Chapter 3 WCIA Video Case Transcript

WCIA-1A

[00:00]

Ms. Gallagher: So, the first part of this; it didn't print out so well. So when you come up here and look at it you're going to have to make do. Okay? And this is your class test. Go.

Students: What?

Angie: Who wants to read it?

<Students run to the front.>

Kim: That's so weird.

Craig: Gosh.

Jack: I can read it out loud, because I'm the group reader.

Kim: Alright, go read it out loud.

Student: Is there a...?

Kelly: Jack, loud and clear.

Jack: Points number 1.

Jack: You may use each other...wait...

Jack: You can use each other, your journals, your text (if you have them), your calculators, and any materials on the middle lab table.

Jack: As always, my cart is off limits!

Students: Oooooh.

[00:46]

Patrick: And there's a time limit.

Jack: Ooooh. Time limit. I'll just get to the time limit. I must have this sheet completed in my hands by 10:04.

<Jack looks at the clock dramatically.>

<laughter>

Jack: ...according to this clock or I will not grade it. If you fail to meet this deadline, place the sheet on the front lab table...blah blah blah. You must submit your response...blah blah blah.

Kelly: Wait, do each of us have to all fill out something and give it to her?

Jack: The class will be assessed on accuracy and on the effort made as a community in the process of solving the...

Angie: Okay, tell us what to do.

Jack: Number 1. Using only the materials provided on the middle lab table, perform the "ChemConcoctions" Lab and make it so that exactly 15.0 mL of ethanol are captured in the graduated cylinder from the tubing attached to the 250 mL flask. A. You have only one opportunity. The first try is your only try...So think before acting! B. Ethanol must travel through the tubes as a result of the chemical reaction between sodium bicarbonate and acetic acid. C. No ethanol may be poured into or out of the graduated cylinder directly. Again, it must be a result of the procedure you did during the ChemConcoctions lab.

Kelly: Let's take that back there.

Jack: Draw a particulate level...draw a particulate level...

Dan: Everyone go quickly but safely. Quickly but safely.

Jack: Clear the way! Clear the way!

Angie: Goggles. Goggles.

Dan: Goggles are provided for us. Goggles are provided for us.

Student: Ethanol...

Michelle: Oh, only three people are allowed to do it.

Kelly: Though more like five, but okay.

Angie: Sorry.

Dan: I will nominate...

[01:56]

Tara: Can we use our like notes?

Student: Yeah.

Dan: You can use your journals and texts and...

Mary: How much ethanol do we have to have?

Student: 15.

Angie: This is insane.

Kelly: Okay, someone look up safety precautions. I'll do it.

Jack: I don't think everyone has their goggles on.

Patrick: Anyways, that's ethyl alcohol; instead of ethanol.

Tara: It's the same thing.

Jack: Wait, you guys, look up the Flinn. Yo, Flinn.

Kelly: Yeah, I'm looking it up!

Tara: Yeah, we already looked it up.

Kelly: Not for ethyl alcohol though.

Tara: Yeah, we did.

Jack: You have to look it up every single time you do it.

Kelly: Yeah, we have to look it up every single time we do it.

Tara: It's flammable and poisonous.

Kelly: You're flammable. I don't mean that.

Chris: Um, could I borrow your key to get some extra goggles?

Ms. Gallagher: No, sorry.

Chris: I'll just cover my eyes then.

Michelle: Angie, see if we're all supposed to write this down.

Robert: The goggle drawer is locked.

Ms. Gallagher: Yes, it is.

Robert: Should it be?

Ms. Gallagher: It should be locked.

Robert: Should we be in...?

Ms. Gallagher: ...in lab without goggles? No.

Robert: Yeah, guys.

Kim: Yo, group.

Robert: She says we shouldn't be in here without goggles.

Kelly: We have to displace 15 mL.

Tara: It has to go from here to there.

Patrick: I already washed it.

Kim: Guys, if you don't have goggles, you should probably come back here.

Mark: Yes, sir.

Kelly: Ah, man.

Jack: Don't worry. I'm wearing contacts.

[03:13]

Jack: People. People. Who took the overhead?

Tara: Wait, we need 15 mL at the end, right?

Kim: Yes.

Karen: Wait, how much do we need of this?

Tara: I don't know. That's why we have to figure out how much of each to put.

Frank: What liquid is that?

[03:30]

Tara: This is like hard because we can't like...

Kelly: But the thing is...last time I did point...ooooh.

Tara: Wait so who did the one with like...did someone do the amount?

Frank: Oh, I did amount of acetic acid.

Kelly: I did amount of sodium bicarbonate.

Tara: Exactly, so there we go. So we just use all of that together.

Kelly: I'm getting my notebook. Angie, can you get me a notebook of mine.

[03:51]

Frank: Somebody should hand us the sheet so we know what we are doing.

Tara: It's up there.

Jack: It's up there on the overhead.

Craig: Who's got the sheet?

Angie: Hey, Kim, can you give them the sheet?

Kim: Yeah.

[04:03]

Tara: Watch us like fail. I will feel so bad.

Angie: Wait, guys, how much are we putting in?

Tara: Okay, we're doing .4 of that and 12 of that.

Angie: Okay, so what do you want?

Kim: If they know what they are doing, then that's okay. I just thought, maybe, you know.

Angie: Okay, I think we're putting in. Guys, how much sodium bicarbonate are we putting in?

Kelly: .4

Angie: .4....What's the grams?

Tom: Angie, can I borrow your goggles?

Kim: Why are you guys putting in .4?

