

NTID  
Scholarship Symposium



Thursday, January 21, 2016

**R·I·T** | NATIONAL TECHNICAL  
INSTITUTE FOR THE DEAF

## **NTID Scholarship Symposium**

**Thursday, January 21, 2016**

**CSD Student Development Center**

**Rochester Institute of Technology**

The NTID Scholarship Symposium is a day-long event showcasing scholarly work done by NTID faculty and staff. Most of the work falls into one of the four categories of research noted by *Strategic Decisions 2020*:

1. Teaching and Learning
2. Language and Literacy/Communication
3. Communication Technology/Access and Support Services
4. Employment, Adaptability to Social Change, and the Global Workplace

Creative work and projects in other categories also have been included.

Given the scholarship expectations of the university for annual appraisals and faculty promotion, this is an opportunity for faculty and staff to convene to share their scholarship and projects. More than 200 faculty and staff participated in the first symposium last year, and we are excited to have another opportunity to come together to share what we have been working on.

Twenty seven presentations will be held in the Student Development Center. Posters will be presented during the hour after lunch, from 12:45-1:30 p.m., on the second floor.

Kudos go to all the faculty and staff who submitted proposals for this event. The hard work and commitment demonstrated by these efforts is greatly appreciated, and sharing this work is vital to our continued collaboration, creativity, and energy. To continue this renewed tradition, a follow-up symposium is planned for 2017.

This program is sponsored by NTID Academic Affairs thanks to the help of the NTID Office of the President; NTID Professional Development; Department of Access Services; Technology and Information Services; Department of Visual Communications Studies; and Communications, Marketing, and Multimedia Services.



## NTID Scholarship Symposium Schedule

8:00-8:40	Registration/check-in and Continental Breakfast - Ellie's Place, CSD Student Development Center	
8:45-8:55	Welcome by Dr. Gerard Buckley, NTID President/Dean, RIT VP - SDC 1300	
	SDC-1300	SDC-1310
9:00-9:20	<b>Crafting Access: Reframing Communications Access as Interdependence</b> Linda Gottermeier, Christopher Taylor Edwards	<b>How to Be a Deaf Scientist: Building Navigational Capital</b> Jason Listman
9:25-9:45	<b>Creating Cohesion Across Languages, English and ASL</b> Campbell McDermid	<b>Discipline-based Undergraduate Research from a Teaching and Learning Perspective</b> Bonnie Jacob
9:50-10:10	<b>Closed Interpreting for Online Videos</b> Raja Kushalnagar, Matthew Seita	<b>Deaf Literature's Transformative Impact on Cognition</b> Rachel Mazique
10:15-10:35	<b>Concept Mapping: A Visual Teaching and Learning Tool in the Classroom</b> Michael Kane	<b>Twitteracy: Would You Like a #hashtag With That?</b> Aimee Whyte, Erin Esposito
10:35-10:45	Mid-Morning Break	
10:50-11:10	<b>Issues in Simultaneous Communication</b> Baldev Kaur Khalsa, Stephanie Polowe	<b>What is Scholarship for the Visual Arts?</b> Eric Kunsman
11:15-11:35	<b>Simultaneous Communication: More Questions than Answers</b> Baldev Kaur Khalsa	<b>Barriers to Justice Reasoning in Sign Language Interpreters</b> Robyn Dean
11:40-12:00	<b>Is SimCom Evil?</b> Marc Marschark	<b>Integration of Experiential Learning to Develop Problem Solving Skills in Deaf and Hard-of-Hearing STEM Students</b> Wendy Dannels, Matthew Marshall
12:00-12:40	Lunch	
12:45-1:30	Poster Session (2nd Floor SDC) - (see descriptions on next page)	
1:35-1:55	<b>Students' Use of Accommodations for Interviews and Co-op Jobs: Did You Know?</b> John Macko, Denise Wellin	<b>Accessibility of Health Information Text</b> Raja Kushalnagar, Poorna Kushalnagar, Marissa Rinkevich
2:00-2:20	<b>Biocultural Deaf Aesthetics: A Critique for a New 21st-Century Deaf Education Model</b> Michael Skyer, Laura Cochell	<b>Using Interactive Virtual Instruction for Deaf and Hard-of Hearing Technical Students</b> James Mallory
2:00-2:40	<b>Flexible Direct Instruction: What is it Good For?</b> Panel Discussion (SDC 2102): Wendy Dannels, Melissa Skyer, Patricia Wink	
2:25-2:45	<b>ASL Philosophy Resource</b> Miriam Lerner, Sarah Cannon, Sarah Schneckenburger	<b>Use of Video Technology and Graphics for Qualitative Research</b> W. Scot Atkins, Gina Sangiacomo
2:50-3:10	<b>Career Technical Education and Program Offerings</b> Dino Laury	<b>Historical Insights from Chomskyan Linguistics in the Developmental Education of Deaf Students</b> Stephanie Polowe, Baldev Kaur Khalsa
3:15-3:35	<b>Online Tutoring: Face-to-Face and Through a Lens</b> Lisa Elliot	<b>Feasting on Deaf History</b> Patti Durr, Jeanne Behm
3:40-4:00	<b>Student Perceptions of the Whiteboard as a Communication Tool for In-Class Team Work</b> Carol Marchetti	<b>Seeing the World Through Deaf Eyes: The Chile Study Abroad Experiences of Deaf Students</b> Joan Naturale, Denise Kavin
4:00-5:00	Wine/Hors d'oeuvre Reception (Ellie's Place)	

**Preferences for Deaf and Hard-of-Hearing Learners in Online Classes**

*James Mallory, professor, Information and Computing Studies*

**Two ADHD Scales Used with Deaf Adults are not Confounded by Cultural Identity**

*Ila Parasnis, professor, Master of Science in Secondary Education-Research*

**Creating Flipped Classroom Lectures: Recommended Practices**

*Mike Kane, lecturer, Business Studies*

*Heather Smith, lecturer, Visual Communications Studies*

**Interactive Storybook Reading and Picture Vocabulary: A Replication Study**

*Jessica Trussell, assistant professor, Master of Science in Secondary Education*

