

# Supplemental Material

*CBE—Life Sciences Education*

Listman *et al.*

**Appendix A: Scholar's Communication Background**

RISE Scholar's Name: \_\_\_\_\_

1. Your preferred communication mode(s). Multiple answers allowed.
  - a. American Sign Language (ASL)
  - b. Written English
  - c. Spoken English
  - d. Cued Speech
  - e. Contact Sign (mix of both ASL & English/PSE)
  - f. Signing Exact English
  - g. Others: \_\_\_\_\_
  
2. How many years have you been using sign language? \_\_\_\_\_ N/A
  
3. When did you begin to learn sign language? \_\_\_\_\_ N/A
  
4. Do you know other languages other than English and ASL that you use frequently at home or at school? If yes, identify which language(s):
  - a. \_\_\_\_\_
  
5. How do you describe yourself?
  - a. Culturally deaf
  - b. deaf

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- c. Hard of Hearing
  - d. Oral deaf
  - e. Hearing Impaired
  - f. Hearing
  - g. Prefer not to say
  - h. Others: \_\_\_\_\_
6. Are you Hispanic/Latinx?
- a. Yes
  - b. No
  - c. I don't know
7. What is your race?
- a. American Indian or Alaska Native
  - b. Asian
  - c. Black or African American
  - d. Native Hawaiian or Other Pacific Islander
  - e. White
  - f. Other: \_\_\_\_\_

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8. Your family hearing status:

a. Father	Hearing	Hard of hearing	deaf	N/A
b. Mother	Hearing	Hard of hearing	deaf	N/A
c. Siblings	Hearing	Hard of hearing	deaf	N/A
d. Others Family Members				
	Hearing	Hard of hearing	deaf	N/A

9. Which potential communication tools do you think you will need to optimize your communication experience in the laboratory? You may circle more than one.

- a. C-Print
- b. English-ASL Interpreters
- c. Interpreters Signing Conceptually Accurate Signed English with some ASL features
- d. Oral interpreters (mouthing the English words)
- e. Note-taking
- f. Close-Vision or Pro-Tactile Interpreter
- g. Others: \_\_\_\_\_

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The following questions will ask you to rate your communication skills and abilities in different areas. For the questions below pick a response from VERY GOOD to VERY POOR. If a question is not applicable to you, please circle N/A.

1. How would you rate your communication skills in spoken English?

- a. Very poor
- b. Poor
- c. Fair
- d. Good
- e. Very Good
- f. N/A

2. How would you rate your communication skills in written English?

- a. Very poor
- b. Poor
- c. Fair
- d. Good
- e. Very Good
- f. N/A

3. How would you rate your communication skills in sign language?

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- a. Very poor
  - b. Poor
  - c. Fair
  - d. Good
  - e. Very Good
  - f. N/A
4. How would you rate your ability to interact with deaf and Hard of hearing people?
- a. Very poor
  - b. Poor
  - c. Fair
  - d. Good
  - e. Very Good
  - f. N/A
5. How would you rate your ability to interact with hearing non-signers?
- a. Very poor
  - b. Poor
  - c. Fair

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- d. Good
  - e. Very Good
  - f. N/A
6. How would you rate your ability to self-advocate for your communication needs?
- a. Very poor
  - b. Poor
  - c. Fair
  - d. Good
  - e. Very Good
  - f. N/A

In the following questions read the sentence and rate how important the statement is to you. Rate your responses for each question below from VERY IMPORTANT to NOT IMPORTANT.

1. How important is it for you to have a mentor who is culturally competent to work with deaf people?
- a. Not important
  - b. Slightly important
  - c. Moderately important
  - d. Important

- e. Very Important
2. How important is it for you to have a laboratory that is “deaf friendly”?
- a. Not important
  - b. Slightly important
  - c. Moderately important
  - d. Important
  - e. Very Important
3. How important is it for you to feel welcomed in the lab?
- a. Not important
  - b. Slightly important
  - c. Moderately important
  - d. Important
  - e. Very Important
4. How important is it for you to feel connected with your peers in the lab?
- a. Not important
  - b. Slightly important
  - c. Moderately important



- d. Important
  - e. Very Important
5. How important is it for you to have your mentor and peers know basic signs?
- a. Not important
  - b. Slightly important
  - c. Moderately important
  - d. Important
  - e. Very Important
6. How important is it for you to have an experienced ASL interpreter providing access in the lab?
- a. Not important
  - b. Slightly important
  - c. Moderately important
  - d. Important
  - e. Very Important

