

# *Biology of* HUMAN

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## **CLC Microbe Maniacs Science Reporter: Evaluation Summary and Compilation of Weekly Write-ups**

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# CLC Microbe Maniacs Science Reporter

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## *Evaluation Summary and Compilation of Weekly Write-ups*

### **Introduction**

The Biology of Human (“BioHuman”) project, funded by the National Institutes of Health (NIH) Science Education Partnership Award (SEPA), focuses on helping youth and adults understand themselves by exploring scientific principles that underlie modern research in human biology. Currently in its third year of a five-year grant, the project is creating innovative outreach materials for youth, educators and librarians.

One project goal is to generate greater interest in biomedical careers, particularly among youth. “Microbe Maniacs Science Reporter” is one in a series of a semester-long science-themed afterschool clubs funded, designed, facilitated and staffed by the BioHuman project and offered through the local Community Learning Center at a public middle school. This collaborative outreach effort serves multiple purposes, not only providing rich, hands-on science experiences for participating youth, but also providing the project with an age appropriate target audience to trial test project deliverables to get relevant timely feedback to make modifications.

Microbe Maniacs Science Reporter was offered once a week afterschool during Fall 2015 at a local, Title 1 middle school. Each session was 75 minutes, 4:15-5:30PM, and the theme of the club content was based on the following premise: “Educators have long used storytelling to stimulate students’ critical thinking skills across and within disciplines, demonstrating an improvement in comprehension and logical thinking, enhancing memory, and creating a motivation and enthusiasm for learning. In addition, research from cognitive scientists and developmental psychologists has confirmed that the human brain relies heavily on stories as a primary road map for understanding, making sense of the world, and remembering. Within science, storytelling allows learners to experience the how and why of scientific inquiry, including the intellectual and human struggles of the scientists making discoveries.” (*Small Matters*, NSF CAISE Newsletter June 2014). In the flyer promoting this club, students were invited to, “Learn the tools of science reporting as you explore microbes, viruses, and infectious disease. Use audio, video, social media, and new technology to construct stories and create media projects.”

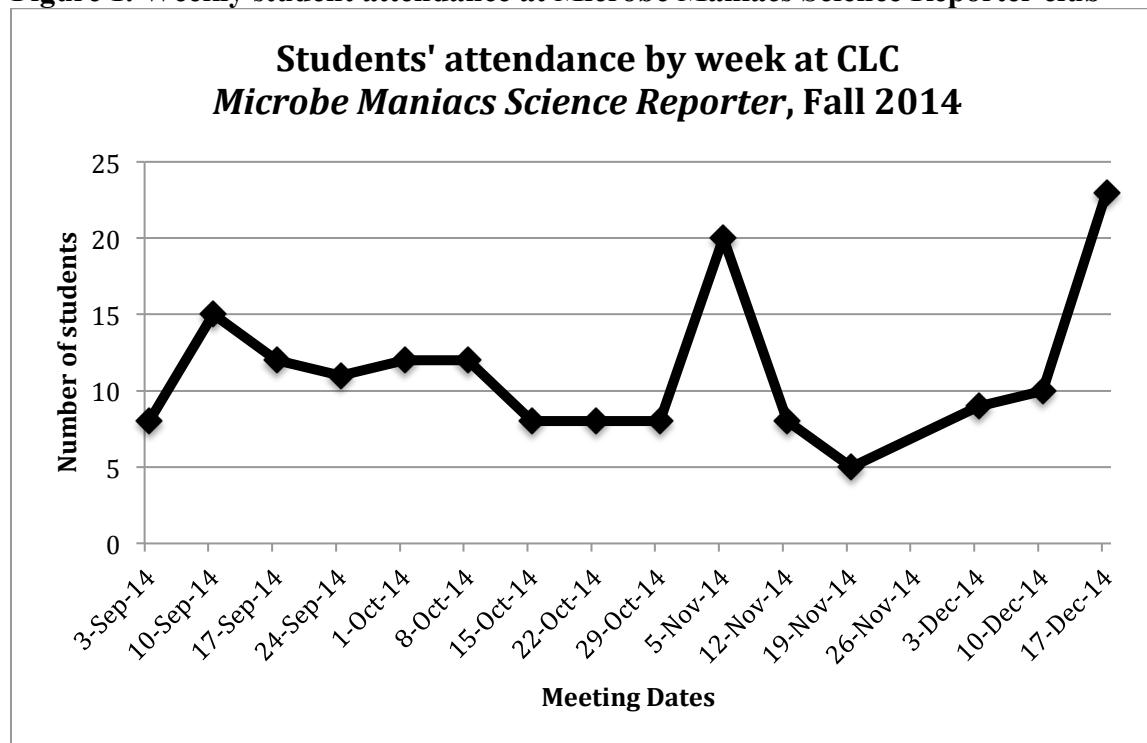
### **Purpose**

This report is designed to serve as documentation about the club participation, activities, and weekly facilitator feedback, and to provide some evaluative information about the impact of the club. The first section of this report describes the student participation in the club and then summarizes the findings from a brief small-scale qualitative evaluation. Next, the weekly summaries of the club meetings are included in their entirety. These include a summary of the weeks’ activities, attendance information, reflections and comments of the lead facilitator, and the written feedback from all the participating facilitators.

## Participants

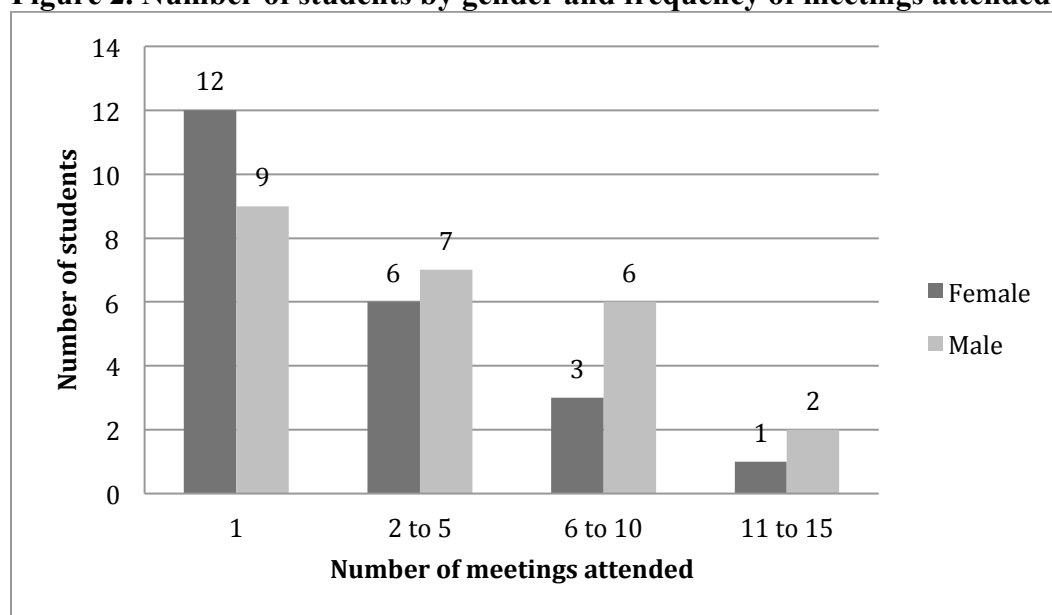
The Community Learning Center (CLC) afterschool club *Microbe Maniacs Science Reporter* met 15 times during the fall semester of the 2014-2015 school year. Weekly attendance ranged from five to 23 students with a mean attendance of 11.3 students (with weekly averages of: 6.6 male, 4.6 female; 4.9 European American, 1.3 African American, 1.5 Middle Eastern, 1.7 Hispanic, 2 multi/bi-racial), and median attendance of 10 students (see Figure 1). A total of 46 different students attended the club, with 21 students attending just one meeting and 12 students attending 6 or more of the meetings (see Figure 2).

**Figure 1. Weekly student attendance at Microbe Maniacs Science Reporter club**





**Figure 2. Number of students by gender and frequency of meetings attended**



## Evaluation

A small-scale evaluation was conducted during the last few club meetings to gather some detailed information from club participants. The goal of this data collection was to better understand student participants' views on the club, its impact on them and how, if at all, participation changed their views on science and/or technology. This evaluation is primarily summative, to help understand something about the impacts of the club on the youth involved. However, findings may also help guide future product development and outreach efforts.

## Questions

Questions guiding the evaluation were:

- What aspects/activities were most memorable and influential for the students?
- How, if at all, has participation in the club changed their view of technology?
- How, if at all, has participation in the club changed their view of science?

## Methods and Participants

Qualitative information was gathered through brief individual and group interviews, with 5 students participating in individual interviews (all of whom had participated in at least one-third of the club sessions), and over 20 students involved in a classroom discussion about the club that took place during the last club meeting. Students participating in the evaluation ranged from 6<sup>th</sup> to 8<sup>th</sup> grade, and included both male and female students.

## Evaluation Findings

### Individual Interviews

In the individual interviews students were first asked what they liked “best” about being the afterschool club and why. All the students mentioned the technology as one of the things they

liked best, with a few naming the 3D printer and Oculus Rift (although given the timing of the interviews, which occurred during the club session where these technology tools were being used by the students, may have influenced their responses to this question). In particular, one student noted that they “got to do a lot of things other clubs can’t do, like the 3D printer.” Some students focused on the science aspects of the club, such as doing experiments, applying science to “everyday things or rare things,” and being inspired by scientists. Others cited the variety of experiences that the club provided, including drawing comics, going on a field trip to the UNL College of Journalism, and seeing the Red Elephant video about the impact of AIDS in Africa.