**A Deaf-Friendly Adaptation of a Manufacturer's Equipment Aids Deaf Students' Learning Process**

*Wendy Dannels, lecturer, Engineering Studies*

*Edward Schwenzer, lecturer, Engineering Studies*

*Gary Behm, assistant professor, Engineering Studies*

**Assessment and Design of a Learning Environment**

*William LaVigne, assistant professor, Engineering Studies*

*James Fugate, assistant professor, Engineering Studies*

*Students from the Computer-Aided Drafting Technology Program*

**Energy Modelers: Teaching Students and Learning from Them**

*Pam Berkeley, assistant professor, Engineering Studies*

**Sitting Height: An Adult Correlate of Physical and Neurocognitive Growth Dysregulation by Early Childhood Adverse Events**

*Vince Samar, associate professor, Liberal Studies-Research*

**Automatic Speech Recognition Systems as Tools to Enhance Spoken Communication in the Workplace**

*Linda Gottermeier, Au.D., associate professor, Communication Studies and Services*

*Carol L. De Filippo, Ph.D., professor, Master of Science in Secondary Education-Research*

*Raja Kushalnagar, Ph.D., assistant professor, Information and Computing Studies*

*Bonnie L. Bastian, speech/language professional, Communication Studies and Services*

**Preliminary Analysis of Second Language (L2) Learners' Discrimination of Phonological Contrasts in ASL**

*Deirdre Schlehofer, assistant professor, Cultural and Creative Studies*

*Isaiah Tyler, ASLIE interpreting student, first author*



## Presentations

### **Crafting Access: Reframing Communications Access as Interdependence**

*Linda Gottermeier, Au.D., associate professor, Communication Studies and Services*

*Christopher Taylor Edwards, experience design consultant, ThoughtWorks, Inc.*

**Time: 9:00-9:20 a.m.**

**Place: SDC-1300**

It is known that the workplace can be disadvantageous for deaf and hard-of-hearing individuals, partially because a wide array of communication strategies and flexibility in their use are essential for entry and upward mobility (Foster & Walter, 1992). Professional jobs in such areas as art, education, technology, and management demand more interaction and greater communication skills with people who have typical hearing than do nonprofessional occupations such as clerical, machine operations, printing, welding, food preparation, or janitorial. Job-related demands also make the workplace a more difficult communication situation for those who are deaf compared to those who are hard of hearing (Boutin & Wilson, 2009). Both groups, however, tend to experience less success in securing higher level jobs than their peers with typical hearing and are limited by level of college degree (Kelly, Quagliata, DeMartino, & Perotti,

2015). For both deaf and hard-of-hearing workers, communication on the job reportedly involves English about 80% of the time, whether through writing, speech, or sign language with speech (Kelly et al., 2015).

Current accessibility paradigms for the deaf and hard-of-hearing professionals require planning for all parties within the ecosystem of the workplace: the deaf professional, the interpreter/C-print operator, and the presenter(s). This type of planned access often is inflexible and puts the onus on the deaf professional to provide or make provisions for their own “access ramps or strategies.” There is opportunity in this place for personal inventiveness. In day-to-day interactions, deaf and hard-of-hearing professionals find ways to communicate with non-deaf and non-signers using what might be called “access hacks.”

Christopher Taylor Edwards (deaf professional; experience designer, ThoughtWorks, Inc.; recent graduate of Parsons School of Design\*) will share his instructional video and booklet that might be used with potential employers to enhance dialogue and application of inventiveness in the use of “access hacks.” The concept behind his instructional video and workbooks is to try to reframe accessibility as interdependence, i.e., one that is not top down but bottom up that empowers decision making. How does the deaf professional/student turn “access hacks” into a cooperative craft? Christopher will share his experiences in preliminary evaluation of his materials.

*\* Linda Gottermeier served as external thesis project adviser.*

## Presentations

### How to Be a Deaf Scientist: Building Navigational Capital

Jason Listman, Ed.D., assistant professor, ASL and Interpreting Education

**Time: 9:00-9:20 a.m.**

**Place: SDC-1310**

Deaf individuals are disproportionately underrepresented in science, technology, engineering, and mathematics (STEM) careers, particularly those requiring doctoral degrees. The leakage in the STEM pipeline between undergraduate enrollment and the awarding of doctoral degrees to deaf students may be attributed, in part, to a lack of deaf individuals in academic mentoring roles who can help

students navigate in the STEM community as deaf scientists. This phenomenological study captured the experiences of three Deaf mentoring dyads (Deaf mentor/Deaf mentee) working in undergraduate research laboratories. Informed by a Deaf epistemology framework, participants described the nature of their mentoring dyad and the nature and content of navigational capital extended to Deaf mentees.

Three themes were found from this study: (a) modeling how to be a deaf scientist; (b) promoting and fostering self-advocacy skills through inclusion and access; and (c) networking with a broader community of scholars. The implications for mentors who are hearing or Deaf in academic or STEM positions seeking to build navigational capital for Deaf mentees is discussed.

### Creating Cohesion Across Languages, English and ASL

Campbell McDermid, Ph.D., assistant professor, ASL and Interpreting Education

**Time: 9:25-9:45 a.m.**

**Place: SDC-1300**

This presentation represents the theoretical framework for a study to explore the nature of cohesion in ASL and English. The model formulated by Halliday and Hasan (1976) served as the basis. Their model holds that cohesion occurs across sentences (so at the level of inter-sentential boundaries) and

is achieved through the use of five means: conjunctive devices, lexical cohesion, reference, ellipsis, and substitution. Each of these will be compared and contrasted. In terms of reference, for example, what is of interest is agentless passive voice, the definite determiner “the” in English, indefinite pronouns, and

ditransitive verbs. A comparison of conjunctive devices will reveal many dissimilarities between the languages. Substitute words in English (so, one, too, do, etc.) may also pose a challenge when translated into ASL. These will be briefly discussed with examples.



## Presentations

### Discipline-Based Undergraduate Research from a Teaching and Learning Perspective

*Bonnie Jacob, Ph.D., assistant professor, Science and Mathematics*

**Time: 9:25-9:45 a.m.**

**Place: SDC-1310**

At the heart of undergraduate research is the learning process that the students experience. Faculty who lead undergraduate research, however, are more commonly referred to as “mentors”

or “advisors” rather than “teachers.” In this presentation, I will discuss undergraduate research from the perspective of teaching and learning. I also will describe my experiences in leading undergraduate research at

RIT/NTID. I will reflect on challenges the students and I have faced, helpful strategies in building and sustaining a student research program, and our successes.