Kelly: Because that was my lab group...that's what gave the best result, .4 did. We did .1, .4, .6 and .4 gave us the best result.

Kim: Okay.

[04:44]

Kelly: You know how there's a straw?

Jack: Uh, you guys. Hello. You guys are again clogging the pathway to the safety equipment.

Angie: To the eyewash.

Kelly: To the eyewash.

Dan: If you're not, put your goggles on, put 'em down, the goggles! Aaaahh!

Michelle: Kim, is it a small graduated cylinder?

[05:04]

Angie: Frank, the group that used ethanol wants to talk.

Kim: Guys.

Dan: Someone, come back here.

Lynn: Look at this graph.

Dan: Let Nick in.

Angie: We're all trying to figure out how it was for water, but they used ethanol.

[05:25]

Tom: Once last check before we do this. What we did was we looked at this graph.

Jack: Wait, wait, wait.

Dan: Hey, listen. Tom is talking. It's Tom's turn.

Tom: Hi, guys. Um, before we do it. We just want to tell everyone what we're doing. We looked at this graph for ethanol and we took a third of it, figuring, you know, if we put in a third of the sodium bicarbonate, we'll get a third of the result, which is what we need for the 15.

Kelly: How do you know if it's a third of acetic? Are you doing? Are you cutting down both the sodium bicarbonate and the acetic acid?

Jack: That's what I was wondering.

Tom: We're not.

Dan: If one doesn't work, then just try the other.

Jack: We only have one opportunity.

Angie & Kim: No, we only have one opportunity.

Tom: 'Cause look we figure this is the...

Kelly: I know, but why only the sodium bicarbonate?

Sandy: Why wouldn't you only...

Robert: Can't we like just have like an extra graduated cylinder for displacement and just pour out the rest if it goes over 15?

Ms. Gallagher: I can't answer your question.

[06:29]

Jack: Yo, does anyone have any objections?

Angie: I say we go with it ’cause we've got 10 minutes.

Tom: Okay, if all you guys agree with it, then that's what we're gonna do.

Kelly: I don't think it's gonna work, but do it.

Tom: Do you have a different idea, real quick?

Kelly: I don't have a different idea. I just don't think it's gonna work. Like that's the thing, I can't go against it.

Tom: Well, this is the best we could come up with.

Kelly: Exactly. I don't have anything else for you. I can't really say anything, but...

Tom: Okay.

Kelly: It doesn't sound like it’ll work.

Angie: Well, we can just try.

Kelly: Just try.

[07:01]

Tom: It was a good swirl though.

Angie: Shoot.

Michelle: What happened?

Angie: Shoot.

Students: Aaaaaaah!

Kim: What happened?

Angie: Nothing.

Kelly: You guys, .06 is a really little, guys.

Jack: What's up, Mr. Keno?

Mr. Keno: How are you doing, Jack?

Jack: Not good. We're actually just failing this lab so.

Tara: Great.

Jack: Thanks for asking though.

[07:29]

Angie: You guys, let's double check to make sure the tubes are right 'cause Debbie said that was the problem.

Tara: What does it even matter 'cause we already did it.

Kim: That's okay. We didn't check with every group.

Mary: But their reaction's wrong.

Mark: Guys, .1 didn't work, so why did we use .06.

Tara: Because!

Kelly: I told 'em .1 didn't work, but they said that's 'cause it's water.

Frank: And then you agreed with us.

Angie: You guys, it's fine. We're not gonna like sit and argue about it.

Tara: Yeah, honestly, it didn't work.

Angie: We all like inputted in equal ways. It's fine.

Tara: Can I have my notebook and my pen?

[08:04]

Kim: Guys, we're drawing the particulate and we're gonna draw the...we didn't have any reaction, so we're not gonna draw a reaction.

Kelly: Wait, didn't something displace though?

Frank: We had a reaction. Wait, time out. Yo. We had a reaction, just nothing was displaced.

Angie: Right, like there was fizzing.

Frank: So there was gas and it went in.

Angie: In the first beaker it fizzed.

Student: The gas was not powerful enough.

Kim: So there's a chemical reaction, but we didn't have any...

Angie: But not enough. The ratio was unequal. Did we write down the Flinn stuff? That will give us some points.

<laughter>

Kelly: She's so cute.

[08:40]

Angie: Ms. Gallagher? Would you like to see our results?

Ms. Gallagher: Bring me the graduated cylinder.

Angie: Alrighty.

Jack: Wait, wait, wait. Don't spill it!

Ms. Gallagher: Okay, thank you.

[09:02]

Debbie: Uh, Ms. Gallagher, are we gonna see our lab reports?

Ms. Gallagher: I'm not going to talk about that right now because this part of the test is going on. Okay?

[09:21]

Kim: Hey, guys, do you need help back there or are you okay?

Angie: We're good. Thanks, Kim.

Frank: Tara, when you did your thing, could you just pour this out?

Tara: Yeah, it's ethanol. I think we did.

Frank: I'm just checking.

Tara: I think we did. I'm not sure. I'm don't see why we wouldn't be able to.

Angie: Wait, are you sure we put ethanol down the drain? Ms. Gallagher, how do we dispose of ethanol?

<no answer>

Angie: Ah, sweet. Is she ignoring us?

Tara: It's just flammable and poisonous.

Angie: You, guys, how do we dispose of ethanol?

Patrick: Um, down the sink.

Frank: Are you sure?

Patrick: Yes.

Angie: Are we sure?

Jack: It's flammable, are you kidding me? We should ask Ms. Gallagher.

Frank: We did.