One theme running through the semester was how to tell a story using technology, so we next asked the participants how using technology helps to tell a story. Although one student claimed technology doesn’t help to tell a story, the other students replied that technology can help you make things, like on the 3D printer, and record things, “like how the world evolved through videos...and compare it to new events” and also helps provide proof of a story. One student talked at length about the benefits of technology, and claimed books were “overrated” and “out of the picture” now. S/he explained, “The internet is a faster way to distribute information. Technology has really helped people become successful. Say, for instance, all the way back in 1998, this school would still have books, no advanced technology. We’d have to carry huge bagfuls of books, study from books, and everything would take even longer. If you have a computer, you can actually look it up online instead of going to the library and checking out book after book after book. The internet has all the information you need.”

When probed for the “best” piece of technology they got to see or use in the club, a couple students named Oculus Rift, saying that it was fun and you could just move your head to use it. A couple students named the 3D printer because it made real life objects and “it costs a lot.” One student said s/he really liked the field trip to the university and doing different activities in front of the camera, remarking, “I’d never had experience in a real newsroom before.”

Students were asked if they were surprised by any of the technology used in the club. Two of the five individual respondents said they were not, but the other three indicated they were, and named Google Glass and Oculus Rift. These tools were different than they thought they would be, for example, that in Oculus Rift it’s “like you’re in a real world and doing stuff.”

When asked directly, all respondents but one claimed that participation in the club had changed their ideas about science, and one student also thought that the club had changed his/her ideas about technology. Responses included the following comments:

*I didn’t think [scientists] could use so much technology, like going to find a fossil, like putting it in Oculus Rift and watching what you did.*

*[It changed my ideas about] how a scientist might do his work – not just go do an experiment, but might need to do research, look for other sources and use other scientists. So scientists look at other things to come to a legitimate reason.*

*[I learned that] scientists do more than just find discoveries. Like Red Elephant, [they] actually went out and heard people's stories. I learned scientists do more than just cure diseases, like they actually discover them, too.*

When asked if there any thing about the club that they didn't like so much or wanted to change, most respondents said there wasn't anything they didn't like. One student did say that the "reporting dragged out a bit. It was a nice experience, we just spent a bit too long on it." Overall, however, this student thought the club was "really nice for people who like science."

### **Group Discussion**

At the wrap-up meeting, the evaluator asked the group as a whole, "how is this club different from science class?" Students had a variety of responses, indicating that both the content and the format differed from their typical experiences in school science. And, it was as much about what was included, as what was not included.

*"We got to use more technology than just a computer."*

*"We got to do art, make comics. And we like comics."*

*"No homework."*

*"No tests."*

*"We got to play games."*

*"We got to actually tell stories."*

*"We were asked our opinion."*

*"It's more fun."*

*"No lecturing – don't have to sit there while the teacher goes on and on."*

### **Discussion**

Participation in afterschool informal clubs means students choose whether or not to participate, and this may depend on many factors, not all within the control of the youth, including access to transportation, responsibilities at home, homework, and other activities. The wide variation in consistency of participation reflects this reality of afterschool club attendance. Although the club activities were sequenced to provide an experience around science reporting that developed over time, they were also necessarily designed to be understandable and enjoyable as independent units.

Students involved in the club reacted to it in different ways. Most reported enjoying the technology they used, and also doing things with science. They appreciated being able to see and do things to which they would not otherwise have access, like visiting UNL, using a 3D printer and Oculus Rift, and learning more about what scientists actually do. Students liked the informal nature of the club, with no homework or tests and the different activities that exposed them to new ways of interacting with science and with technology. Some students articulated how their ideas about science, scientists and technology were influenced by their experiences in the club. Their comments provide evidence that the club broadened students' views and helped enrich their conceptions of what science is by engaging them as "Microbe Maniac Science Reporters."

# Weekly Summaries

## Week 1

**Community Learning Center Club**

**University of Nebraska Museum SEPA grant BioHuman**

**Activity Report 09032014**

**September 3, 2014; 4:15-5:30pm**

**Middle School, Room 126**

**BioHuman staff:** Adam Wagler, Amy Spiegel, Sara LeRoy-Toren, Robert Vavala, La'Risa McLennon, Kellie

**Student Participants:** 7 Students: 4 male, 3 female

**Special circumstances:** This was the first day of our club and 3 students who signed up for the club were not in school that day.

### Activities:

The club was opened with introductions and Dr. Spiegel's evaluation overview, and the parent opt out forms were distributed. **"Dumb Ways to Die"** a public health campaign by Metro Trains in Melbourne, Australia was played for the students and discussed briefly. The students reacted well to the video, were attentive and willing to engage in discussion and contribute ideas to the discussion.

"Who, What, When, Where, How and Why", a serial writing game, was played with the entire group. Adam read the completed stories to the group. The students were divided into 2 groups, and teachers rotated between the last 2 activities following:

"Story Telling with Apps" was playing the app for "Dumb Ways to Die" and was very popular with the students. Adam was able to bring iPads and we had enough for each group to play. The students asked good questions and appeared enthusiastic about the activity. Robert had prepared well for this, and led the activity for this group.

"Technology Focus Group" was led by Adam, and the students were happy to join in with their thoughts. The exchange between Adam and the students was thoughtful and the kids showed good insight and were willing to share. The comments made by the students are included in several teacher comments and in observations made by Dr. Spiegel.

### Assessment:

The day went very well. The activities were appropriate and the students were comfortable and receptive. Individual student participation was very high. Student numbers may increase next week as 3 students who signed up were not in school that day. I asked the students if they liked the day, and they indicated "yes", so I suggested that they could invite their friends. Mr. Mack is also still collecting sign-up sheets from parents. The support from the team was good in terms of clarification, redirection and focus. The activities we did not fit in can be used on future dates as needed. We discussed the need to have activities available sooner for teachers so we can prepare, and will meet on Monday, September 15<sup>th</sup> to discuss upcoming sessions.

Attached: Facilitator feedback

**Microbe Maniacs Science Reporter, Afterschool CLC**  
**3 September 2014**  
**Facilitator Feedback, Summarized by Amy Spiegel**

**Student comments:**

- “I’m here because I like small stuff.”
- “I like this game!”
- asked about what technology they might play with
- “I like science”
- “I did not sign up for this. Mr. Mack made me come.”
- “I don’t have a computer.”
- “I’ve always loved science”
- students suggested some other ways to tell stories – use art, or TV
- “would love more apps like this to go with different things”
- “how can I download this?” [app]

**What worked well with the activities:**

- What When How Why etc was good ice breaker activity
- Lots of laughter while playing the app.
- They understood that the app and video both told a story – the same story in a slightly different way.
- They all liked the game better than the video.
- 2 of the 7 had played the game [prior to club]; none had seen the video before.
- Students were very interested in the pictures with technology they don’t normally see (google glasses, oculus rift, 3D printer); They liked picking out technology (from the pictures) that they liked or would like to play with
- Focus group worked well with photos to get them talking about technology and imagining how they can use it to learn and tell stories; Students were engaged talking to Adam about their interests
- Good transitions from story in groups to groups with iPads
- Switching with groups, multiple activities was good.
- Small groups were good.

**What changes would you recommend?**

- We need to stop them between games of the app to discuss ways to tell stories. I did that with one group and it worked well. I tried to talk with the other group while they played and it was more difficult to draw things out of them.
- Use bitstrips (if time allows) Not needed today, maybe keep in mind when students create own stories later, or prez!
- Need to have instructions for activities to teachers sooner, but some quick organization, skill of team, and small numbers made the activities work.
- Activities were good/ well-received.
- If we have smaller groups, we will need to make sure there’s enough to do.
- A number of students did not have their devices with them, so we need to figure that out; Technology – do we need to bring them all the time?

## **Week 2**

**Microbe Maniac Science Reporter**

**Community Learning Center Club**

**University of Nebraska Museum SEPA grant BioHuman**

**Activity Report 09102014**

**September 10, 2014; 4:15-5:30pm**

**Middle School, Room 126**

**BioHuman staff:** Adam Wagler, Amy Spiegel, Sara LeRoy-Toren, Robert Vavala, La'Risa McLennon, Kellie

**Student Participants:** 15 students: 8 male, 7 female

8 Euro Americans Students

2 African American Students

2 Middle Eastern Americans

2 Hispanic/Latino American

3 Multi/Bi Ethnicity American Students

**Special circumstances:** Students were brought to the classroom earlier, which helped with getting started on time. This went well.

### **Activities:**

**MMSR** Club began with a greeting and asking students to think about what big stories about disease were in the news. Members of the NET film crew for Red Elephant were introduced, including Christine Lesiak, producer; Ralph Hammack, videographer; Erin Green, sound engineer. The video, "Red Elephant was viewed" and the students and team discussed the video and talked about what happened on the journey.

The NET team brought the video equipment they took to Zambia to do the video, and demonstrated the camera and sound gear. Students were invited to look through the camera lens, hold the mic boom, inspect the light set and ask questions. After that, the students were invited to be interviewed in the same way the young people at Red Elephant had been, and all but one participated. The answer and thoughts shared were impressive and touching. The NET crew will make CDs of the interviews for each student.