### Closed Interpreting for Online Videos

*Raja S. Kushalnagar, J.D., LL.M., Ph.D., assistant professor, Information and Computing Studies*

*Matthew Seita, B. Thomas Golisano College of Computing and Information Sciences*

**Time: 9:50-10:10 a.m.**

**Place: SDC-1300**

Many videos and movies found online today are not captioned, and even fewer have a supporting video with an interpreter. Also, even with a supporting interpreter video provided, information still is lost due to the inability to look at both the video and the interpreter

simultaneously. To alleviate this issue, we came up with a tool called closed interpreting. Similar to closed captioning, it will be displayed with an online video and can be toggled on and off. However, the closed interpreter is also user-adjustable. Settings, such as interpreter size,

transparency, and location, can be adjusted. Our goal with this study is to find out what deaf and hard-of-hearing viewers like about videos that come with interpreters, and whether the adjustability is beneficial.

## Presentations

### Deaf Literature's Transformative Impact on Cognition

*Rachel Mazique, Ph.D. candidate, lecturer, Liberal Studies*

**Time: 9:50-10:10 a.m.**

**Place: SDC-1310**

In the "Literature, Visual Culture, and Deaf Studies" classes that I taught at the University of Texas at Austin, the majority of students entered class with minimal knowledge, or exemplars, of and about Sign Language Peoples or Deaf culture. In this literature course, students read a semi-graphic novel, a play, two novels, and a film. All texts except the Harry Potter novel have at least one Deaf protagonist. Throughout the course, students also learned about and conducted their own research into the historical and critical contexts from, or in discourse with, Deaf Studies. The interdisciplinary approach to literature, while (at times) challenging for students in this introductory-level literature course, fosters development of critical reading and thinking skills across a

range of mediums—promoting the synthesis of ideas, interrogation of ideologies, and new information-processing routines.

The culminating assignment is inspired by cognitive literary studies and asks that students examine the role of emotions in their understanding of themselves and of others. Their critical analyses of one of our primary texts must also interrogate what their emotional reactions/lack of emotional responses signify with relation to their received beliefs.

This talk will present samples of student writing—published on our course blog—that demonstrate how our class discussions and their

critical readings of literature led to the development of empathetic understanding, and, for those students who originally understood Deaf people solely in a pathological framework, evidence of bias correction. In other words, students learned to read the world and a range of texts through a Deaf lens—scrutinizing ableist or audist biases.

In short, I present this course as well as public evidence of students' personal development as an example of how cross-cultural humanities study can and does promote cognitive development in the form of new exemplars, prototypes, metacognition, and transformations—changes promising social justice.



## Presentations

### Concept Mapping: A Visual Teaching and Learning Tool in the Classroom

Michael Kane, lecturer, Business Studies

Time: 10:15-10:35 a.m.

Place: SDC-1300

**BACKGROUND: An instructor in the** NTID Business Studies Department, Michael (Mike) Kane is an extensive user of concept maps as a visual teaching and learning tool for his Accounting and Spreadsheet Applications for Business (Microsoft Excel) classes. Concept maps are visual representations of ideas connected with each other on paper. Kane will demonstrate similarities and differences between two noted concept-mapping software options utilized by educators nationwide: Inspiration™ ([www.inspiration.com](http://www.inspiration.com)) and MatchWare MindView™ ([www.matchware.com](http://www.matchware.com)). For Kane's classroom, concept maps serve as a visual guide during lectures, an on-the-spot comprehension check, an assessment tool (in lieu of multiple-choice or essay questions) in tests, a homework assignment, a study guide, a student schema tool for the teacher, and a visual aid for flipped classroom lectures. MindView™ currently is available to faculty and students due to campus-wide licensing privileges by RIT Information and Technology Services. Examples of teacher-generated concept maps used for the above-discussed purposes will be displayed. In addition, Kane will discuss pros

and cons – based on his experience – of each of the two software options.

**STUDENT-GENERATED CONCEPT MAPS:** Kane often asks his students to think of alternative vocabulary in lieu of “concept maps.” Various responses from students make a long list: diagrams, charts, bubbles, balloons, organizational tools, visual maps, mind maps, graphs, spiders, webs, mapping, brainstorming opportunities, planners, chains, groups, outlines, and bars. It is evident that many of Kane's students have experience with this learning strategy in high school prior to attending NTID. Kane's students create concept maps involving teacher-assigned accounting topics as a study guide for himself and his classmates. Kane observes that his students quickly learn the basics of creating concept maps due to both software being user-friendly and their prior experiences with concept-mapping in high school. At the beginning of each academic term, creating those maps are done as in-class activities with guidance provided by Kane. Later, students independently create their concept maps outside of the classroom as homework assignments. Over the span of a semester, students often

develop strong preferences of software choices, specific layouts/styles, and colors. Examples of student-generated concept maps will also be displayed during this presentation.

**RECOMMENDED PRACTICES WITH CREATING CONCEPT MAPS:** From Kane's perspective, the more simple the maps, the more effective they are. An effective concept map, Kane discovers, is one that the students can easily write their notes on during lectures and self-paced assignments. An ideal concept map is one with a colored background and white “balloons” with accompanying text and relationship indicators.

**SURVEY FINDINGS:** The vast majority of Kane's students who were surveyed on using concept maps the last three academic years reported creating a concept maps as a positive educational activity, reviewed the concept maps as a study guide before taking chapter tests, preferred to study their classmates' concept maps over the teacher's concept maps, and would like to have concept maps available as an option for their other classes at RIT/NTID.

## Presentations

### **Twitteracy: Would You Like a #hashtag With That?**

*Aimee Whyte, lecturer, Liberal Studies*

*Erin Esposito, lecturer, Liberal Studies*

**Time: 10:15-10:35 a.m.**

**Place: SDC-1310**

Social media has become an integral tool in engaging and educating millennials. Capitalizing on the opportunity to effectively connect with students and inspire critical thinking requires optimal use of specific social media strategies. One such strategy involves the use

of Tweeting as a literacy practice (Greenhow, 2015). This presentation will discuss ideas for incorporating Twitter chats and #hashtag projects in the classroom and the benefits to literacy. Using the parameters of Twitter - 140 characters or less - students can easily connect with each

other, apply and share new learning points and vocabulary words, and participate in assigned Twitter chats. We will share our experiences and observations from English class using #VivaVocabulary and in Sociology class using #SOCIRIT.