Angie: And she won't tell us.

Jack: Well, then we should make her tell us. Wa, ha, ha.

Dan: Look it up in the book. Wait, how did we dispose of it?

[10:16]

Dan: Yo, guys, we have a minute.

Lynn: We have less than a minute. Less than 50 seconds.

Kelly: I think that we should get in our seats.

Michelle: Guys, sit down.

Mary: Guys, get in our seats.

Craig: Put your seats back.

Mary: Are we supposed to give it to her?

Michelle: Oh, put it in her hand. Hurry! Hurry!

Student: Hurry up!

Ms. Gallagher: Thank you.

Kim: Alright, guys!

Michelle: It's like run, run!

Ms. Gallagher: Okay, have a seat.

Jack: Guys, we did it!

WCIA-1B

[00:00]

Ms. Gallagher: Okay? Alright, now, I want to spend a few minutes talking about the class assessment. That was the class test that you did all together, last class. You already received some feedback from your individual test. You had a chance to start your corrections. We'll find a time to finish those corrections during another class. We won't have a chance to do that today. Okay? So this is the next piece of feedback. As I go through this stuff, it's a good idea to jot down anything you think might be helpful for you for the next time you have to go through a class challenge. So you can quickly read it and remind...

[00:41]

Ms. Gallagher: For all of these things, it typically comes in three parts and I mentioned this the last time, after your lab when I gave you feedback from that. First of all, we'll talk about the Accuracy meaning...Did you get the answer right? Did you communicate it well on the piece of paper? Safety. If there's anything that you're doing in lab in terms of safety, you'll get feedback on that. And then the Community part. How well you worked together on getting an answer, on getting some sort of response that you were comfortable with.

[01:17]

Ms. Gallagher: So, some of the things I look for in terms of accuracy so that you're prepared for next time. Was it on time? There's always going to be a deadline. There's always going to be somewhere, some place on that piece of paper, written, "It must be in my hand by ____." Okay, so did you turn it in on time? I'll also be looking for whether or not the class followed the directions. Now those directions might be very specific. Written on that piece of paper, for instance, I wrote down what you could use. I said you could use each other, your journals, your text, classroom resources, and the stuff on the middle lab table. So right away you knew there was a lot of the room that was available for you in terms of resources. Okay? Well, next time I might write something different. You're only allowed to use each other. No journals. No texts. None of that, etc. So make sure that if I've written…

[02:12]

Ms. Gallagher: Is your answer correct? Of course, that's part of the accuracy. So I'll look at the response that you guys wrote down and see whether or not it was correct. So what do you think? How well do you think this part went for your class assessment this time?

Dan: Not very good.

Kim: Two out of three?

Jack: Two out of three.

Student: Two out of three, come on, that's a 66%.

Ms. Gallagher: Why, what was wrong?

Lynn: We were precise, but we weren't accurate. Because we did all the mathematics and figured out everything we thought we needed to figure out, but then we never got the correct result. But it's not like we did it the wrong way. We just didn't get the answer we thought we were going to get.

Ms. Gallagher: So, you're kind of talking about two different things. The result from lab versus maybe what you wrote on the paper. Like are you okay with what you wrote on the paper? Are your models okay?

Lynn: Yeah, like it describes what we did. It's just not what we were supposed to get.

Ms. Gallagher: Okay, so the result in lab didn't happen the way you planned, but your models were still on...so, remember it isn't all lab or all paper, but your accuracy is kind of a combination of both of them. Okay, so that should make you a little more comfortable.

[03:29]

Ms. Gallagher: It does matter how well you did in lab. And this time I was looking for not only that, but accuracy in terms of what you did in lab, like the technique, and the results of what you wrote on paper. You guys did okay in this area. I mean you get a 4.5 out of 5.

Kim: Oh, okay.

<laughter>

Jack: Uuuuuhh.

Dan: I did not see that coming.

Ms. Gallagher: Because...and one of the reasons was because the drawings were very thorough.

Students: Yeah, Mary!

Ms. Gallagher: The pictures do matter.

Frank: Yeah, Mary!

Ms. Gallagher: So don't think that just the lab matters unless of course that's the only thing I'm looking for.

Jack: Wait, wait, wait. 4.5 out of 5, right?

Ms. Gallagher: For just the accuracy.

Jack: Our class?

Ms. Gallagher: Uh-hum.

<laughter>

Ms. Gallagher: Well, did you even see what was turned in?

Jack: Yeah.

Kim: Yeah, it was good.

Jack: It was good.

[04:24]

Ms. Gallagher: Alright, so the next part was safety. Again, lots of stuff to look for safety. Sometimes your class assessment won't even be a lab. So this won't matter so much. It might just be a list of a lot of challenging questions that you need to work through together. But if there is a lab, safety will count. So of course, do people have goggles on if they're back in lab? Five or fewer people to a lab table. Desks are cleared away with a free path to the safety materials, particularly the eyewash station. The technique that you're using. Whatever it is that you're doing back here. Is it correct? Clean-up time. Did you leave enough of it so that everything was cleaned up by the end of company time or class time? And was it appropriate? Meaning if there were waste chemicals, did you know where to put them and did you put them in the appropriate spot?

<laughter>

Frank: I was asking.

Ms. Gallagher: Okay? So how do you think the safety went?

Kim: We did all the cleanup, that's for sure.

Frank: Was it supposed to go down the drain?

Ms. Gallagher: Was what supposed to go down the drain?

Frank: The ethanol.

Ms. Gallagher: You've all used ethanol. I shouldn't have to tell you. Everyone in this room has used ethanol.