**Appendix B: Communication Access and Skills Scales (CASS)**

Answers were selected using a scale 1 to 5:

In sections #1-5 (how often...): 1 = very often, 5 = never

In section #6 (how important...): 1 = not important, 5 = extremely important

In section #7 (you can...): 1 = strongly disagree, 5 = strongly agree

1. If you use interpreters, do you typically use ASL/English interpreters or oral transliterators/interpreters (interpreters who sign exact English with English mouth movements)
  - a. ASL/English interpreter
  - b. Oral transliterators/interpreter
  - c. You do not use interpreters [If “c”, skip Question 2 and go to Question 3]
  
2. How often do you use interpreters in these settings (1=Very Often ... 5 = Never)
  - a. Lab meeting
  - b. General lab work hours
  - c. Conference
  - d. Poster session
  - e. Other lab-related activities (e.g., social dinner with lab members)
  - f. Academic classroom
  - g. Out-of-classroom Professional activities

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- h. Others (PLEASE SPECIFY): \_\_\_\_\_
- 3. How often do you use assistive listening devices (e.g., personal amplifier, FM system) in these settings
  - a. Lab meeting
  - b. General lab work hours
  - c. Conference
  - d. Poster session
  - e. Other lab-related activities (e.g., social dinner with lab members)
  - f. Academic classroom
  - g. Out-of-classroom Professional activities
  - h. Others (PLEASE SPECIFY): \_\_\_\_\_
- 4. How often do you use C-Print captioning in these settings:
  - a. Lab meeting
  - b. General lab work hours
  - c. Conference
  - d. Poster session
  - e. Other lab-related activities (e.g., social dinner with lab members)
  - f. Academic classroom

- g. Out-of-classroom Professional activities
  - h. Others (PLEASE SPECIFY): \_\_\_\_\_
5. How often do you use notetaking in these settings:
- a. Lab or research setting meetings
  - b. Academic classrooms
6. How important is it for you:
- a. To have a mentor who is culturally competent to work with you as a deaf or hard of hearing student?
  - b. To feel welcomed in your lab (or other research setting) as a deaf or hard of hearing student?
  - c. To feel connected with your hearing peers in your lab (or other research setting)?
  - d. That your mentor and peers know basic signs?
  - e. To have an experienced interpreter providing access in your lab (or other research setting)?
7. Please rate the following statements:
- a. You can effectively use an interpreter to communicate in your current lab or other research setting.
  - b. You can effectively use assistive listening devices (e.g., personal amplifiers, FM system) to understand spoken conversations in your current lab or other research

setting

- c. You can effectively advocate for your communication needs in your current lab or other research setting.
- d. You can effectively contact the disability office or interpreter coordinator to make a request for access.
- e. When you don't understand your current mentor or peers, you usually ask for clarification.
- f. You feel that your current mentor needs to have more professional development training on how to effectively work with you as a deaf or hard of hearing student.
- g. When the other members of your current lab or research setting talk with each other, they include you.
- h. You find yourself exhausted from struggling to follow conversations or presentations in your current lab or research setting.

**Appendix C: Pre-Interview Questions for the Mentors**

1. Have you ever worked with deaf and/or hard of hearing students in the past? If yes, describe your experience in detail.
  - a. What was your first impression when you first worked with deaf and hard of hearing students?
  - b. List success and challenge stories when working with deaf and hard of hearing students.
2. Do you have a colleague(s) that is deaf and/or hard of hearing? If yes, describe your relationships with them.
3. Describe your potential goals for optimizing the communication experience in the laboratory. Include possible strategies that you have come up with to achieve these goals.
4. Have you ever worked with an interpreter? If yes, describe your experience in detail.

**Appendix D: Communication Observation in the Research Laboratory**

Field Notes & Observation

1. Describe and sketch the layout of the laboratory.
2. Describe the rapport between the mentor and mentee.
3. Describe the interaction between the mentor and other students in the laboratory
4. Describe the communication interaction between the mentor and the mentee. Identify challenges and accomplishments.
5. Any group work identified? If yes, describe the interaction of the group work with the scholar.
6. Were there any one-on-one meetings? If yes, describe the interaction between the scholar and the mentor or peers.

**Appendix E: Follow-up Communication Interview with the Scholar**

1. Describe your overall experience with communication during this past semester? Any challenges and/or accomplishments you would like to share?
2. Describe whether the modification that occurred during the semester helped the interaction in the laboratory?
3. Describe how satisfied you are with your experience in the laboratory?
4. Explain what you would do differently next time regarding self-advocacy and communication?
5. Is there any additional information we need to know about communication to help you and future scholars in this program
6. Anything else you would like to share?
- 7.