### **Issues in Simultaneous Communication**

*Baldev Kaur Khalsa, associate professor, ASL and Interpreting Education*

*Stephanie Polowe, Ed.D., professor, Liberal Studies*

**Time: 10:50-11:10 a.m.**

**Place: SDC-1300**

Simultaneous Communication (SC) is frequently used at NTID and in many situations where deaf and hearing people are present in a social or

academic situation. Yet Simultaneous Communication has been erratically studied and confused with other language choices. A brief review of the

literature on SC is presented, along with proposals for future study.



## Presentations

### What is Scholarship for the Visual Arts?

*Eric Kunsman, lecturer, Visual Communications Studies*

**Time: 10:50-11:10 a.m.**

**Place: SDC-1310**

A presentation on how the faculty in the Visual Communication Studies Department approach scholarship of exhibiting their artwork. Many individuals do not realize the constraints creative faculty members must endure to have their work exhibited. This presentation will discuss how I approached my body of work "Thou Art... Will Give..." over the past 11 years. The final edit was displayed in the Dyer Arts Center November- January of last academic year. This body of work now will be published into a book to help raise funds for the penitentiary at the center of the work.

This body of work was based on a historical concept, which required historical research before I started taking my first photograph. Once I had a strong historical foundation, I started my photographic journey, which lead me to visit the penitentiary 362 times. After 11 years, I finally finished editing the work and preparing for the final concept. I will be displaying some before and after photographs to demonstrate how the post-processing of the work is where the historical, conceptual, and aesthetic elements of my work merged.

Topics will include: exhibiting the work-in-progress to get feedback, budget, sponsorship, printing, hanging the work, sequence, and publicity.

Other concerns for Visual Communications Studies faculty include answering the following questions: What is a portfolio review? How do you find an exhibition? What is a juried show? Where does the work go? How do you take rejection?

### Simultaneous Communication: More Questions Than Answers

*Baldev Kaur Khalsa, associate professor, ASL and Interpreting Education*

**Time: 11:15-11:35 a.m.**

**Place: SDC-1300**

The term Simultaneous Communication is used a lot, but the definition varies, the situations vary, and the reasons vary. Admitting

that there are more questions than answers, asking those questions and starting a dialogue can be the beginning of some consensus about

the choice to use Simultaneous Communication or not, or only in select situations.

## Presentations

### Barriers to Justice Reasoning in Sign Language Interpreters

*Robyn Dean, Ph.D., assistant professor, ASL and Interpreting Education*

**Time: 11:15-11:35 a.m.**

**Place: SDC-1310**

Since its beginning, the sign language interpreting profession has made moral and justice claims as its reason for being or its *raison d'être*. Interpreters claim to make decisions that are articulated as “empowering the Deaf person.” Further, interpreters claim to be allies, and there has been a particularly new focus on social justice. However, when comparing some of these claims and the ethical content material of the interpreting profession with those of other service-based professions and the philosophies of justice-reasoning, the sign language interpreting profession falls short.

According to morality research, “justice-reasoning” stands at the apex of the moral developmental hierarchy. Kohlberg posited that morality is a developmental process and proposed six stages of development that a person advances through in regards to beliefs on

morality. Researchers who followed on from Kohlberg further proposed three moral schemas from which an individual makes and justifies decisions: personal interest schema, maintaining norms schema, and post-conventional schema.

For decades, the Center for the Study of Ethical Development has been collecting data on how people from around the world respond to an instrument that measures moral development and the tacit use of these three schemas. This measure, the Defining Issues Test (DIT), uses ethical scenarios in combination with a rating and ranking scheme to measure a respondent’s justice-reasoning, or the ability to reason beyond micro-morality issues and to advocate for broader cooperation and shareable ideals. The DIT has been validated to indicate differences between age groups/educational levels, shows significance in relation to cognitive capacity measures,

and is sensitive enough to detect change following moral education interventions (Bebeau & Thoma, 2003).

The DIT was administered to a cohort of 25 sign language interpreters in the United States. This presentation reports on the DIT data, revealing a strong preference for maintaining norms. Normative data for different age, educational, and professional groups also show that interpreters may lag behind those individuals they work with (doctors, lawyers, etc.). This quantitative data is further triangulated with two separate sources of qualitative data collected on this same cohort. Together, these reveal that interpreters consider ‘maintaining their role’ as the most effective way to engage in ethical practice. Such a conceptualization of ethical behavior, at least theoretically, would serve as a barrier to advancement toward the apex of moral development.

### Is SimCom Evil?

*Marc Marschark, Ph.D., director, Center for Education Research Partnerships*

**Time: 11:40 a.m.-12:00 p.m.**

**Place: SDC-1300**

This presentation considers the available evidence over the past

40 years with regard to the use of SimCom in K-12 and college

classrooms, and its implications for learning.



## Presentations

### Integration of Experiential Learning to Develop Problem-Solving Skills in Deaf and Hard-of-Hearing STEM Students

Wendy Dannels, lecturer, Engineering Studies

Matthew Marshall, Ph.D., associate professor and associate dean of undergraduate programs, Kate Gleason College of Engineering

**Time: 11:40 a.m.-12:00 p.m.**

**Place: SDC-1310**

We present an experiential approach to improving problem-solving skills in deaf and hard-of-hearing students. Students utilize a highly structured methodology adapted from industry to step through a series of problem-solving case studies.

A pervasive assumption about educating deaf and hard-of-hearing students is that overcoming the communication barrier between instructor and student is sufficient to effectively educate these students. However, research demonstrates that deaf and hard-of-hearing students have additional needs that extend beyond the communication barrier. A critical challenge that deaf and hard-of-hearing students face in pursuing STEM degrees is developing problem-solving skills and, by extension, understanding the interaction among concepts or variables that are interrelated. Compared to their hearing peers, deaf and hard-of-hearing students often bring a lower level of conceptual knowledge to the classroom. As a result, when faced with a problem involving an unfamiliar system, deaf and hard-of-hearing students may not easily relate past experience to the problem at hand. Furthermore, educators need to accommodate for the fact that deaf children learn differently, often are more visual, and often process information differently than their hearing peers.