Jack: So that's good.

Chris: But no one in this room remembered where it went.

Angie: I think it went down the drain...

Ms. Gallagher: That's bad. That counted against you.

Chris: Well, we remembered that it went down the drain. Is that right?

Ms. Gallagher: Uh, no, YOU did. No one listened to you though. I heard you say it at the lab table.

Chris: No, but that's where we put it though.

Ms. Gallagher: Yeah, in the end, but the fact that no one looked in a lab journal to find that information...

Jack: We did. We did.

Kim: Yeah, we looked in the Flinn.

Jack: But it didn't say it in there. To like flammables, so.

Ms. Gallagher: That's all a problem. What you guys are saying you might just be quiet. Everything you're saying is a problem. If you all have used ethanol before, you should know what the waste is. And if you didn't remember in your head, looking is your journal should have taken two seconds and you should say, "Oh, this is where we put it." Okay? So, it shouldn't have been an issue even though it seemed to be. 'Cause it took a long time for that to eventually get cleaned up. Okay? So yes you should ask, but as a class if it's a chemical you've used, it shouldn't take but two seconds to figure it out. Okay? What else about safety?

Dan: Yeah, all the rest.

Lynn: We did the first four.

Ms. Gallagher: The first four.

Angie: Yeah, I thought we were good about like people having goggles on at the back table and we were like...

Lynn: Yeah, like as one person came out, the other person like just handed off the goggles.

Jack: There was points where people were kind of covering the pathway and we tried to get that cleared.

Ms. Gallagher: Yeah, you want to make sure...yeah, there were people for over seven minutes leaning against that lab table watching what was going on in lab without goggles on. That's the lab area. So, yeah, that's an issue. And then people standing in front of the place where you would go for help. The eyewash station, the shower, etc. Yeah, that's a problem too.

[07:29]

Ms. Gallagher: So you ended up with a 4 out of 5 for that one. There were a couple of times when it took a little too long to get...for someone to focus on getting people in a safe spot. Okay? But that's still good. 4 out of 5. That's good. That means that's an easy thing to improve. Okay, so your accuracy, really well. Your safety, really well. So you guys...those first two things are on a good note.

[07:54]

Ms. Gallagher: So in terms of the three things we listed up there. Community means how constructively, positively are you working towards an answer together as a class. So this is as important as the other two. Which means again we could use the scenario of...Alright, we're

going to be mean to one another and we're not going to be safe, but we're gonna get a right answer. You'd get 33%. So you need to be thinking to yourself. All three are equally important. Okay? Or you could be really nice to each other, get a wrong answer and do it unsafely. That's 33% as well. You're trying to find a really good balance between all three. Now, the community also means how organized it is. Not just that it's positive, but the organization. Is everyone involved? Actually here are a few of questions that I would ask myself. Was everyone involved? Could you all do this individually? Meaning was there enough discussion before and after so that everyone in the room is confident that if I walked in today and put one of you on the spot, could you do it? Okay? And that might be what's coming. Your class assessment might be the next day I pick one of you out to do something new that has to do with the lab and it is for everyone in the room, which means you should be talking to one another so that everyone in the room understands the material. Did you leave time to discuss it at the end? Not only what went on in the back. Do people even know what the procedure was that went on back there or just a select few people? And what about those pictures? Could everyone in the room do those models or is it just a select few? What might improve your communication and organization for next time? So you tell me in terms of the community part, the organization, how did it go?

Lynn: Well, we had like people standing in the back, watching what was going on, and then the people in lab and then we were like communicating with them, and then there were like seven or eight people in the front like looking at the directions and drawing the particulate picture. So we got it done. Like somebody in the back would always be saying like, "Who's drawing?" or whatever and we'd say, "Oh, they're in the front drawing."

Ms. Gallagher: Uh-hum.

Lynn: So we knew what was going on, but I don't know if we like could have done better.

Kim: Well, I think that we were able to include a lot of people into it. Like we would switch off the goggles a lot of the time, but I don't think that we discussed it enough at the very end. We did discuss it, but I don't think that everybody was paying attention. Definitely, so.

Ms. Gallagher: What about at the beginning?

Kim: The beginning, I think we did...we were trying to organize it, 'cause it was kind of chaotic 'cause there were only a few goggles.

Ms. Gallagher: Uh-hum.

Kim: So we had to decide who was going to go back there and I think that turned out really well in our attempt to organize from there.

Ms. Gallagher: Okay. Yeah.

Angie: I thought we did a really good job of making sure like everyone agreed. Even though maybe not, well, like...when we finally decided like the amounts of sodium bicarbonate we were going to use...we made sure like does anyone have a problem? Does anybody have any other suggestions? So we like made sure that it wasn't just one person who decided and then like just did the experiment.

Ms. Gallagher: Okay.

[11:21]

Ms. Gallagher: What could you do to make it better?

Jack: Sit down and like relax at first.

Ms. Gallagher: Okay.

Kim: Yeah.

Frank: Chill.

Jack: Instead of being like really active like sit down and plan what we're going to do. 'Cause we had enough time to actually like plan out what we wanted to do. So at least like sit down and get in a circle and have someone lead like get in front of the classroom talking to everybody.

Ms. Gallagher: Okay, a couple of things. Yes, chill! Oh my god. Total chaos at the beginning.