**Appendix F: Follow-up Communication Interview with the Mentor**

1. Describe your overall experience with communication with your mentee during this past semester? Any challenges and accomplishments you would like to share?
2. Describe whether the accommodations that occurred during the semester has helped the interaction in the laboratory?
3. Describe how satisfied are you with your role as a mentor?
4. Explain what you would do differently next time you have a deaf mentee in your laboratory?
5. Any additional information we need to know to help you and the future scholars in this program in regard to communication?
6. Anything else you would like to share?

**Appendix G:**

**Follow-up Communication Interview with Hearing Peers**

1. Describe your overall experience with communication with the deaf scholar during this past semester? Any challenges and success stories you would like to share?
2. Describe whether the accommodations that occurred during the semester helped the interaction in the laboratory?
3. Describe how satisfied you are with your role a hearing peer working with deaf scholar in the laboratory?
4. Explain what you would do differently next time if you worked with a deaf mentee in your laboratory?
5. Any additional information we need to know to help you and the future scholars in this program in regard to communication?
6. Anything else you would like to share?

**Appendix H: RIT-RISE Scholars Focus Group Questions**

1. Describe your best mentor that you ever had.
  - a. Elaborate on what made this mentor the best and how did this mentor help you succeed in college
    - a.i. Characteristics & attributes
2. Describe your past or current RIT-RISE mentor, and what makes your mentor effective?
3. Describe if any, frustrations that you've experienced in a research lab in the area of communication.
  - a. Describe any strategies that were effective to foster smooth communication in a research lab.
4. Describe if any, frustrations that you've experienced with your mentor in the area of communication.
  - a. Describe any strategies that either you or your mentor used that helped foster smooth communication with one another.
5. Imagine that you went to a university where your mentors and teachers have no background knowledge on how to effectively work with D/HH people, what would you want them to know.
  - a. List possible topics that you think they should become familiar with.
  - b. How can they better support you as a D/HH student
6. Describe what would make a research lab an inclusive environment
7. If any, describe your mantra that helps you succeed in college.

8. If any, share a quote, word of wisdom and or/mantra that your mentor gave you.
9. Do you have any advice for future RIT-RISE scholars? What would you tell them?
10. Which RIT-RISE workshops were most memorable? How did they have an impact on you?
11. Ask them how they communicated with their mentor and what kind of technology was used (if any)?

**Appendix I: RIT-RISE Mentors Focus Group Questions**

1. Describe what set of knowledge, skills, and protocols in the area of communication that you wished you knew before working with a D/HH scholar.
2. Imagine that you went to a conference and a scientist was recently asked to mentor a D/HH scholar, what would you tell the mentor in order to help ease anxiety of mentoring D/HH students?
3. Describe any strategies you observed to be effective to foster smooth communication between your D/HH scholar and project collaborators in the research lab.
4. Describe any strategies that either you or your D/HH scholar used that helped foster smooth communication with one other.
5. Describe any communication frustrations or hurdles you observed between your D/HH scholar and project collaborators in the research lab.
6. Describe, if any, frustrations or hurdles that you've experienced with your D/HH scholar in the area of communication.
7. What "soft skill" areas did you perceive as being areas of strength in your D/HH Scholar, if any?
8. What "soft skill" areas did you perceive as benefiting from improvement in your D/HH Scholar, if any?
9. What did you learn from this experience as a RIT-RISE mentor?
10. As a RIT-RISE mentor what would you do again and what will you not do again.



**Appendix J: Demographic Survey**

1. Are you:
  - a. RIT-RISE Scholar
  - b. RIT-RISE Mentor
  - c. Other (research group peer, lab staff, etc.)
2. Today's Date:
3. Name:
4. Gender:
  - a. Male
  - b. Female
  - c. Other:
5. Date of Birth:
6. Are you Hispanic/Latinx?
  - a. Yes
  - b. No
  - c. I don't know
7. What is your race? (You may select more than 1):
  - a. American Indian or Alaska Native
  - b. Asian
  - c. Black or African American
  - d. Native Hawaiian or Other Pacific Islander
  - e. White
  - f. Other:

8. Do you know ASL/Sign Language
  - a. Yes
  - b. No
9. Your preferred communication mode(s). Multiple answers allowed.
  - a. American Sign Language (ASL)
  - b. Written English
  - c. Spoken English
  - d. Cued Speech
  - e. Contact Sign (mix of both ASL & English/PSE)
  - f. Signing Exact English
  - g. Other:
10. How many years have you been using sign language?
11. Do you know any languages other than English or ASL that you use frequently at home or at school? If yes, identify which language(s):
12. How do you describe yourself?
  - a. Culturally deaf
  - b. Deaf
  - c. Hard of hearing
  - d. Oral deaf
  - e. Hearing impaired
  - f. Hearing
  - g. Other:
13. What is your father's hearing status?