To address these challenges, an approach was developed that combines interactive, experiential learning activities with the 'A3'-based approach to problem-solving commonly used in industry. The approach is rooted in the traditional Plan-Do-Check-Act (PDCA) philosophy and refers to the 11 x 17-inch paper on which each step of the problem-solving process is documented. The method provides a structured way of reporting problems and emphasizes the use of visual information (e.g., graphs and charts) to clearly and efficiently convey the problem as well as the stages leading to its mitigation. In this approach, students document experiential laboratory problems and step-through the initial stages of the PDCA cycle. The 'A3' problem solving method requires students to develop and improve their critical thinking skills.

Utilizing a state-of-the-art production systems laboratory, deaf and hard-of-hearing students act as workers in manufacturing and warehousing scenarios and work in teams to solve problems they encounter first-hand. By being part of the system, students quickly develop the content knowledge needed to address problems introduced as part of the lab activity. To ensure accessibility of the laboratory content, such as providing equal access to

information, online video clips were developed that use American Sign Language and captioning to define relevant technical terms.

To evaluate the approach, students completed a series of four problem-solving case studies that were developed or adapted for this project and blindly scored using a previously developed rubric. The case studies were used as pre/post and follow-up instruments for assessment. Two control groups and two intervention groups were established in the experiment. Preliminary results indicate that students who experienced the intervention realized, on average, a statistically significant 10.6% improvement in assessment score compared to a pre-test baseline and maintained this performance at a six-month follow-up. By comparison, the control group did not experience any statistically significant change in baseline performance. The intervention group scored higher than the control group at a statistically significant level for each test except the baseline pre-test.

Co-author: Andres Carrano, Ph.D., Philpott-WestPoint Stevens associate professor, Department of Industrial and Systems Engineering, Auburn University

**LUNCH 12:00-12:40 p.m.**  
**POSTERS 12:45-1:30 p.m.–SDC, Second Floor**

**Descriptions of posters may be found on pages 25-31**

**Presentations**

**Students' Use of Accommodations for Interviews and Co-op Jobs: Did You Know?**

*John Macko, director, Center on Employment*

*Denise Wellin, senior associate director, NTID Institutional Research*

**Time: 1:35-1:55 p.m.**

**Place: SDC-1300**

To understand how students are using accommodations during interviews and co-op positions, NCE conducted surveys of the past two years' co-op students. Results of the surveys indicate unexpected variances depending on degree level and communication style preference. These results are compared with previous surveys conducted prior to 2008. The results raise questions for "best practice" accommodation strategies that faculty and staff

can use to prepare students for interviews and positions.

What are the ways students learn, discuss and evaluate accommodations they might use during interviews and on the job? In this session we will ask participants to contemplate broadening our thinking from teaching accommodations in a few short lessons to teaching 'accommodations

across the curriculum.' How can we collaboratively prepare students for communication issues in the working world? If students are using more self-directed strategies in communication, specifically in written form, how can we best prepare students to be successful with interviews to obtain positions, and achieve successful employment upon graduation?



## Presentations

### Accessibility of Health Information Text

*Raja S. Kushalnagar, J.D., LL.M., Ph.D., assistant professor, Information and Computing Studies*

*Poorna Kushalnagar, Ph.D., research associate professor, College of Science*

*Marissa Rinkevich, first-year graduate student, Master of Science in Secondary Education*

**Time: 1:35-1:55 p.m.**

**Place: SDC-1310**

The public's knowledge of health topics has become an increasingly important area of study in our text-based world. Knowledge of health topics is needed for critical health literacy, which is the person's ability to integrate health knowledge and skills to take actions to improve health at the individual and community levels. Functional health literacy is important for reading and

understanding health information in text. However, many measures of health literacy are conducted using traditional written examinations. As educational research has shown that testing modality can influence participants' anxiety and test performance, it is possible that the written form may underestimate the person's functional health literacy and therefore does not necessarily

correlate with the person's critical health literacy. In this study, we compared participants' responses to questions on health literacy using both traditional computerized multiple-choice testing and a face-to-face interview format to see if the responses differed based on how the question was asked.

## Presentations

### **Biocultural Deaf Aesthetics: A Critique for a New 21st Century Deaf Education Model**

*Michael Skyer, Ph.D. candidate, lecturer, Master of Science in Secondary Education*

*Laura Cochell, Ed.D. candidate, Teaching and Curriculum, University of Rochester*

**Time: 2:00-2:20 p.m.**

**Place: SDC-1300**

This presentation critically examines a multimodal film produced by Rachele Harris, entitled "Seizing Academic Power: Creating Deaf Counternarratives" (2015). The film is presented in American Sign Language, accompanied by English subtitles and graphic/design (aesthetic) elements, which are employed to critique the 20th century model of deaf education as exemplified by Myklebust's 1964, "The Psychology of Deafness." Harris' film is designed to inform individuals in the Deaf community about harmful metanarratives that have pervaded the educational contexts for deaf people throughout the past 50 years. Harris' film explores the concepts of producing deaf counternarratives as a strategy to gain academic power and assert cultural autonomy.

In this exploratory study, two different researchers offer complimentary analyses that explore multidisciplinary theoretical lenses to decompose this film artifact. These orientations include: culturally relevant pedagogy, multimodal communication, deaf epistemology theory, and deaf gain theory (Ladsen-Billings, 1995; Kress, 2010; Paul and Moores, 2012; Bauman and Murray, 2013). Our findings reveal that our unique researcher positionalities,

as well as the distinct theoretical orientations we employ affect the analysis. Blair and Skyer chose different, though related theoretical frameworks that align with their perspectives regarding teaching deaf students as presented by Harris (2015) in her film.

Blair views the film through the lens of culturally relevant pedagogy (CRP), as exemplified by Ladsen-Billings (1995a; 1995b). CRP is based on the notion that all students are capable of academic success, all can gain and maintain cultural competence, and all can develop critical consciousness within the classroom. This framework focused on the teacher's conception of self and others, as well as the teacher's conceptions of knowledge as a basis to analyze the facilitation of student learning, especially in a marginalized group, in this case, Deaf culture. Skyer draws from an eclectic array of post structural education and communications research to explore the ideological and aesthetic dimensions of this artifact of teaching. This approach uses Larson (2014), Ranciere (2013), and Kress (2010), among others, to explore the multimodal, multisensory avenues for teaching as exemplified by Harris' (2015) film. This orientation reveals

some of the ontological flaws of the 20th Century model of deaf education. It reveals the need for radical equipotentiality in all deaf educative contexts, and offers new ways to explore the political and aesthetic dimensions of teaching deaf students.