The day ended with a brief wrap up of activities and a huge Thank you! for the NET film crew.

### **Assessment:**

This club day was well attended, and the student participation was very high. There were several new students, as well as a student returning from last year. This is a day of the week (Wednesday) with a lot of competition for student time (athletics, other), so this attendance was very good. The activity was enthusiastically received and allowed the students to learn and to express ideas and information about their interests and concerns. Club staff was able to learn more about our student members that will help in planning activities useful and meaningful for them. This group of students comes from a number of different countries, speak different languages including Spanish, French, Russian and Ukrainian, and live in a variety of circumstances.

The NET team provided an exceptional experience for all present, and highlighted the diversity of this group and the ability to be inclusive in our club and our lives.

We will meet as a teaching team on September 15 to debrief this experience and plan for the next month of club activities.

**Microbe Maniacs Science Reporter, Afterschool CLC**  
**10 September 2014: Red Elephant with NET**  
**Facilitator feedback, summarized by Amy Spiegel**

**Student comments:**

- “What does ‘ebola’ mean?”
- “Is ebola like AIDS?”
- “Why do they call [the organization] ‘red elephant’?”
- “Where was that place [Red Elephant], inside or outside the city?”
- “Do only mothers and fathers get the disease [HIV AIDS] or do children get it too?”
- “Do the kids always get HIV from their mom?”
- “Do all people die from AIDS? Or is there a cure?”
- During video, one student noticed that the Zambian kids weren’t wearing shoes.
- “Oh cool! It [the camera] is like the ones they use to make movies!”
- “How much does all of the [recording equipment] cost? -- Ahhh, holy jesus!”
- “How many days did you stay there [in Zambia]?”
- “Did you do some fun things there [in Zambia]?”
- “Did you learn to dance like in the video?”
- “Why is it grey when you look through the camera?”
- “What was your budget for this [trip to Zambia]?”; “How much did [travel] cost?”
- “Can we watch the other video you made [from Zambia footage]?”
- “Whose voice is on the video?”

**What worked well with the activities:**

- Asking about news stories and how students get their information was a good way to introduce the NET group.
- The video seemed to hold the attention of most students; students enjoyed the video.
- There were wonderful student questions; Christine commented during the Q&A, “You have some great questions! Like [you are in] high school.”
- Seeing and exploring the equipment was appealing to the students; Kids loved looking through the camera and adjusting focus; touching and interacting with the different equipment was a great experience for the students.
- Wearing headphones and listening to sound through the mic made their eyes light up and created huge smiles.
- Students enjoyed learning more about the trip to Zambia, and some of the details about traveling there.
- The ones who sat in the chair and were interviewed really enjoyed the experience; they liked being able to share about themselves.
- Three or more of the kids would not have gone on camera if Kellie had not helped them by asking them questions to prove to them that they could do it, and letting them rehearse and get confident.
- Students were excited about a video being made of their brief interviews, and were eager to know when it would be done.

**What changes would you recommend?**

- When asking students what science stories they’ve heard in the news, have students discuss with a neighbor. Some students won’t volunteer, but they’ll share in small groups.
- Nothing! Really fun day!

### **Week 3**

**Microbe Maniac Science Reporter  
Community Learning Center Club  
University of Nebraska Museum SEPA grant BioHuman  
Activity Report 09102014**

**September 10, 2014; 4:15-5:30pm**

**Middle School, Room 126**

**BioHuman staff:** Judy Diamond, Amy Spiegel, Sara LeRoy-Toren, Robert Vavala, La'Risa McLennon

**Student Participants:** Total: 12 Students

5 Euro Americans Students

2 African American Students

2 Middle Eastern Americans

2 Hispanic/Latino American

1 Multi/Bi Ethnicity American Students

**Special circumstances:** Students arrived slightly early, this aided in signing in. One student arrived late due to soccer practice. One student left (crying) after a discussion with peers concerning evolution.

#### **Activities:**

**MMSR** Club began with a greeting and asking students if they read comic books. All indicated interest and they were told that today we needed their expertise in reviewing a comic book about microbes.

Draft copies of "Occupied" were handed out and the students seemed interested and excited. Worksheets with categories (Like, Don't Like, Other Comments) were distributed to each student along with pencils. The comic was projected on the screen in front of the classroom, and read to the students. Although they had been advised that they could read on their own, most followed along with the reading while looking at their own copy. Students were engaged, and were consistently interested and recording their thoughts.

When most students appeared ready, the group broke into 2 groups of 10 to discuss their ideas. Many of these comments may be found in the attached "Comment" section. Responses were numerous, well observed and supported by the students. After considerable discussion, a rating form for the "Occupied" comic was distributed and completed by the group members.

Each student received a new version of the Microbe Maniacs Sticker Book to compare with his or her comic, and a small amount of time was spent doing this and continuing the discussion. Students continued until the end of the time, and some stayed to help clean the classroom.

#### **Assessment:**

This activity was very well received by the students. The club member input was of a very high level, well observed and supported, impressively so. The students were actively engaged (hands-on, minds-on) for the entire time. The BioHuman staff had been concerned that the students might be disinterested, and this could not have been further from the case. In reflecting on the prior meetings, as well as this one, it appears that the material, the connections with the group and individual students and the continuing work with Middle School CLC are creating a positive learning community for the club members and the BioHuman project.



**Microbe Maniacs Science Reporter, Afterschool CLC**  
**17 September 2014: Student Feedback on Occupied Comic**  
**Facilitator feedback, summarized by Amy Spiegel**

**Student comments:**

- “Cool – love comics!”
- “Oooh – we did this!” [cotton swab activity depicted in comic]
- “Look, it’s the tree of life!” [while reading comic]
- “Ew, what is this nasty thing?” [hypha in comic]
- “are they [microbes] real?”
- “how do bacteria move?”
- “what are the ones [microbes] in the body called?”
- “are they like AIDS?”
- “the comic was a cliff-hanger”
- “What? It didn’t make sense to me” [after hearing comic read]
- “I liked it except when are you guys going to make the 2<sup>nd</sup> one because I want to know what happens next”
- “I like this!”
- “when will this be published?”
- “will it be in stores?”
- “I like this comic!”
- “This is awesome”

**What worked well with the activities:**

- Students were very attentive during the reading, and followed along closely with their own copies, except for one [level 1 ELL] girl, who paid close attention to the reading facilitator and the comic on the screen; The students seemed to follow along when the comic was read.
- Asking questions of them, probing and bouncing ideas off each other.
- Discussion and forms were good. Participation was high. Student observations about comic were acute.
- The interviews brought out many ideas. I think that part of the activity could have gone on for much longer.
- The kids loved sharing their opinions even more than they enjoyed the comic.
- Amy, Rob and La’Risa did a good job with leading the discussions – one student had a hard time – crying – left with Troy. Student had been observed making great observations. Had a disagreement about evolution with the rest of the group.
- 

**What changes would you recommend?**

- We needed more facilitators (or smaller groups or both) and needed to record “interviews” with kids because they had so many ideas and were thinking so fast that I could not get all of their comments written down.
- We passed out the sticker books to use at the end in conjunction with the comics – this was not specifically planned, but worked out well.
- Was there a missing comic page?

## **Week 4**

**Microbe Maniac Science Reporter**

**Community Learning Center Club**

**University of Nebraska Museum SEPA grant BioHuman**

**Activity Report 09242014**

**September 24, 2014; 4:15-5:30pm**

**Middle School, Room 126**

**BioHuman staff:** Sara LeRoy-Toren, Robert Vavala, La'Risa McLennon, Adam Wagler

**Student Participants:** Total: 11

5 Euro American Students

2 African American Students

2 Middle Eastern Americans

1 Hispanic/Latino American

1 Multi/Bi Ethnicity American Students

**Special circumstances:** Students arrived on time. One student arrived late due to soccer practice.

Students were very energetic on this day, and school staff mentioned that it had been a busy day. Student who left in previous club meeting was back, and able to remain for the entire club meeting. Troy Mack and Sara discussed strategies for this student in event of another melt down, but no intervention was necessary.

### **Activities:**

**MMSR** Club began with a greeting and asking students if they had experienced influenza or had friends/family who had been ill. All indicated that they had experience with flu, and many shared stories. Vaccination was discussed and about half said they had been vaccinated for the 2014-15 flu season.

Students were told that we would be looking at comics as a storytelling device, and would be looking at influenza stories told in the WOV comics and in The Flu Pandemic of 1918 (Krohn, Katherine E., illustrated by Hall, Bob, et.al., Capstone Press, 2008). They were also introduced to Bob Hall who came to observe a portion of the club, and told that he would be coming next time to work with them on telling stories by making cartoons.

The WOV comics were distributed and students watched "Frozen Horror". They were shown a brief preview of the first app on the video, and told that they would get to use these apps after the video. Students followed along with the video and their comics. Although 2 of the students indicated they had seen the "Frozen Horror", they all appeared engaged.

Following the video, the group broke into 2 groups. Robert Vavala supervised the app activities with iPads and the other group read the The Flu Pandemic of 1918, filled out a comment sheet to guide their reading and discussed the book with La'Risa and Adam. After 20 minutes the groups rotated to the other activity.