<laughter>

Ms. Gallagher: And you just said a key word: Plan. Even though you may have been planning and okaying things with one another. Not everyone was involved. Not everyone got to hear what was going on and feel like they were a part of that plan. So that's a key word. The plan. How are you going to do that? Does it make sense for us to sit as a class and talk and get something concrete that everyone knows we're going to do and then do it. What do you need to know in order to plan? I mean you knew what the question was, but what did you need to know in order to plan what you were gonna do?

Lynn: Like what...every other group had tested their specific variable. So we could know what each group tested and whether or not what they found had an effect…

Ms. Gallagher: Okay, one piece of information that would have been helpful was to review the variables you tested as a class. Yes, there was one group that tested the liquid in the middle flask. That was one of the things that you guys tested. Plus the volume that you ended up with for different groups that did different variables that affected that. So certainly getting information from each group. What else did you want to know before you actually did the lab? What was back there?

Student: Materials.

Ms. Gallagher: What materials?

Students: The liquid. Flask. Graduated Cylinders.

Ms. Gallagher: Okay, some of you may right now know what was back there. And others of you don't.

Kim: Oh yeah, I think I'm one of them.

Ms. Gallagher: So if you didn't get a chance to actually put the goggles on and see what was back there, did anyone tell you what was back there?

Dan: Well, I don't necessarily think that you needed to be up at the table to know. I mean we did it...or…and you could see...

Ms. Gallagher: So if I asked everyone right now to write down what was at that lab table, could everyone in this room do it?

Jack: We'd basically get everything right.

Dan: I think that most people who paid attention during their...

Ms. Gallagher: Did someone communicate what equipment was back there to the rest of the class?

Students: No.

Jack: No. We thought it was almost implied 'cause we did the lab earlier.

Ms. Gallagher: Yeah, bad assumption.

Jack: Yeah, bad assumption.

Ms. Gallagher: Bad assumption.

<laughter>

Ms. Gallagher: Okay? Because you guys didn't even figure out that only five people could be back there until you got back there to see that there were five pairs of glasses. And about ten people went over to the drawers and tugged on them and it was locked and then came over to ask me, "Will you unlock the lab drawer?" and I was like, "No."

Jack: Now I see what you mean.

Ms. Gallagher: So even that, right there, is information you should know before you go back to lab to do a lab. You should know what it is you have to work with. We have five pairs of goggles. We have this. We have this. We have this. Did you notice what the concentration of the acetic acid was?

Student: 1.0 molar.

Ms. Gallagher: Okay, so that stuff. If everyone in the room isn't aware of that, that's bad. Okay, did you know what the volume of ethanol was that I gave you, total. All of those things were really important. So the point is that the communication part that you guys are talking about, the planning, is really important. It would be nice if everyone chilled out a little bit and talked about what was going on first. Of course, time is going to be an issue.

[15:04]

Ms. Gallagher: In terms of the community part, you've got some work to do. The community part, 2.5 out of 5.

Students: Aaaaah.

Ms. Gallagher: A lot of room for improvement, okay?

Kelly: Aw, we failed.

Ms. Gallagher: So, this last part, I have a few suggestions to help you in order to make it so that at the beginning of class might not be so chaotic and so that at the end of class, you don't have people who are wondering what's going on. Asking three times, "Could we have some...I'd like to be involved...Tell me what's going on...or Why isn't there water?" etc. So those questions

would not happen if there was some sort of organization at the beginning. Now a suggestion I have, and again it's up to you if you want to follow it, is to have some class managers. And here's the purpose. First of all, I'll give you some past years of experience for help. In the past, whenever there's been a class assessment or class lab that might take three or four days even, I'll read a challenge or put a piece of paper up front and walk away. And the thing that has helped is to have two people from the class come up front and help out in terms of organization. Now, in the past, I can tell you that one person from the class up front seems to be a little too overwhelming for that person. Twenty-five other people saying things to one person seems to be a little much. And that three people up here seems to be too many people where everyone doesn't know who to talk to and it's still a little chaotic. The communication among those three people seems to be a little too fragmented. But with two people, in years past, having two people up front, it's been a good thing. I'll also share with you that, in the past, classes have thought about who to nominate and who to put in these roles, at least at the beginning, so that at least one person up front is very comfortable in front of his or her peers. Just talking so that everyone can hear, organizing real quickly, delegating responsibility. That that person is very comfortable standing up and working in front of his or her peers. And that the other person, at a minimum, is real comfortable thinking about science on his or her feet. Meaning if someone is throwing science content at you, you can...you're okay with, "Let me think about that for a second. Okay, that first part makes sense, but then at the end, I think we should," and just doesn't mind literally standing up here and back and forth talking about the science content until it makes sense. Of course, it's wonderful if you can get two people up here that's good at both. Being in front of their peers and talking about science, but not necessary. So let me get some input from you. Do you think the idea of having class managers would help you guys in terms of organization?

Students: Yes.

Mary: I vote Jack.

Ms. Gallagher: Do you want...wait, hold on. Yeah, Frank.

Frank: I think that we could have three and just put one for each like...we'll make one person like do accuracy, one person do community, and one do safety.

Jack: That's fine, but honestly, when you have three, I know what she's talking about, when you have three, this part of the class is talking to that one person. This part of the class is talking to that person. And that part of the class is talking to that person. And you're not getting all together. But it does make sense, but then you're not communicating with each other. You're just saying, "Wait, you know, just talk to me." I mean if it works, but in the same sense...

Ms. Gallagher: Yeah, unless you could do it really well I think kind of what you are saying is that you'll end up in the same boat where these guys might know one thing and you might know another and you might know another, but you still don't all have all the pieces.

Jack: Right.

Ms. Gallagher: I think.

Jack: The more you split it up, the harder it is.