This interpretive, qualitative study employed specific analytic approaches in order to offer a complex picture of contemporary deaf education issues and dilemmas. We situate deaf studies in the 21st century and explore recent philosophical "turns" of deaf education by investigating it historically and conceptually through hybrid empirical methods. Data were collected through several structured viewings of Harris' film. Data were analyzed using process coding, reflective writing, and memo coding. Our study concludes with implications for further study in the disparate domains of a new 21st century deaf education, including (but not limited to) pedagogy, discourse, ideology, and aesthetics.



## Presentations

### Using Interactive Virtual Instruction for Deaf and Hard-of-Hearing Technical Students

*James Mallory, professor, Information and Computing Studies*

**Time: 2:00-2:20 p.m.**

**Place: SDC-1310**

Virtual labs are now a viable option for learning hardware and networking technology due to more powerful computers, higher bandwidth and advanced software emulation packages. The assignment of lab times with busy student schedules and limited room and resources has also spawned an interest at many universities

and schools where students have limited access to labs. The author has found that virtual instruction has also increased the reading motivation for his NTID students as complex technical instructions must be thoroughly understood before students can begin the hands-on portion of these virtual labs. The author will demonstrate

implementation of the virtual laboratories for students preparing for CompTia A+ and Network+ exams. The pros and cons from a professor's point of view will be discussed along with a live demonstration of the classroom and virtual lab usage of this software.

## Panel Discussion

2:00–2:40 p.m.

### Flexible Direct Instruction: What is it Good For?

*Wendy Dannels, lecturer, Engineering Studies*

*Melissa Skyer, lecturer, Science and Mathematics*

*Patricia Wink, senior lecturer, Science and Mathematics*

**Time: 2:00-2:40 p.m.**

**Place: SDC-2102**

This panel discussion will examine three different instances of the application of Flexible Direct Instruction (FDI) this fall semester.

The panel will review their experience with the FDI process, including how they became aware of the system, how it works, how it

has impacted their classrooms, and what their overall assessment of the concept has been.

## Presentations

### ASL Philosophy Resource

*Miriam Lerner, ASL philosophy resource, Liberal Arts Interpreting Team*

*Sarah Cannon, associate interpreter, Department of Access Services*

*Sarah Schneckenburger, interpreter, Department of Access Services*

**Time: 2:25-2:45 p.m.**

**Place: SDC-1300**

Native speakers of English or American Sign Language (ASL) rarely discuss the language of philosophy. This paucity of source material presents an obvious problem to Deaf students taking Introduction to Philosophy courses, and ASL-English interpreters working in Philosophy classes in postsecondary education. There are no simple signs for the concepts of ESSENCE, BEING, REASON, EXISTENCE, METAPHYSICAL, etc. The practice of Philosophy often relies on the use of Logic strings, the presentation of which is often antithetical to ASL discourse style.

This project provided a venue for deep translation work and the creation of a website resource repository for definitions of terms, concepts and mini-lectures/discussions in English and ASL for students to use as a supplement to their reading, class lecture / discussion exposure and tutoring sessions.

Deaf and hard-of-hearing students now have a resource to solidify

their understanding of vocabulary and concepts they encounter in Philosophy and Philosophy of Ethics courses offered at RIT. This unique resource will provide clear and nuanced language samples that will enhance interpretation.

Phase I of this project consisted of a translation project, a one-week "boot camp," that led to the creation of a learning resource offering a primer of philosophical constructs and vocabulary rendered in ASL and English. Dr. Teresa Blankmeyer Burke, professor of Philosophy at Gallaudet University, served as our scholar-in-residence for five days, acting as the primary consultant to the master signers (Patrick Graybill, William Hayes, Ruth Anna Spooner and Rita Straubhaar) as they worked through translations. The group engaged in explorations of precise definitions of vocabulary items and concepts with native ASL signers to arrive at consensus ASL translations. These definitions/expansions/explanations were recorded and uploaded to a WordPress website and made

accessible to the public. These are the inaugural entries. Throughout the 2015 Fall semester, Deaf students and interpreters will be recruited to "test drive" the signs and then provide feedback on the process.

Our immediate goal for this innovation is, of course, improved student comprehension of the subject matter. Better comprehension may well lead to greater engagement, enhanced inclusion, and the opening of an entirely new perspective on basic definitions in academic subjects. Interpreters will be better equipped to enter introductory classes in Philosophy/Ethics and render clearer and more correct representations of these abstract ideas.

This is the beginning of an innovative learning tool that will benefit not only deaf and hard-of-hearing students and interpreters, but anyone interested in delving into the complexities of philosophical discourse.



## Presentations

### Use of Video Technology and Graphics for Qualitative Research

*W. Scot Atkins, Ed.D, assistant professor, Business Studies*

*Gina Sangiacomo, graduate student, Master of Science in Secondary Education*

**Time: 2:25-2:45 p.m.**

**Place: SDC-1310**

Qualitative research is an important component of research with populations that are relatively small, difficult to locate, or understudied. A key challenge of conducting qualitative research is the high cost of conducting research on-site with remote subjects because increased travel costs and logistical challenges make on-site research expensive and inefficient. The author conducted a study using social network analysis with Deaf entrepreneurs. These Deaf entrepreneurs were from various locations across the country and

had varying availability. One of the objectives of this research project was to discover and/or create new and innovative approaches to qualitative research with a focus on conducting interviews with deaf and hard-of-hearing subjects. During the video-based interviews, a visual depiction of the entrepreneur's social network was created using a document visible on the video screen. This added a rich layer of information to the qualitative study, which was used in the final coding analysis.

During the presentation, the author will outline the process of selecting the appropriate tools and software to conduct remote qualitative interviews for the specific population of deaf and hard-of-hearing people. Lessons learned from the process will be shared with participants. Through this process, it was discovered that this particular process has great promise for future research projects, especially through continuously improving technologies.