Students continued until the end of the time, and some stayed to help clean the classroom.

### **Assessment:**

This activity was well received by the students. The students were actively engaged (hands-on, minds-on) for the most of the time. They responded in a more complete manner to the WOV material and the apps than to the Pandemic comic. This may be due to previous familiarity with the WOV material, the intriguing nature of the apps and the ease of presentation with the read projection of the "Frozen Horror". The Pandemic comic is longer with more reading and more facts. There were a number of questions about this comic, and in reflection, we could have spent an entire club meeting on this book. Overall, the students were active and happy participants. 2 students stayed after to help clean up the room. Many smiled and said, "see you next time" as they left.

**Microbe Maniacs Science Reporter, Afterschool CLC**  
**24 September 2014**  
**WoV Comic & App “The Frozen Horror” & *The Flu Pandemic of 1918***  
**Facilitator feedback, summarized by Amy Spiegel**

**Student comments:**

**(about “The Frozen Horror”)**

- (p 56) “Why is the family blue and the child is in color?”
- (p. 58) “Why does the story end this way?”
- “Why are there no houses on top of the mountain?”
- (p. 53/54) “How do they see whatever they want to see [duck, pig, etc.]?”
- “I’m not impressed. This is boring.”
- “What does ‘isolated’ mean?”
- “We had that one in Iraq. We had to kill all the chickens so we didn’t get it.”
- “Is this really real?”
- “Oooh, that’s nasty” [in regard to the image of virus]
- “It’s great.”
- “It takes you into the ocean”
- “I want to play the ‘Dumb Ways to Die’ app”
- “I don’t like it narrated.” [however, others liked the narration]
- “Why doesn’t it say what these are?” [some parts of virus image not labeled]
- “I think it’s better with narration because then you can tell what the different parts are.”

**(about *The Flu Pandemic of 1918*)**

- “Is this story real?”
- “Is the Spanish flu airborne?”
- “What are those [microvilli] on the picture of the cells?”
- “Both books are boring on the same kind of level.” Then student closes book and lays head down.
- “Wasn’t this pandemic Hitler’s idea?” “Is this about Hitler?”
- “Can we keep the 1918 Flu Pandemic?”
- “Do I have to read this?”

**What worked well with the activities:**

- Realistic
- Some kids related to Elliot Elementary school
- Students preferred WoV app to the comic.
- Liked interactive parts of app. Liked playing with the apps; The apps were good; All students seemed engrossed in WoV apps.
- Students were focused. Some said they had seen the comic, but watched it when it was played.
- The Flu Pandemic book was read by all – there were comments, but the app sounds made it difficult to hear.
- Talking with them about the 1918 book – they thought it was cool, wanted to read more.
- Talking with them about story telling – color; technology & clothes shows era the story is set in

**What changes would you recommend?**

- Some wanted the 1918 Flu book read to them.
- I don’t know how we could do it differently, but with 4 kids simultaneously working on iPads with narration, the sound was distracting for the other group; Perhaps turn down the app volume; Apps competing with books was tough, noisy & active.
- It was difficult to get students to address/answer questions because they were so into the WoV apps.

## **Week 5**

**Microbe Maniac Science Reporter**

**Community Learning Center Club**

**University of Nebraska Museum SEPA grant BioHuman**

**Activity Report 10012014**

**October 1, 2014; 4:15-5:30pm**

**Middle School, Room 126**

**BioHuman staff:** Sara LeRoy-Toren, Robert Vavala, La'Risa McLennon, Adam Wagler

**Student Participants:**

3 Euro American Students

2 Middle Eastern Americans

2 Hispanic/Latino American

3 Multi/Bi Ethnicity American Students

Total: 10 Students

**Special circumstances:** Students arrived on time. News reports and school staff indicated that a 6<sup>th</sup> grade student had been struck and severely injured by a truck on the way to school that morning. The level of student awareness of this incident was not determined, but Sara decided that the team would not disclose any awareness of this to students. Troy Mack and Sara discussed strategies for talking with students, but it was not necessary. We will need to be aware for the next session.

### **Activities:**

**MMSR** Club began with a greeting introducing Bob Hall, comic artist for a number of publications, including the drawings for the Batman comic and The Flu Pandemic of 1918, which was read by students during the previous week's club meeting. Mr. Hall began by asking students if they liked comics (all raised their hands and said they did) and asked if the students liked to draw. Only a few raised their hands. They were then asked if they liked draw, but did not like their drawings, and many more raised their hands. Mr. Hall then demonstrated drawing a human figure on the whiteboard, and asked the students to draw a figure. During this time, the students enthusiastically observed, asked questions and participated.

Mr. Hall then worked on visual story telling with the students, taking them through the elements of scene setting, scene focus and character visualization. He explained that an artist needs to determine the most important parts of the story to depict, lest the comic panels become too numerous.

The MMSR club finished its time with the students drawing their comics with individual attention from Mr. Hall.

### **Assessment:**

The club members were enthusiastic participants today. They were actively engaged; asking questions, drawing, predicting behaviors of cartoon character. All responded very well to Bob Hall, and he managed the group with great skill. He was resourceful and generous, encouraging the more diffident students. Once again, 2 students stayed after to help clean up the room. Many indicated their enthusiasm to have Mr. Hall return next week.

**Microbe Maniacs Science Reporter, Afterschool CLC**  
**1 October 2014**  
**Bob Hall, Illustration workshop**  
**Facilitator feedback, summarized by Amy Spiegel**

**Student comments:**

- “You draw Batman!?”
- “Boys can have long hair.”
- “Some crazy boys wear dresses.”
- [What are gloves without fingers?] “Mittens”
- “Why do you use gutters?”
- “Don’t use our eraser? What?”
- “I need an eraser”
- “Can I draw a shark? That eats people?”
- “Can I go get a good pencil?”
- “Where’s Robin? He’s my favorite.”
- “What happens to the Joker after Batman is done?”
- [What is Joker doing?] “Making up a plan to rob a bank!”
- [What is the Joker’s lair like?] “Creepy and evil”
- “But Batman doesn’t do it – it doesn’t make sense”
- One student had to leave early, and her reaction was “Awwhh” because she was enjoying the drawing.
- “Is my lettering good?”

**What worked well with the activities:**

- Having Bob draw in front of everyone at the board; students paid close attention to him.
- Students enjoyed being able to help Bob tell the story – coming up with ideas to describe things, being part of the process; He did a great job building the story from student ideas; Even the ELL students (with limited English) volunteered ideas.
- Bob was able to revise his drawing based on kids’ suggestions.
- All students enjoyed drawing their own “comics”
- Bob walked around and looked at all the kids’ drawings and gave them ideas – they all reacted very well to the individual attention; Bob was able to answer every individual question/suggestion.
- Using comic drawing paper [was good].
- The timing of the activities – steps, breaks, work time, questions.
- Emphasis on telling a story [worked well].

**What changes would you recommend?**

- We need to get some better pencils for next meeting.

## **Week 6**

**Microbe Maniac Science Reporter  
Community Learning Center Club  
University of Nebraska Museum SEPA grant BioHuman  
Activity Report 10082014**

**October 8, 2014; 4:15-5:30pm**

**Middle School, Room 126**

**BioHuman staff:** Sara LeRoy-Toren, Robert Vavala, Adam Wagler, Judy Diamond, Amy Spiegel

### **Student Participants:**

6 Euro American Students  
2 Middle Eastern Americans  
2 Hispanic/Latino American  
2 Multi/Bi Ethnicity American Students

Total: 12 Students

**Special circumstances:** Most students arrived on time. Several students arrived 15-20 minutes late, after Bob Hall's introduction of our activities. 2 students were relocated to other rooms due to their need to do homework. The center of the whiteboard has been made unusable due to the installation of a large TV screen, so Bob Hall had to use a camera system to demonstrate drawing to the students.

### **Activities:**

**MMSR** Club began with a greeting and welcome for Bob Hall, who returned for a second part of his workshop. The activities from the previous club meeting were reviewed and students were asked to think about the drawings they had worked on.

Bob then asked students to think of a story of their own that included a microbe. He handed out 4 sheets with panels printed and instructed the students to make a title page on the first sheet and tell the story on the following sheets. He demonstrated a title page with its components on the camera/TV and then told students they could fill in the remainder of the sheets as they saw fit to tell their story.

The MMSR club finished its time with the students drawing their comics with individual attention from Mr. Hall. He went from student to student offering suggestions and encouragement.

### **Assessment:**

The club members were engaged participants again, today. They asked questions, drew and wrestled to make choices about their stories. Once again, all responded very well to Bob and he managed the group with great calm and equanimity. He was resourceful and generous, encouraging the more diffident students. A number of students showed enthusiasm in regard to drawing their own story and being allowed to choose the storyline.

It was evident that students were learning to deal with their ability to make choices in activities and products; an element not often allowed in the regular school day. As the semester moves ahead, hopefully this will lead to more confidence on the part of the students as they self-direct their club activities.

3 students stayed after to help clean up the room.