Angie: I think that we should stay with two.

Students: Yeah.

Ms. Gallagher: So there's the idea of having three being in charge of one part of the assessment or the idea of two. So show of hands. How many think two?

<most hands go up>

Ms. Gallagher: Okay, so that's what we'll do. Okay? Now we need people nominated for those roles. And let me again give you the suggestion that yes, it's a good idea to nominate yourself if you think this is a good role for you. Remember the purpose is to find what strengths you have so that you can help the class as best you can. Some people might nominate you and you'll think, "You know what, I'm better off in my desk. I really think I can contribute more if I'm sitting here as part of the larger group." And again, other people may nominate you and you'll think, "Yeah, that's where I belong." So again, look around the room, think about yourself, where you belong in what role and raise your hand, say a name, and we'll see whether or not that person or you are interested in...playing the role of class manager.

Lynn: Kim.

Ms. Gallagher: Do you accept the nomination?

Kim: Okay.

Ms. Gallagher: Yes?

<laughter>

Jack: Do you accept the nomination.

Mary: Jack.

Ms. Gallagher: Jack, do you accept the nomination?

Jack: Sure.

Ms. Gallagher: Okay.

Frank: Patrick.

Ms. Gallagher: Do you accept the nomination?

Patrick: No.

<laughter>

Ms. Gallagher: That's fine. I've had a lot of like rejects today.

Dan: Me.

Ms. Gallagher: Do you accept the nomination?

Dan: Absolutely.

<laughter>

Jack: Mary.

Ms. Gallagher: Do you accept the nomination?

Mary: Sure, that’s fine.

Ms. Gallagher: Okay.

Jack: She did our particulate drawing.

Kim: Yeah, it was good.

Ms. Gallagher: Okay, maybe two more people?

Tom: I'd like to nominate myself.

Ms. Gallagher: Okay. Do you accept the nomination?

Tom: Um, yeah.

<laughter>

Angie: Frank.

Ms. Gallagher: Frankie. Where's Frankie?

Angie: Frank.

Ms. Gallagher: Frank. I'm sorry. "Frankie is in my other class," I thought. Okay, do you accept?

Frank: Yeah.

Ms. Gallagher: Alright, that's six. So we're done. That means you wanna take out a small sheet of scratch paper, just something really little. And write down two names from the list that's up there. Okay?

[21:26]

Kim: It's too quiet in here.

<laughter>

Ms. Gallagher: It's like really quiet. I'm trying to go fast too.

[21:40]

Ms. Gallagher: Okay, so, these two and then our sub. In case somebody's absent on a day when I might throw something at you.

[21:51]

Ms. Gallagher: So, you need to keep in mind that the managers' responsibility is not to do the work. Everyone contributes to the work. The managers' responsibility is to help organize and plan so that you can all do the work as accurately and safely as possible, okay? So, now that we know who the class managers might be or are going to be, when I might come up and give you...here's your class assessment or here's today's challenge and I walk away....here's suggestions for how you might function for the first couple of times until there's more details to work out. Okay? Read the entire cover sheet. So one of the managers will pick up whatever it is, the piece of paper or whatever it is, and read it out loud to the class. Of course, if there's an attached overhead, it would be great to show the class as well, but all of the information will be on the cover sheet, not on the overhead. So you want to make sure that cover sheet is read out loud to the class so everyone knows. The answers to most of the initial questions you hear are answered on that sheet. What are we allowed to use? How much time do we have? Where are the materials that we're supposed to be using? All of those types of things would be answered on that cover sheet. So one of the managers make sure you read that cover sheet out loud to the class first. Then, everyone shut up. Everyone sitting and looking at the problem that's on the overhead or thinking about what was just read to you, keep quiet and process it. Be thinking to yourself, "What do I know about this? How can I contribute to getting a good response to that challenge? Oh, I know where I read something in the book, I'm going to get my book out and open it up to that." Or whatever. You're processing the question individually so that you can then contribute to the group. Now a lot of people hadn't yet been given the opportunity to absorb the challenge you were supposed to do last time and that's why a lot of those questions were still going on at the end. So during the time while everyone else is thinking, the two managers up front are organizing, "Okay, based on the way this is asked, maybe it would make sense for all of us to break up into our six groups, answer these six questions individually, and then come back and talk as a class," or "It's one lab question. We should get everyone's information from each variable and then blah blah blah." So the managers for these first 60 seconds are thinking about together how should we organize, what would make sense. So it's a really good idea to give your managers a minute or two. And you might think that that's just an eternity when you're sitting there, but just keep quiet the whole time so that they can actually think about what makes the most sense. And that you guys can process the question. Then you'll plan as a class. "Here's the plan that we came up with. Any suggestions, comments, or whatever?" And then you execute your plan. You make it happen. And then you reconvene at the end. You leave time so that you can come back together and talk to one another about the responses you got individually or what happened in lab. Someone who was back there could explain it to the class. Or if you're drawing the picture for the class, you could show it to everyone. Okay? Now if you don't have time to reconvene at the end, then you need to come...figure out some other method for communicating outside of class what went on. Okay? So somehow everyone in the room needs to know what the responses were to every question, even if you don't have that time at the end. So turn in the

product on time at all costs. So whatever the deadline is that's written at the top of your cover sheet, make sure that whatever it is that you're supposed to turn in by that deadline, is turned in or it won't be looked at. It won't be looked at. That means for accuracy, it's zero. So at all costs, you need to get that product in on time, even if it's not finished. Okay? That's really important.