### Career Technical Education and Program Offerings

*Dino Laury, chairperson, Engineering Studies*

**Time: 2:50-3:10 p.m.**

**Place: SDC-1300**

This decision-analysis proposal seeks to answer the question, which associate degree programs should NTID's Department of Engineering Studies (DES) offer? The rationale is associated with NTID's strategic planning, which identified that the college should (a) review and update NTID's career-focused program portfolio that prepares students for the workforce; (b) expand NTID's Associate of Applied Science Transfer programs through articulation agreements regarding transferability to one of the other colleges of RIT; (c) consider Green Technology as one option among several career-focused or transfer programs; and (d) investigate development of deafness-

related STEM bachelor's degrees with other RIT colleges.

The primary issues and concerns with respect to new program additions for Department of Engineering Studies are related to ACT scores, the limitation of program choices, and students who are academically underprepared. First, not all deaf and hard-of-hearing students qualify to pursue associate and/or baccalaureate programs due to their low ACT scores. Second, there are only two choices for students in career-focused AOS programs, and if a deaf and hard-of-hearing student is not interested in either of the current career-focused programs, then attrition becomes

an issue for the department because it loses a qualified student. Finally, the underprepared deaf and hard-of-hearing students will have one academic year to become academically ready for the career-focused programs in DES.

The method for the review of the literature for program expansion was conducted using a variety of sources such as peer-reviewed academic journals, books, and dissertations. From the review of literature, the findings are organized into the following major topic areas: (a) current trends; (b) program offerings, including strategies such as articulation agreements; (c) engineering



## Presentations

education reform, including recruiting non-engineering students and offering apprenticeships; and (d) Deaf epistemologies on education and occupation for the deaf. The summary of the literature suggests different strategies to approach in considering program offerings as follows: (a) following CTE and Perkins IV guidelines; (b) incorporating clustering and pathways; (c) employing academic-to-employment readiness programs like apprenticeship; (d) developing articulation agreements between 2/4 year institutes if a student decides to pursue a bachelor's degree; (e)

expanding the concept from STEM to STEAM to attract prospective engineering or non-engineering students with the intention of diversifying the engineering field; and (f) adding program offerings that will enhance STEM (or STEM to STEAM transition) to potentially increase student enrollment, particularly for non-engineering students. According to one study, there was a significant disparity in employment rates among graduates with associate degrees, with 83.7% of hearing graduates finding employment compared with 64.9% of deaf and hard-of-hearing graduates.

Thus, there are eight decision analysis models. Mixed Scanning has been selected as the decision analysis framework, based on the framing of the problem statement using both broad and deep lenses (i.e. T-analogy), to scan the alternatives developed from the understanding of institutional context, rationale, and the review of the literature considering program expansions. The alternatives are (a) Maintaining DES's current situation (i.e. status quo), (b) adding a new program, and (c) eliminate an existing program and adding a new program.

### Historical Insights from Chomskyan Linguistics in the Developmental Education of Deaf Students

*Stephanie Polowe, Ed.D., professor, Liberal Studies*

*Baldev Kaur Khalsa, associate professor, ASL and Interpreting Education*

**Time: 2:50-3:10 p.m.**

**Place: SDC-1310**

During the 1970's, the researcher Stephen Quigley led a research team in applied linguistics at the University of Illinois, Champagne Urbana. These linguists looked into the application of Transformational Grammar to the

teaching of English of students who are deaf. A synopsis of the work, and its early uses at NTID, is presented. This presentation will be useful to developmental English teachers, and to anyone who is interested in

a systematic approach to assisting our students with English grammar concerns.



## Presentations

### Online Tutoring: Face-to-Face and Through a Lens

*Lisa Elliot, Ph.D., senior research scientist, NTID Office of the President*

**Time: 3:15-3:35 p.m.**

**Place: SDC-1300**

Students who are deaf or hard-of-hearing and who are enrolled in science, technology, engineering, or math (STEM) courses with hearing peers often require additional support to be successful in their courses. At RIT/NTID, in-person tutoring with faculty who are skilled communicators with students who are deaf and hard-of-hearing has been the traditional option for providing additional support. However, this model is not always practical. For example, conflicting student and faculty schedules and the location of faculty offices across campus often prevent students from attending tutors' regularly scheduled office hours. In addition, challenges such as illness, bad weather, or faculty travel may make it impossible for students to make an in-person office visit. Other institutions with only a few deaf and hard-of-hearing students may not have qualified staff to provide tutoring support.

Synchronous (same-time) online tutoring is an alternative to the in-person tutoring appointment. While synchronous online tutoring has become increasingly available for students who are hearing, applications that involve video-only (such as Skype-based sessions) or text-only do not offer the range of communication options required for optimal tutoring for students who are

deaf or hard-of-hearing. Additionally, tutors for generic tutoring services may not have the communication skills necessary to conduct sessions with students who are deaf or hard-of-hearing. Limited research has been conducted on the topic of synchronous online tutoring for deaf and hard-of-hearing students. One study (Brown, 2010) looked at high school students' experiences. A second study (Bryant, 2011) was conducted at NTID with students in an English course. As online education grows, additional research is useful to identify and expand best practices for providing online supplemental support to deaf and hard-of-hearing students. Therefore, a fundamental research question to be addressed in this presentation is, "What takes place during synchronous online tutoring sessions for STEM courses between deaf and hard-of-hearing students and their tutors?"

Now in its fifth year of operation, the Deaf STEM Community Alliance is an NSF-funded project lead by Rochester Institute of Technology (Rochester, NY), with partners at Camden County College (Blackwood, NJ) and Cornell University (Ithaca, NY). The Alliance has developed the Deaf and Hard of Hearing Virtual Academic Community (DHHVAC), which was established to address three types of critical

barriers to the success of students who are deaf or hard-of-hearing: 1) student preparation; 2) socialization; and, 3) accessible media. Using an incremental and iterative model-building strategy, the community is always evolving in response to members' needs. One of the first and central activities of the DHHVAC was online tutoring for student participants at each of the three campuses.

To date, DHHVAC tutors and students have participated in more than 130 synchronous tutoring sessions. These sessions represent tutoring by 13 tutors, 32 students and nine STEM topics. The presentation will describe a qualitative research project involving analysis of a sample of videos from these sessions. The presentation will highlight initial findings from the analysis, provide a basic description of the tutoring program, and describe some challenges and strategies encountered by the project participants during synchronous online tutoring.