**Microbe Maniacs Science Reporter, Afterschool CLC**  
**8 October 2014**  
**Bob Hall, Illustration workshop Part II**  
**Facilitator feedback, summarized by Amy Spiegel**

**Student comments:**

- “Do we have to have a hero?”
- “What if you don’t like your hero?”
- “Can the villain win?”
- “Does it have to have a microbe? Can he just appear once in the back?”
- “Can we put a face on a microbe?”
- “What if when the microbe dies, everybody dies?” [possible plot line]
- “Is this good?”
- “Can I make a cute microbe?”
- “I’m going to draw a beret. It’s French...it’s a French evil microbe.”
- “I’m going to blow everything up!”
- “Does there have to be talking people?”
- “Do we have to draw the whole background?”
- “How do I draw someone brushing their hair in the mirror?”
- “How do you take a photo?”
- “Can I take this home to finish it?”

(about the 3D model that Adam brought to show)

- “How did you make this?”
- “Can I make something in 3D?”
- “Can you print something for me?”
- 

**What worked well with the activities:**

- Bob’s activity was good. They seemed into drawing and putting a story together.
- Individual story telling worked well.
- Students, for the most part, were very focused and enjoyed working on their own stories/comics.
- They liked taking photos of their work and each other.
- Most everything.

**What changes would you recommend?**

- The iPad display at the front was having trouble during Bob’s demo
- Figuring out if they can continue with their drawings and work.

## **Week 7**

### **Microbe Maniac Science Reporter**

### **Community Learning Center Club**

### **University of Nebraska Museum SEPA grant BioHuman**

### **Activity Report 10152014**

**October 8, 2014; 4:15-5:30pm**

**Middle School, Room 126**

**BioHuman staff:** Sara LeRoy-Toren, Adam Wagler, Judy Diamond

**Guest Speaker:** Dr. John West

#### **Student Participants:**

3 Euro American Students

1 Middle Eastern American

1 Hispanic/Latino American

3 Multi/Bi Ethnicity American Students

Total: 8 Students

**Special circumstances:** Students arrived on time. 1 student arrived late (this student typically participates in soccer practice before this club, but has routinely attended MMSR this semester).

#### **Activities:**

**MMSR** Club began with an introduction and welcome for Dr. John West. Dr. Wagler explained the microphone/recording devices the students would use today to record their interviews with Dr. West and practice for their own recording session next week. Paper and pencil had been passed out at the beginning of club for the students to write down what questions they might have for Dr. West. Dr. West told the class that he was a virologist and works in Africa. He explained that he studies HIV and showed the students the hazmat gear he had brought for them to see and try on. He then suggested that the students come up and ask him questions and they could record the conversation. Students then experienced the trials of double gloving, wearing protective masks and donning the PPE suits. Dr. West taught the students how to put on and take off the suit, explaining the difficulties encountered by health workers. Relative contagion of Ebola, HIV, and Mad Cow disease were discussed and the students enthusiastically asked questions and recorded the discussion. Adam took the recorders back and said he would listen to the interview material and see if he should bring it back for our comic recording next meeting.

#### **Assessment:**

The club members were extremely interested in today's meeting. Many questions were asked and Dr. West patiently and clearly talked with the students. His explanations were clear and accessible to the students, and the questions asked were thoughtful (see the feedback that follows).

This type of interaction appears very positive for our club members. The topic for the day is very current, and allowed the students to process some of the information they are hearing on the news and evaluate it with an expert. The expert was able to see a group of middle school students with great potential to study science in the future. The addition of the recording microphone devices prepared the students to experience telling a story with a different sort of technology and allowed them to listen more carefully to Dr. West's answers. This day was a very positive meeting of the MMSR Club at Middle School.

3 students stayed after to help clean up the room.



**Microbe Maniacs Science Reporter, Afterschool CLC**  
**15 October 2014**  
**John West, Virologist**  
**Facilitator feedback, summarized by Amy N. Spiegel**

**Student comments:**

- “What happens when it’s [blood] on your fingers?”
- “Why do you have to throw away the gloves and clothes?”
- “What is a prion?”
- “So the protein takes up all the properties of the virus?”
- “Like incubation?”
- “How can you tell if a person has Ebola?”
- “How long do you work with a virus? When is it time to quit?”
- “How do you get these on? “[Gloves]
- “Isn’t chlorine bad for you?”
- “What if you had symptoms of Ebola, but it is really the flu?”
- “How do you get food while in quarantine?”
- “What if you want to go to the restroom?”
- “So [with] Ebola, you are bleeding out”
- “It’s disgusting”
- “Do the doctors wear the suits?”
- “Why wouldn’t the doctor be scared?”
- “How do you solve it? Is there a shot to keep you from getting Ebola?”
- “When H1N1 hit, how was that treated?”
- “What happens to you when you get HIV?”

**What worked well with the activities:**

- Putting on the bio suits and gloves; putting on parts of the hazmat suits
- Gloves were great with the fidgeters!
- Access to a scientist – they had lots of questions to ask.
- Having them record things; using the microphone/head sets; interviewing Dr. West
- Interaction with John West – ability of students to converse and ask questions freely
- Very positive day – new information, great access
- Well coordinated

**What changes would you recommend?**

- No changes I can think of

## **Week 8**

**Middle School Microbe Maniac Science Reporter**

**Community Learning Center Club**

**University of Nebraska Museum SEPA grant BioHuman**

**Activity Report 10222014**

**October 22, 2014; 4:15-5:30pm**

**Middle School, Room 126**

**BioHuman staff:** Sara LeRoy-Toren, Adam Wagler, Robert Vavala, La'Risa McClennon

**Guest Speaker:** Dr. Ford Clark

### **Student Participants:**

4 Euro Americans Students

1 Hispanic/Latino American

3 Multi/Bi Ethnicity American Students

Total: 8 Students

**Special circumstances:** Students arrived on time. We had at least 1 new student who was an enthusiastic and productive participant. He also appears to practice comic art as a hobby and understands voice in narration.

### **Activities:**

**MMSR** Club began with an introduction and welcome for Dr. Ford Clark. Dr. Clark teaches Audio Journalism at the UNL College of Journalism.

Dr. Wagler reviewed and explained the microphone/recording devices the students would use today to record their interviews with one another and practice for their own recording session with the Occupied comic later in the meeting. Students broke up into groups of 2, with one student choosing to record on his own.

Students then left the room in pairs to go to the library computer room and practice their recording voices with Dr. Clark and La'Risa. In the regular classroom, Adam continued to work with other students in pairs to explore the interview process as both interviewer and interviewee. At the end of the club time, we recapped and reviewed the day's activities.

### **Assessment:**

The club members were interested in the use of the technology and the process of recording a soundtrack for an app. Dr. Clark worked in a positive and supportive manner with the students. One particularly sensitive female was willing to explain her reading process and then read for a part in the app.

The interview process was modeled well, but might have benefitted from a bit more structure and reflection with the students. Inability to know how many/whom we might have may exert an influence on these types of interactive experiences. There are at least 2 more opportunities for the students to consider interviewing as story telling with audio recording, so perhaps this will become clearer for our club members. Some remembered our previous session with Dr. West, and did well with the equipment.

The day ended with students who were willing to help clean up and 2 stayed to ask Dr. Clark questions.

**Microbe Maniacs Science Reporter, Afterschool CLC**  
**22 October 2014**  
**Audio Production with Dr. Ford Clark**  
**Facilitator feedback, summarized by Amy N. Spiegel**

**Student comments:**

- “Are we going to be voice actors?”
- “Can we animate ourselves?”
- “I know how to do that!” [record sounds]
- “Our recordings from last week probably sounded ‘crackily’ because we were making noises by walking and things.”
- “Can friends help out with this?” [recording and the process of rehearsing sound effects]
- “Can we work with friends?”
- “That’s too fake!” [response to Ford reading]
- “Do we have to read it the exact way it is?” [i.e. read word for word]
- “I like voice acting”
- “If you hold the mic 5 inches from their mouth will you still get the pop; will it pick up all the P’s and B’s?”
- “How can I record audio without the mic?”
- “How do you use audacity?”
- “What questions should I ask?”
- “Is it recording?”
- “I don’t like reading out loud”

**What worked well with the activities:**

- Recording and working with the equipment; recording audio/interviews
- The auditions for the parts of the comics
- Teaching students about how to read with inflection and practicing with the students
- All but one student were willing to read/audition to record parts for the comic
- Most were excited about working with microphones
- The process of interviewing each other was well received.

**What changes would you recommend?**

- Perhaps some more structure
- It was a little chaotic, but the students seemed into it.
- Figuring out how to connect and work with their devices would help.
- When trying the recording devices, we could have given them random funny conversations to practice voice inflection

## **Week 9**

**Middle School Microbe Maniac Science Reporter  
Community Learning Center Club  
University of Nebraska Museum SEPA grant BioHuman  
Activity Report 10222014**

**October 29, 2014; 4:15-5:30pm**

**Middle School, Room 126**

**BioHuman staff:** Sara LeRoy-Toren, Adam Wagler, Robert Vavala, La'Risa McClennon

**Guest Facilitator:** Aaron Sutherlen

### **Student Participants:**

1 Euro American Student  
2 Middle Eastern Americans  
1 Hispanic/Latino American  
2 Multi/Bi Ethnicity American Students  
1 African American  
1 Native American  
Total: 8 Students

**Special circumstances:** On this day, students arrived in intervals. We had several new students who had not participated this semester, so needed to do some routine instructions on signing in, using their computers, etc. The students who had been chosen by Dr. Clark to narrate the "Occupied" app were present. We had several activities running simultaneously.

