting to watch the dynamics and see them thinking about making a trade, especially if they know someone has traded with a lot of people before them.
10. After the trading is complete, I add a drop of the phenolphthalein solution to test each student’s cup. Those who have been infected will turn a bright pink. I try to add a little suspense and they wonder who’s been infected or not.
11. Wrap up the activity with a discussion of what happened.

Discussion

1. Start out by explaining that only one person was infected to start with and how they got it (from me during the demo).
2. Have everyone who turned pink stand up. Usually in a class of 25 there are only 2-3 who don’t turn pink.
3. Ask those that didn’t turn pink how many trades they made. They usually didn’t trade at all or made one or two trades.
4. Have the infected ones try to trace how they got it.
5. Have the class discuss how the “infection” spread, how many people they traded with, what effect multiple exchanges had on their chance of being “infected”, what path the “infection” traveled to get to them.
6. Have the people stand up who were “infected” but did not trade with the student who started the infection (there are usually four or five). That seems to make the biggest impression.

Possible discussion questions

- Could you tell whom it was safe to trade with by looking at them?
- How many people were infected and did not trade with the first infected student?
- Of the people who did not turn pink, how many trades did they make?

- How was your chance of being infected related to the number of trades you made?
- Did you hesitate to trade with someone if you knew they had made many trades before you?
- Are people always honest about the number of partners they may have had?
- How is this activity like real life? AIDS? Other STDs?
- If this really were the AIDS virus, how would the consequences be different than if it was a cold or flu virus?
- Does anyone in your state or community have AIDS?
- In a small group (town) where people choose to have multiple partners early in life, what is your chance of getting an STD once one person has it?
- If you are having sex, what other consequences can result besides an infection with an STD?

Personal Evaluation

I have used this activity a number of times with 8th graders and it really makes an impression. They love it and it is one I always hear comments about years later. It always generates lots of good discussion and I think it makes a point about making personal choices and their consequences. We talk about how quickly something can spread through a small population (like the town where I teach) when people have multiple partners. It seems to get them thinking at least that when you trade “bodily fluids” with someone you are not only trading with that person, but all the other people those partners have traded with in the past.