- a. Hearing
- b. Hard of hearing
- c. Deaf
- d. I don't know

14. What is your mother's hearing status?

- a. Hearing
- b. Hard of hearing
- c. Deaf
- d. I don't know

15. Do you have deaf or hard of hearing siblings?

- a. Yes
- b. No
- c. I don't know

16. Are any other family members deaf or hard of hearing?

- a. Yes
- b. No
- c. I don't know

17. Which potential communication tools do you think you will need to optimize your communication experience in the laboratory? You may circle more than one.

- a. C-Print
- b. English-ASL Interpreters
- c. Interpreters Signing Conceptually Accurate Signed English with some ASL features

- d. Oral Interpreters (mouthing the English words)
- e. Note-taking
- f. Close-vision or Protactile Interpreter
- g. Other:

18. You understand people best when they:

- a. Use sign language
- b. Speak and sign at the same time
- c. Speak only
- d. Write only
- e. Other:

19. You express yourself best when you:

- a. Use sign language
- b. Speak and sign at the same time
- c. Speak only
- d. Write only
- e. Other:

20. How old were you when you learned sign language?

- a. You do not know sign language
- b. 0-5 years old
- c. 6-15 years old
- d. 16 years or older

21. How well do you think people understand your signing?

- a. They understand everything you sign

- b. They understand almost everything you sign
- c. They understand about half of what you sign
- d. They understand only a few words you sign
- e. They understand nothing

22. Please rate your sign language skills:

- a. Excellent (you can sign with ease)
- b. Good (you can sign pretty well most of the time)
- c. Fair (you can have a limited conversation)
- d. Basic (you know how to fingerspell and a few signs)
- e. None (you don't know any signs/fingerspelling)

23. How well do you think hearing people understand your speech?

- a. They understand everything you say
- b. They understand almost everything you say
- c. They understand about half of what you say
- d. They understand only a few words you say
- e. They understand nothing
- f. You do not use speech

24. How well do you understand speech when you speech-read and/or use your hearing aid(s)/cochlear implant(s)?

- a. You understand everything
- b. You understand almost everything
- c. You understand about half of what is said
- d. You understand only a few words

e. You understand nothing

25. Do you use a hearing aid?

a. Yes

b. No

26. How often do you use your hearing aid?

a. All of the time

b. Most of the time

c. About half of the time

d. Rarely

e. Never

27. Have you had surgery for a cochlear implant(s)?

a. Yes

b. No

28. How often do you use your cochlear implant?

a. All of the time

b. Most of the time

c. About half of the time

d. Rarely

e. Never

**Appendix K: Pre-Interview for the Scholars**

1. Describe your experience with communication in high school?
  - a. Describe your challenges with communication in and outside of the classroom.
  - b. Describe your success stories with communication in and outside of the classroom.
2. Describe your experience with communication at home?
  - a. Describe your challenges with communication at home.
  - b. Describe your success stories with communication at home.
3. Describe your experience with communication in and outside of the college classroom.
  - a. Describe your challenges with communication in and outside of the college classroom.
  - b. Describe your success stories with communication in and outside of college classroom.
4. Describe your ideal communication environment in a research laboratory?
5. Describe potential challenges you will face in the research laboratory with your mentor, lab staff, and peers.
  - a. How would you solve or mitigate those challenges?

### Appendix L: Resources

- *Rochester Bridges to the Doctorate*: <https://www.rit.edu/ntid/deafscientists/program>
- *Bridges to PhD WoW Seminar*: [https://youtube.com/playlist?list=PLj6xSiHNnfgELwTQ-7X8gsmQeBeJ21M\\_w](https://youtube.com/playlist?list=PLj6xSiHNnfgELwTQ-7X8gsmQeBeJ21M_w))
- *DeafTEC*: <https://www.rit.edu/ntid/facilities/deaftec>
- *National Deaf Center*: <https://nationaldeafcenter.org/>
- *RIT U-RISE*: <https://www.rit.edu/ntid/rise>