### **Activities:**

**MMSR** Club began with handing out and viewing the video shot by NET in September, with interviews of the students who participated in "The Red Elephant" activity. The students enjoyed watching their video, as did the MMSR teaching team.

While Dr. Clark took students to the adjoining classroom to record parts of "Occupied", Professor Sutherlen introduced the balloon tying activity to the remainder of the students. There were numerous, colored foamcore board pieces with fragments of microbe names on them: i.e., "ADENO, VIRUS, STAPH, etc. Prof. Sutherlen had inflated a number of sculpture balloons and demonstrated to the students how to tie the balloons to make whatever microbe shape the students could imagine. The students were then encouraged to make up a name for their microbes. The Microbe Sticker books were provided to each student, as well as decorative stickers to simulate surface proteins. When the group ran out of balloons, several students enthusiastically inflated a set of extra balloons to keep the activity going.

At the end of the meeting, the activities were reviewed, cookies with integral M&M "microbes" were handed out, and students were reminded to get their permission slips signed to go on the field trip to the School of Journalism, November 5, 2014.

### **Assessment:**

This day was envisioned as a microbe party before the Halloween holiday, and the students had a good time. There were good questions on the part of the students (facilitator feedback following) and reinforcement of microbe structure/function. As before, choice/decision making was an issue, but it appears our students are becoming more comfortable both asking questions and making a choice about their activity. Having the confidence to make a strategy is an essential part of STEM activities, and students have been encouraged to be more comfortable in this area.

The balloon activity was very popular, and Prof. Sutherlen was very good with the students, encouraging and helping them. Dr. Clark successfully recorded the "Occupied" voices, and participated in the balloon activity. The meeting ended with students cleaning up, happy and still asking questions.

**Microbe Maniacs Science Reporter, Afterschool CLC**  
**29 October 2014**  
**Halloween Balloon Microbes & Audio Recording of Comic**  
**Facilitator feedback, summarized by Amy N. Spiegel**

**Student comments:**

- “Can we make bad microbes?”
- “Can we make monster microbes?”
- “Like balloon animals?”
- “Can we make anything we want?”
- “How do you combine balloons?”
- “What should mine do?”
- “Can we keep these?”
- “What do we do when we finish?”

**What worked well with the activities:**

- The kids liked seeing themselves in the video recorded by NET.
- Balloon microbe activity was a hit!! -- the creation of balloon microbes and using the word tiles to create names for their creations; Definitely the balloons
- This activity inspired them creatively; Lots of room for creativity
- Naming and deciding what it [balloon microbe creation] does; They had fun thinking up names – the naming was fun once they understood the process; They had so much fun picking names out and assigning microbe jobs
- Kids had fun making multiple solutions
- Students had the chance to teach us about their microbes
- The students doing the recording all did very well – I gave them all instruction and they followed them very well.
- Recording; taking them one by one to record, nobody was distracted by friends.
- Everything – balloons, recording, cookies

**What changes would you recommend?**

- Might like to have more references for them to model ideas off of? E.g. balloon models
- None!! This was great!; None; N/A

## **Week 10**

### **Middle School Microbe Maniac Science Reporter**

#### **Community Learning Center Club**

#### **University of Nebraska Museum SEPA grant BioHuman**

#### **Activity Report 110514**

**November 5, 2014; 3:00-5:30pm**

#### **UNL School of Journalism Fieldtrip**

**BioHuman staff:** Sara LeRoy-Toren, Adam Wagler, Robert Vavala, La'Risa McClennon

**Guest Facilitators:** Professor Matt Waite, Professor Luis Peon-Casanova, Professor Adam Wagler

#### **Student Participants:**

8 Euro American Students

2 Middle Eastern Americans

4 Hispanic/Latino American

4 Multi/Bi Ethnicity American Students

2 Africa American

**Total: 20 Students**

**Special circumstances:** This meeting of Microbe Maniacs Science Reporter club was a fieldtrip to the UNL College of Journalism, and met from 3:00 until 5:30pm. The bus was later than anticipated, so students waited until 3:30 to board, and were picked up from campus at 5:00. There were more students than previous meetings of the club, some of whom had not attended this semester and some new to the club. One student was picked up from the UNL location after confusion on the part of the person picking her up. Adam waited with the student and La'Risa helped the ride provider find the UNL location. A staff shortage for CLC resulted in no CLC staff member accompanying the group on this fieldtrip.

#### **Activities:**

Adam met the bus at the front door of Andersen Hall and the group walked through the first floor on the way to the 3<sup>rd</sup> floor conference room. Students observed the radio station on first floor, as well as the video media area. In the conference room, students were welcomed and given an overview of the activities of UNL College of Journalism, and introduced to work in advertising and technology.

The students got to see classrooms, the newsroom, radio station, and 3-D printer on the way through 2<sup>nd</sup> floor and down to the basement to join Professor Matt Waite's drone presentation and demonstration. The TV studio was the next stop, where students interacted with the cameras, green screen and news desk. The students then went in groups of 10 to the control room where Professor Luis Peon-Casanova explained how newscasts were produced and aired.

Students then headed to the door to meet the bus, and backpacks with UNL College of Journalism information were given to each participant. The bus ride went well, and arrived back at TheMiddle School about 5:20.

**Assessment:** This was an exciting and informational trip for the students. They were interested in the variety of options at the School of Journalism and asked good questions. The interactive parts of the trip (video, drone demo, production room, control room) were especially well received. This was a positive part of our theme of story telling and opportunity for our students to see what happens at UNL in this department.

The student number was higher than anticipated, and the predictable challenges ensued. Having students we had not had previously and the larger number created some management complications. This can be addressed by establishing stations on future fieldtrips, if possible, and reducing the number of students in any given activity to allow them to focus more on the events at hand.

We had a good day, and the students were very positive when they departed from school as their rides picked them up.

**Microbe Maniacs Science Reporter, Afterschool CLC**  
**5 November 2014**  
**Field Trip: UNL College of Journalism Tour**  
**Facilitator feedback, summarized by Amy N. Spiegel**

**Student comments:**

- Can we be on the radio?
- Is that guy doing radio?
- That is cool!
- “Are we going to the newsroom?” After an answer to the affirmative, “Yes!” with a fist pump.
- Do you do cartoons here?
- Do students get nervous when they are on camera?
- Why are there so many TVs?
- Do people actually do the news here?
- Look – I can see me! Where is that coming from?
- Is that a green screen?
- Come over here! Do this! (Referring to “anchor” desk and cameras)
- Can I press this button?
- Can I type something on the computer?
- Is it okay to wear the headphones?
- How much does the drone cost?
- Do they make cheaper ones?
- Can you buy one? Where can you get one?
- Can anyone buy one (drone)?
- Can anyone fly a drone?
- Can I fly the drone?
- How do you get the drone to come back to you?
- If humans can’t go into a volcano then how did the drone do it?
- Do you have to take all the classes in all three majors at the college?

**What worked well with the activities:**

- The kids loved the field trip.
- Everything! The presentation of the drone, the showing of the 3D printer, Adam’s presentation of advertisements, playing with the camera, buttons and green screens.
- Seeing all the tech and hands on things
- The PPT at the beginning, the 3D printer, the cameras and technology, and the radio station all were interesting to the students.
- The presentation of various parts of the School of Journalism was interesting to many, but this was impeded by the number of students we had (rooms were smaller than would hold 22 and facilitators).
- Flying the drone around; the drone activity was the most successful activity because the kids were seated and fascinated; they were attentive and (mostly) calm in the auditorium while the drone video was shown and while they saw a demonstration of how the drone flew. They wanted to be able to actually fly the drone but, rightly, were not able to do so.
- They were quite interested in seeing themselves on camera in front of the green screen and the weather map.
- The newsroom was interesting to many because of the huge number of TV screens all tuned to different stations.
- They also liked the idea of seeing into the KRNU studio while a student host was on air. Some also found the fact that KRNU airs Husker football games exciting.
- The students were exposed to very good experiences, and the fieldtrip was successful for them, judging by their comments on the way home.

**What changes would you recommend?**

- Have the TV studio more organized
- See if students could get on the radio or record audio
- Allot more time to have them learn a little more about each area
- Smaller groups & rotations; Probably divide and conquer would work best with a group of this size: small groups at a site and rotation of the activities. There would be more opportunity for the students to experience the different things that were offered and provided more structure for management.
- We need to plan ahead for future field trips so that we can better manage groups larger than our typical attendance numbers. Planned stations and times would allow us to split up groups and keep the older kids from influencing younger ones and being influenced by their peers. The time we spent in the video room was a bit chaotic because there were too many kids and they were overly stimulated by the novelty of what they were experiencing.
- The time spent explaining what happens at the school of journalism could probably been cut to just a couple of minutes or could have been incorporated into the rest of the tour. Although I was interested in the UN-L student advertising portfolios/campaigns, I do not think the students cared much about them. This may not be entirely accurate because I did not ask them questions in this regard, it is just a feeling I got from watching them.