[26:11]

Ms. Gallagher: Okay, so those are my suggestions for right now. That's my feedback. You now have a couple of class managers that are willing to stand up and help that organizational thing. And the rest of it, the safety and the accuracy, you guys are already doing really well. So for next time, let's see for improvement in these three areas, what happens. Questions or comments?

[26:36]

Ms. Gallagher: That means when you're doing one of these things, first of all, stay on task. There were a few people that were asking me questions that had nothing to do with the class test. Like how much extra credit did I get or I forgot to turn in my packet, can I turn it in now, or things that had nothing to do with the class test. So don't do that. If there's a test going on, that's what you should be focusing on. Contributing somehow for the good of the group. Okay? Another thing…yes, you can ask me questions that have to do with the class test. I may not answer. You may ask me a question, and I'll just stand there and stare at you because it's something that I'm wanting you to figure out. That's what you should get from me not responding. Oh, that question is something that you guys could figure out. Okay?

[27:30]

Ms. Gallagher: "You get the talking stick," which was an attempt to try to get people to talk one at a time, they were passing a stick around. Actually, good idea.

<laughter>

Ms. Gallagher: Actually, a good idea. Let's see. Someone did walk up to me and say, "Are you allowed to talk to us?," and I didn't answer. And he stood there and stared at me for three minutes.

<laughter>

Ms. Gallagher: And I just kept looking at the clock. And yeah, he didn't get the hint, I guess.

[28:01]

Ms. Gallagher: Let's see. "We can only do the lab once. Okay, so what if we take Gallagher out of the room in a burlap sack. We see what's going on in the lab. Then we bring her back out of the burlap sack and do the lab for her. Did she hear? No, I don't think she has a clue what's going on."

<laughter>

Ms. Gallagher: Yeah, typically, I have at least a clue.

[28:22]

Ms. Gallagher: "Guys, it's over. We failed. Let's move on. Let's think of something we can do." Pause.

Kim: Oh yeah!

<laughter>

Ms. Gallagher: "Let's wash our hands," which is a good end to any lab, washing your hands, yeah.

[28:42]

Ms. Gallagher: Okay, so, lots of feedback. Now we finished Unit I officially at this point.

Student: Woo-hoo.

Ms. Gallagher: Yeah, it took a long time. So here's what you want to think about. For Unit II, whenever I give you some sort of challenge, whether it's a workshop or a class lab or a class assessment, all of the skills that you've been taught already need to be applied to it without my guidance. I've already guided you. I've already shown you how to do those things as efficiently and effectively as possible. So you guys want to take those skills and apply it to the stuff we're gonna do in Unit II. And Unit II is like we're finally starting chemistry.

Dan: What was this?

Ms. Gallagher: That was physical science from junior high.

Dan: Great.

Ms. Gallagher: Yeah, we're actually starting some chemistry.

WCIA-7

[00:00]

Kim: ....by the Ostwald process represented by the following equations. <points to them on projected image from overhead> What mass of ammonia must be used to produce 1.0 × 10^6 kilograms of nitric acid by the Ostwald process, assuming 93% yield in each reaction? Show all work.

Jack: Ssshh.

Kim: Okay, so let's...minute of silence.

Kim: Okay, we don't know how much the time limit is right now...

Jack: Do we know how much time we get?

Ms. Gallagher: Uh-hum.

Kim: ...but what we're gonna do is divide you up in each row so that each row can individually work on the problem. We'll get together at the end so that we can compare answers. And that way, we can check each other's work and talk about it so that everyone understands. Is that…? Michelle?

Michelle: I have a question. Is it NH_2 or NH_3?

Kim: Um, NH_3.

Michelle: Okay.

Kim: Um, do you know our time limit?

Jack: Uh, we know.

Kim: Huh?

Jack: What's our time limit?

Dan: What's that blank overturned piece of paper?

Kim: Ah, excellent.

Jack: Ooooh. Very nice.

<laughter>

Kim: I thought it was looking for our work on this.

Jack: It's like…I know. Alright, we have until 9:55.

Kim: Right.

Dan: Good.

Kim: So, uh, we'll have up until 9:45 and after that we'll compare answers.

Mary: Or maybe a little earlier.

Kim: Okay.

Kelly: Are we doing this by row did you say?

Jack: You're gonna do it in each row. You're gonna come together in each row.

Joe: So like this.

Jack: There was something about ammonia in the reading. Does anyone remember that? That was the example given in the reading that they used throughout the entire chapter.

Dan: Yo, what's our resources?

Kim: You can use books, journals, calculators as resources. Yeah?

Mark: Why don't we just split into groups?

Kim: Groups? Easier? Okay. Groups.

Kelly: No, rows is...Never mind. Sorry.

Kim: Okay. Just do it in your groups right now. It's easier. You know the people.

Joe: Um, suggestion. We should probably just balance it on the overhead.

Jack: Well...

Joe: Or not.

Jack: Well, we are supposed to hand this in.

Joe: Or we should pick?

Jack: So we'll do it all together and if we get the same thing then.

Joe: That works.

Kim: Alright, guys.

Jack: Go back into the groups.

Kim: Yep, ready?

Jack: We'll come back...

Kim: At 40? Okay, 40. Alright, guys, you have until 40 to work it out within your groups, okay?

[02:54]

Kelly: So are you saying we should divide by it and not multiply? No, 1.0 times 10^6 divided by .93.

Jack: Yeah, are you guys making a lot of progress? You guys are stuck. You guys doing okay? You know at this point. Are you guys making progress?