## **Week 11**

**Middle School Microbe Maniac Science Reporter**

**Community Learning Center Club**

**University of Nebraska Museum SEPA grant BioHuman**

**Activity Report 111214**

**November 12, 2014; 4:00-5:30pm**

**BioHuman staff:** Sara LeRoy-Toren, Adam Wagler, Robert Vavala, La'Risa McClennon

**Guest Facilitators:** Messan Amevor

### **Student Participants:**

3 Euro American Students

1 Middle Eastern Americans

1 Hispanic/Latino American

1 Multi/Bi Ethnicity American Students

2 Africa American

Total: 8 Students

**Special circumstances:** The club meeting began on time. We were fortunate to have Messan, a native of Togo, join us for this meeting. Messan was able to take time off from work to help, and his perspective was very useful for our students.

**Activities:** This meeting of Microbe Maniacs Science Reporter club was a great follow up to our field trip, allowing students to develop interviewing experience and learn to record and videotape a subject.

The students developed questions to ask their interviewees about themselves and about their experience with public health. A framework provided by Adam guided these questions.

A framework provided by La'Risa guided the questions for Messan:

1. To what extent is healthcare a human right in Togo?
2. Why is it important to look at foreign countries and how they handle health care?
3. What are the differences in how poor populations receive health care in the US vs Togo?
4. What is the role of the CDC in West Africa, primarily the countries dealing with Ebola?

Adam led a review for each group on the use of their audio and video recording devices and traveled from group to group assisting the students with their technology. The students worked hard and persevered. Interest level appeared to be high.

**Assessment:** This was a very successful club meeting. Several students that had been reluctant to interview stepped up and did great work. There was also an opportunity to see that at least 4 of the group were shooting videos at home and uploading them to YouTube. There appears to be a big interest among our regular attendees in technology, making this a very appropriate topic for our sessions and a really positive way to teach/learn about public health and microbes.

**Microbe Maniacs Science Reporter, Afterschool CLC**  
**12 November 2014**  
**Video recording/ Interviews**  
**Facilitator feedback, summarized by Amy N. Spiegel**

**Student comments:**

- They [students] all developed questions based on who they were interviewing.
  - What does a flabotomist (sic) do?
  - What is your favorite color?
  - Where are you from? Where is that?
- Can we change the settings on the camera to mess it up?
- Where is the lens cap?
- Why can't I hear the audio?
- I have a YouTube and I post videos
- It takes me about 4 hours to do setup [for video taping].
- Editing takes hours and days.
- What do all the buttons do? Can I press them?
- Does B-role stand for background role?
- My first tripod I got – I broke it.
- The first camera I got – I broke it.
- I take videos of my dog.
- So you can hear it better? (why wear headphones?) Do you have to wear the headphones?
- Can I interview her?
- We need to edit out the outside sounds and the microphone in the video.

**What worked well with the activities:**

- Structuring the questions around the interviews for each group.
- Having people to interview: Sara, La'Risa, Messan
- Connecting things to NET's visit, comic book storyboards, and audio recording
- Checklist on video-taping – can apply to individual YouTuber
- Recording
- Interview & question development
- B-role
- As with all the hands-on activities, the kids loved working with the video/audio equipment.
- They love creating their own things.

**What changes would you recommend?**

- Have quieter spaces for each group to record their interview.
- Rotating roles for video crew.
- This was a great opportunity for the kids – it would be nice to have a few more kids here for the entire time. The small groups are good but I'm wondering how we can get consistent attendance so kids get exposed to all aspects of what we are doing.
- None – this activity went well with three groups; Many thanks to Messan & La'Risa

## **Week 12**

**Middle School Microbe Maniac Science Reporter**

**Community Learning Center Club**

**University of Nebraska Museum SEPA grant BioHuman**

**Activity Report 111914**

**November 19, 2014; 4:00-5:30pm**

**BioHuman staff:** Sara LeRoy-Toren, Adam Wagler, Robert Vavala, La'Risa McClennon

**Guest Facilitators:** Levi

### **Student Participants:**

3 Euro American Students

1 Middle Eastern American

1 Hispanic/Latino American

Total: 5 Students

**Special circumstances:** The club meeting began with an irregular trickling in of students at 4:05pm, and we delayed starting due to the small number who had arrived. One student signed in and then had to leave as her parents had come to pick her up. Adam and Levi arrived with flash drives and materials for the video editing, and students had their devices, but the technology did not cooperate and only audio from the interviews conducted at the last meeting was able to be downloaded.

**Activities:** Adam began our session showing a video he had brought as an example for the students, and then explained that we would be editing our interview videos that we shot last week. The students set up their devices and Adam asked the students to separate into their interview groups to work on their videos. As expected, some group members were not present. As the downloading process was ongoing, Sara handed out 6 panel comic sheets for the students to use to organize their video edits. As time went on, it became apparent that the videos were not downloading onto the LPS devices, despite the best efforts of Adam and Levi.

Adam told the students about 3-D printing and Oculus Rift on the schedule for next meeting, and we talked as a class and as groups about the student's experience making and uploading their own videos. Sara passed out bananas and cookies, and we continued to investigate how we might solve our tech problem.

**Assessment:** While this meeting did not go as we had planned, there were positive outcomes. The students continued to show interest in the project and work on the problem of downloading their work. They discussed their own challenges when they make videos at home, and worked cooperatively and productively together. At least one student who joined us late in the semester has continued to attend and be a good contributor. The rest of the attendees have been faithful throughout the semester. All were enthusiastic about the upcoming interaction with the 3-D printer and the Oculus devices. They all stayed and helped clean up, and left with a smile on their faces.

**Microbe Maniacs Science Reporter, Afterschool CLC**  
**19 November 2014**  
**Video editing**  
**Facilitator feedback, summarized by Amy N. Spiegel**

**Student comments:**

- “Oh my gosh, what is this?”
- “Do I copy all of them?”
- “When did this become journalism club?”
- “How can we watch /see the video?”
- “How come I can’t find the pictures?”
- “I can hear the audio”
- “I think the technology hates us right now?!”
- “I told you you were going to lose it!”
- “It could be your fault”

**What worked well with the activities:**

- Mixing creativity while telling a story relates to the comics we were working on.
- Sadly, there was no activity today.
- Nothing was working with the devices playing video; we salvaged things by playing video with VCR player, but we couldn’t edit.
- Talked a little about editing, watched a video Adam made, and promoted 3D/Oculus for next time.
- Showing video; watching their videos
- Discussion of what we were trying to do.
- Attention to downloading
- Talking with students about what previous editing experiences they had.
- Students and facilitators were compelled to explore the devices.

**What changes would you recommend?**

- Video game playing [as a back-up]
- Problems with technology made it impossible to view videos/interviews. We needed to have a plan B so there was something to do; have a back-up plan fully fleshed out.
- Check video codecs on their devices
- Possibly just use computer labs
- This was just one of those days – when the devices will not accept/open folders; it is beyond our control. Students continued to work, which was positive.

## **Week 13**

**Middle School Microbe Maniac Science Reporter**

**Community Learning Center Club**

**University of Nebraska Museum SEPA grant BioHuman**

**Activity Report 120314**

**December 3, 2014; 4:00-5:30pm**

**BioHuman staff:** Sara LeRoy-Toren, Adam Wagler, Robert Vavala, La'Risa McClennon, Amy Spiegel

**Guest Facilitators:** Levi

### **Student Participants:**

4 Euro Americans Students

1 Middle Eastern Americans

2 Hispanic/Latino American

1 Multi/Bi Ethnicity American Students

1 Africa American

Total: 9 Students

**Special circumstances:** The club began on schedule with a more typical number of students. The students were excited to be there, and the room was set up with 3 different types of technology for them to try: Google glasses, 3D printer and Oculus Rift.

**Activities:** The students were welcomed and Adam began our session explaining the different types of technology available to use during this club meeting. Amy was present to interview the students who had been attending regularly. 3 groups of students were assembled with Rob, La'Risa and Sara each heading up a group. The 3D printer was experiencing technical problems, so Levi took over working on the machine and assisting the students at that station. The printer made a plastic chain link and students were able to observe how the printer worked. This was the least interactive of the 3 stations.

Rob headed up the Oculus Rift station, which had very enthusiastic participants as well as cycling his students through the groups. There were 2 activities available at this station: piloting a space craft in a hostile space environment and riding a roller coaster. Discussions of this activity involved gaming and virtual reality.

Adam worked with the technology on the Google glasses. Students donned the glasses and worked on surfing the web. This station was quieter than the Oculus Rift station, but students seemed to become very involved when they caught on to the visual techniques required to use the glasses.

Sara coordinated timing the activities and pulling students out for interviews, and Amy talked with students and made observations. The club members were very intrigued with the activities, and appeared to be most enthusiastic about Oculus Rift. Several were able to take more than one turn after all others in their groups had gone.

**Assessment:** This was a very successful meeting. It was a significant amount of work to bring all the technology to the middle school, which was accomplished by Adam and Levi. Student involvement was very high, and staff worked hard to keep the kids in their groups and make sure that everyone had their turn. The club members were very enthusiastic, and made comments that connected other school or life experiences with their technology experience. This connection is an important component in the continuation of experiencing science through technology.

Students helped clean up the room and left later than usual due to extended turns on the Oculus Rift.

**Microbe Maniacs Science Reporter, Afterschool CLC**  
**3 December 2014**  
**Technology day: 3D printer, Oculus Rift, Google Glass**  
**Facilitator feedback, summarized by Amy N. Spiegel**

**Student comments:**

- “It costs a lot of money [all of it]?”
- “How much did that cost [Oculus Rift]?”
- “Doesn’t it have to be a huge 3D printer [to print an actual concrete house]?”
- “Can you make a computer virus on the printer?”
- “Oh! Tinkercad! I use that for 3D drawings.”
- “Do they actually use the chess pieces for the game?”
- “You can print foods?! How does that work?”
- “What does it taste like?” [printed food]
- “What does the 3D printer print with?”
- “If I had a printer at home, I would make an Oculus Rift.”
- “I would make create containers/totes – custom made.”
- “I’d use the 3D printer to make soccer cleats.”
- “You could make tools.”
- “How long does it take [to print something]?”
- “Could you put an already made object back on the printer and add to it, or connect the 2-link chains?”
- “Can we take these home with us?”
- “Are we going to get to do everything?”
- “For how long [can we play on Oculus Rift]?”
- “Can I share something with Glass?”
- “How do I shoot a video with Glass?”

**What worked well with the activities:**

- Kids were excited to see the technology
- The Oculus was a hit!; The Oculus Rift was *very* popular.
- Groups; Rotating the groups was effective, and students were really engaged.
- Having stations and having students actually get to be hands-on with the technology.
- The idea of the hand-out worked well, too – having students think about how they could tell a story or learn science with the new technology. They had good ideas and reactions.
- Everything worked well.

**What changes would you recommend?**

- Kids were fascinated by the 3D printer, but watching it print got boring for them quickly. They need to be able to do something with it; The 3D printer is interesting to see, but not much to do in terms of a station;. Maybe try having them build something in 3D to show how things are created on the computer then printed.
- Fleshing out the handout so students are filling them out as they are sitting in front of or using the technology.
- The stations were a good idea, but blended together, so I hope all the kids got to try everything out. Just hard to track, but they seemed to really enjoy it.
- N/A; None – all worked well.

## **Week 14**

**Middle School Microbe Maniac Science Reporter**

**Community Learning Center Club**

**University of Nebraska Museum SEPA grant BioHuman**

**Activity Report 1201014**

**December 10, 2014; 4:00-5:30pm**

**BioHuman staff:** Sara LeRoy-Toren, Adam Wagler, Robert Vavala, La'Risa McClennon, Amy Spiegel

### **Student Participants:**

6 Euro Americans Students

2 Middle Eastern Americans

1 Hispanic/Latino American

1 Multi/Bi Ethnicity American Students

0 Africa American

Total: 10 Students

**Special circumstances:** The club began on schedule with students excited to find out how they would assemble the items they worked on to make a video for the celebration next meeting. We had many returning students, with 2 who had been less frequent attendees.

**Activities:** The students were welcomed and Adam began our session explaining that we would break into 2 groups to work on creating a video to show our semester activities. He brought pictures taken throughout the semester showing students participating, and asked the club members to arrange these in a way to tell our story. The 2 groups then suggested music and titles for each of the activities shown. Amy was again present to interview the students who had been attending regularly. 2 groups of students were assembled with Rob and La'Risa and Sara and Adam paring up with a group.

The 2 groups had very different working dynamics, but each group came up with a plan for the video. Initially, we were concerned that we might not be able to keep the students engaged, but this turned out to not be the case. There was a *lot* of discussion in regard to sequence and music and the students had committed and varied opinions. While it became pretty loud at times, all the students stayed with the activity.

**Assessment:** This was a very successful meeting in several ways. The level of the sorting-organizing-editing activity required a higher level of choice making and collaboration than we have previously seen the students exhibit. On this class day, we were very pleased to see that all the students stuck with the activity and that they were able to explain their choices in terms of telling a story. The activity also reminded the students of the variety of things that they had experienced in the last semester, and provided a platform for the facilitators to reveal plans for 2<sup>nd</sup> semester Science 3-D Club.

We had help cleaning the classroom and ended on a positive note.

**Microbe Maniacs Science Reporter, Afterschool CLC**  
**10 December 2014**  
**Organizing final video creation of the semester's work**  
**(using images representing different activities)**  
**Facilitator feedback, summarized by Amy N. Spiegel**

**Student comments:**

- “What are those?” [images of activities]
- “Is this all we are doing?” [They took a bit of time to get into it]
- “What should the title say?”
- “Can we have a different type of music?”
- “I want country [music for the video]”
- “[I want] smooth jazz [music for the video]”
- “It’s Picasso”
- “We’re having cookies” [describing events depicted]
- “Can Levi make two videos?” [one based on each group’s recommendations]
- “Will we get the video we shot [earlier in the semester]?”
- “I’m in 7<sup>th</sup> grade”
- “Do we have to write it?”
- “Is the day and time next year the same [for this afterschool club]?”
- “Why [is next semester’s club called] Science 3D?”
- “Are we bringing back the Oculus Rift?”

**What worked well with the activities:**

- Having them talk through the past activities; the activity allowed students to recall (mostly fondly) the things they had done throughout the semester.
- Once they got going, they really enjoyed reconstructing the things they learned.
- Thinking about the order and talking through the audio and getting them to visualize in their head without technology.
- Allowing them to add slides they made, picking music, and adding comments to slides.
- Editing worked really well with Adam’s group; it was a lot more challenging with the other group.
- At the end, BOTH groups had good suggestions and plans.
- Grouping kids so at least one person in each group was here the majority of the time.

**What changes would you recommend?**

- When we break into groups, it would help for the facilitators to have a list or model to follow when they are working with students. For example, what do you do to make/edit a video?
- It was tough to get them to focus – required some work; It took a bit of prodding to get our group moving but I’m not sure how we could have done things differently.



## **Week 15**

**Middle School Microbe Maniac Science Reporter**

**Community Learning Center Club**

**University of Nebraska Museum SEPA grant BioHuman**

**Activity Report 121714**

**December 17, 2014; 4:00-5:30pm**

**BioHuman staff:** Sara LeRoy-Toren, Adam Wagler, Robert Vavala, La'Risa McClennon, Amy Spiegel, Judy Diamond

### **Student Participants:**

9 Euro American Students

4 Middle Eastern Americans

3 Hispanic/Latino Americans

3 Multi/Bi Ethnicity Americans

4 African Americans

**Total: 23 students**

**6 parents signed in as well and were present.**

**Special circumstances:** This meeting of Microbe Maniacs is the celebration for the semester of learning and work with students. Parents, guardians and friends have been invited to see the students' activities and what they have experience and produced over the course of 14 weeks. Special refreshments were provided, including Subway sandwiches (from the CLC group) and fruit drinks (Dr. Diamond).

**Activities:** Students and parents were welcomed, and Sara and Adam recapped the activities of the semester, including the students' comments about what they did. Dr. Diamond asked the students to share what they liked best, and some of those comments are on the following page. The response was very positive, and included comments from parents.

Adam showed the video that the students had worked on the previous meeting, and flashdrives of the student video were given to each student. Levi compiled the video, but was unable to be at the meeting due to a final schedule.

Students and parents then continued to comment and explain the activities of the semester, and all enthusiastically consumed sandwiches and drinks. The day ended on a very positive note.

**Assessment:** This was a very successful meeting and serves as a reminder to include parents and friends in the conclusion of a CLC club. Parents who attended were very positive about the activities of the club and responded well to their student's activities. A number of the parents appeared to be new immigrants.

Reflection is a best practice for any learning experience. When parents learn firsthand the activities of their children in CLC, it may increase the likelihood of that student continuing in the club. Continuing to expose the students to science and technology may also increase the participation in these activities as the student progresses in school.

**Microbe Maniacs Science Reporter, Afterschool CLC**  
**17 December 2014**  
**Wrap up activities: Video and Party**  
**Facilitator feedback, summarized by Amy N. Spiegel**

**Student comments:**

- “Did you make the video? Are we going to watch it?”
- “Am I in there?”
- “We did that?!”
- “Where is the printer?”
- “What did the Oculus show? Was I here for that?”
- “You didn’t make changes on the [comic] book.”
- “Who’s Levi?”
- “Cool!! What are we doing next time?”
- “Is there food?”
- “Can we have another sandwich?”
- “I am fasting right now, can I take one [sandwich] for later?”

**What worked well with the activities:**

- This was a very positive day. Several sets of parents came to see what students had done, and looked interested and pleased.
- Building up to showing the wrap-up video [worked well]: we reviewed some of the basics of what we did over the semester, watching their videos and listening to the narration of the comic.
- Having many components to the celebrations [was good].
- The students were excited to see what we had experienced during the semester and were very excited to see pictures of themselves at the various activities.
- Levi did a great job of combining both the student teams’ video editing suggestions and putting them to music.
- The kids felt proud.
- I thought it was cool to demonstrate how they can use technology and storytelling to learn about science. I don’t think they ever felt like they were in a science class, but learned about viruses, microbes, and science in general through storytelling and technology.
- Food is always a nice idea, especially for the final day.
- Glad Troy and parents showed up and good to see some faces we haven’t seen in a while.

**What changes would you recommend?**

- This was a great celebration of learning for all of us.
- One thought is that we might have it a week earlier in the semester to avoid conflict with the contributors’ schedules (visiting scientists, artists, journalists), but I am not sure it would have made a difference in this day.
- Checking the audio – totally forgot to check that – I thought that the video connection would pull in the audio too, like the Apple Airplay.
- Some things uploaded slowly, but we were able to buy time; Finding/using a faster computer so things open up in a timely manner.