[03:29]

Kelly: Okay, let's say X number. That's the percent yield. Whatever you have is the 93%. But out of that number, to get the 93%, usually you multiply by .93 and you get 1.0 × 10^6, right? So to reverse that, to get the X, you divide it by .93.

[03:55]

Kim: Okay.

Jack: Alright, guys, listen up.

Kim: Guys, can we have a volunteer to write on the board?

Sandy: I will.

Kim: Sandy. Okay.

Jack: We're just gonna get the answers.

Kim: Right. Okay. So what we're gonna do is we're gonna individually go through the groups and you're gonna give us the answer that you obtained. Okay?

Mark: Wait, wait, wait.

Kim: Well, if we're gonna go over the work to see which one...

Angie: Guys, listen.

Jack: You guys.

Student: Ssssh.

Jack: Alright, Group 1 back there, what did you get?

Michelle: Wait. We're not done.

Jack: Okay, so Group 2?

Kim: Adam, what'd you get?

Adam: 5.03 × 10^8 grams.

Kim: Of?

Student: NH_3.

Jack: Um, Sandy, what'd we get? Could you write that number for our group?

Kim: Okay, what did Sandy's group get?

Robert: I got 4.04 × 10^8, but I don't know...

<Sandy writes 3.26 × 10^8 on the board>

Patrick: We got the same thing.

Jack: Alright, what'd you guys get?

Mary: Same thing Sandy wrote. We found it in kilograms. I think that we should keep it in kilograms.

Sandy: So what's it in kilograms?

Tara: 3-2-6, comma, and three zeros after. (3.26 × 10^5).

Jack: What did you guys get?

Craig: We're not even close.

Jack: Angie, you don't have an answer either?

Angie: No.

Kim: Okay, well we know that two groups agree on an answer. So, Sandy, can you explain how you got your answer and we'll see...

Jack: See if the other groups that aren't done come out with the same answer.

Tara: So no one else is done yet?

[05:39]

Mary: Does everyone agree with the...

Jack: Does everyone agree with these balanced equations, right?

Students: Yeah.

Jack: So we're on the same path, right?

Students: Yeah. Yes.

Jack: Alright, good. Alright, Sandy?

Sandy: Okay.

Angie: We only have 10 minutes.

Jack: Yeah, just write on the board.

Sandy: Um, well, the first thing that you have to do is…you have to work backwards.

Jack: You guys, listen up.

Sandy: It gives you the amount of nitric acid that you have. It's here. And you want to get ammonia. So you have to work backwards through all of the equations. So the first thing that you want to do is find out like what's in common between these two. So it's the NO_2. So you want to figure out how many moles of NO_2 you need using the HNO_3, which is nitric acid. So you have 1.00...

[06:39]

Sandy: Am I doing it wrong?

Kelly: I just never did it like that. Don't you have to...'cause that's 1.00 × 10^6 kilograms is the 93% yield. And then don't we have to get the theoretical yield first and then do it backwards?

Michelle: Can't you just divide by .93?

Sandy: Well, after I did this, so I got this.

Kim: Hey, guys, let Sandy explain please.

Sandy: So this answer equals.

[07:08]

Joe: Just multiply by .93 and you'll get it. Honestly, it doesn't matter at all.

Kim: But the thing is guys, what a couple groups are saying that is you have to divide it not multiply it.

Kelly: Shouldn't the 2.38 be on top?

Students: Yeah.

Kim: Exactly, that's what we are talking about.

Jack: Woah, woah, woah. You guys.

[07:28]

Michelle: Okay, based on where she left off. I erased that. Okay, then from there we said you divide by the .93. You just do 1 over .93. And then I didn't go back into grams. I did all of it in moles first. So then I went to 2 moles. And then that was also 93, so you have to divide by .93 again.

Dan: That's right.

Joe: Yeah.

Student: That's what we got.

Jack: That's what you guys got?

Student: Ooooh.

Angie: Okay, wait, what is?

Jack: Wait, you guys.

Angie: What's on the board?

Mark: Yeah, we got. Our group got the same thing that's written up there.

Angie: Okay, Jack, I think we...I think that the majority of the groups agree that what's on the board is correct. And we only have four minutes so.

[08:53]

Jack: Does anyone...I mean...people understand what's going on now with this?

Sandy: No. Can someone...?

Jack: Yeah, so, Adam, can you come up real quick and explain it? Michelle is writing it out now so Adam is going to explain the same thing. Explain it one more time.

Adam: I'm going to go through explaining it with a different method. Say if we have a hundred dollars and we want to find 93% of it. To do that you have to do that and multiply by .93 and you get 93 dollars, 93% of a hundred dollars, right? But what we're given is we end up with a hundred dollars and we have to find what result...what you have to take the 93% of to get that hundred dollars. So you have X times .93 equals 100. And then you solve for X and you just get X equals 100 over .93, which is 107.

[09:52]

<Kim hands in completed sheet to Ms. Gallagher.>

Ms. Gallagher: Thank you.

Kim: The back is the work...uh, the work is on the back.

Ms. Gallagher: Okay.

Joe: Did I say that?

Dan: Wait, listen to this.

Joe: Okay, so if you're taking 93% of each reaction, and we're trying to find what we began with, then we' obviously have to have more of what we began with than less of it. If we're gonna take 93% of it, then we're going to have less than needed to go through the reaction and get the result. You're gonna need more of it in the first place.

Dan: Where's the thing?

Angie: She's already handed it in.

Kim: I already turned it in.

Angie: We turned it in.

Kelly: Did you say we should end up with more or with less?

Joe: You should end up with more 'cause it's going backwards.