Project Assistants: Annette Tavernese, second-year graduate student, Master of Science in Secondary Education; Jonathan MacDonald, Master of Science in Secondary Education alumnus

## Presentations

### Feasting on Deaf History

*Patti Durr, associate professor, Cultural and Creative Studies*

*Jeanne Behm, coordinator, RIT ASL and Deaf Studies Community Center*

**Time: 3:15-3:35 p.m.**

**Place: SDC-1310**

Four years ago, the RIT ASL and Deaf Studies Community Center hosted its first banquet at NTID in honor of the 300th birthday of Abbe de l'Epee, the founder of Deaf education in Paris, France, and each year since has honored other anniversaries.

This presentation will review student involvement in researching and reenacting important people in Deaf

history as we resurrected the Paris Deaf-mute Banquets as well as show clips from films, exhibitions, and presentations that were produced during these special weekend celebrations.

Many students, faculty and staff have commented on how much they have learned and benefited from these

Banquets and associated events as they help bring Deaf history to life, as well as give us an opportunity to reflect on not only where we have been, but where we are going.

### Student Perceptions of the Whiteboard as a Communication Tool for In-Class Team Work

*Carol Marchetti, Ph.D., associate professor, College of Science*

*Co-author: Susan Foster, Ph.D., professor, Master of Science in Secondary Education-Research*

*Project assistant: Chi Man Ho, student, Master of Science in Secondary Education*

**Time: 3:40-4:00 p.m.**

**Place: SDC-1300**

Many teachers are aware of the benefits of cooperative learning. However, implementation, especially in classrooms with communication challenges, can be difficult. Team

work can be daunting, particularly for students who struggle with language. Hear the student perspective on how a low-tech tool can improve this environment.



## Presentations

### **Seeing the World Through Deaf Eyes: The Chile Study Abroad Experiences of Deaf Students**

*Joan Naturale, Ed.D., NTID reference librarian, Wallace Library*

*Denise Kavin, Ed.D., lecturer, Liberal Studies*

**Time: 3:40-4:00 p.m.**

**Place: SDC-1310**

Research has indicated that a global education, including study-abroad programs, is increasingly crucial in today's world and offers intercultural, personal, academic, and career-related benefits to participants. However, there has been a paucity of academic research on best-class and study-abroad program designs for deaf and hard-of-hearing students. The research to date has not included the experiences and perceptions of deaf students who participated in study-abroad programs. The purpose of this study was to examine the perceived supports and barriers to study-abroad experiences of deaf

students. Information gathered from the unique perspective of deaf study participants was used to assist in designing optimal classes and study-abroad programs that consider the cultural, visual, and linguistic needs of these students. This study incorporates Yosso's community cultural wealth theory and investigates how deaf study participants develop social, familial, aspirational, linguistic, navigational, intercultural, and/or resistant capital, which are components of community cultural wealth (Listman, Rogers, & Hauser, 2011; Yosso, 2005, 2006). The researcher employed a

qualitative methodology, specifically, phenomenology. Interviews were conducted with participants who are deaf students and have experienced study-abroad programs using the direct signing model. The phenomenon of interest is the sign-accessible Chile abroad experience of deaf students. Interview questions exploring the development of various capital were also asked (Listman et al., 2011; Yosso, 2005, 2006). At the conclusion of the study, the researcher recommends best practices in-class and study-abroad program designs from the deaf students' perspectives.

### Preferences for Deaf and Hard-of-Hearing Learners in Online Classes

*James Mallory, professor, Information and Computing Studies*

This research study was undertaken to evaluate the experiences of deaf and hard-of-hearing students who were enrolled in online college courses and to determine what the optimal or “best practices” would be for online instructional

delivery to this population. Students with hearing loss participated in an in-depth interview in one of two separate groups sharing their experiences in their online classes. For effective instruction, it was found that faculty and students need to

follow recommended best practices to optimize the deaf and hard-of-hearing students’ experience and learning in an online class. These best practices will be explained during this presentation.

### Two ADHD Scales Used with Deaf Adults Are Not Confounded by Cultural Identity

*Ila Parasnis, Ph.D., professor, Master of Science in Secondary Education-Research*

ADHD rating scales can be sensitive to students’ cultural backgrounds, leading to disproportionate ADHD misdiagnosis for different cultural subgroups (Reid et al., 1998, *J. of Ab. Child Psych.*, 26, 187-198). ADHD may be misdiagnosed in deaf individuals because culturally normal behaviors can mimic clinically normative ADHD symptoms (Parasnis et al., 2001, *NTID Research Bull.*, 6). Hence, cultural expectations for normative behaviors may influence ADHD rating scale scores, and these expectations may depend on how strongly a deaf individual identifies with Deaf and Hearing cultures. If so, current ADHD rating scale norms may not apply to deaf individuals. We compared deaf adults’ scores on the Deaf Acculturation Scales (DAS, Maxwell-McCaw & Zea, 2010, *J. of Deaf Studies and Deaf Ed.*, 16(3), 325-342) with scores on two ADHD diagnostic tests, the Attention Deficit

Scales for Adults–Sign Language Version (ADSA-SLV; Parasnis et al., 2008, Rochester, NY: RIT), and the Behavior Rating Inventory of Executive Function (BRIEF-A valid for deaf adults, Hauser et al., 2013, *J. of Psychoed. Assess.*, 31, 363-374). The DAS has two indexes of the strength of Deaf (DASd) and Hearing (DASH) cultural identity. The ADSA-SLV is an ADHD self-rating test for deaf adults. It offers ASL, English-based sign, and English print, overcoming language access validity issues, and has nine subscale scores and a total ADHD score. The ADSA-SLV has excellent criterion and predictive validity for identifying ADHD in deaf adults (Parasnis et al., APS 2013, 2014, 2015). The BRIEF-A has nine subscale scores and three broad executive function indexes (Behavioral Regulation, Metacognitive, and Global Executive Function). Twenty-nine non-ADHD deaf undergraduates

took the ADSA-SLV, DAS, and BRIEF-A. DAS scores showed a wide range of cultural identities (1 to 5 scale: DASd, 2.6-4.9; DASH, 2.2-4.9). Pearson product-moment correlations (corrected for attenuation) of DAS subscales with ADSA-SLV scores were low and non-significant (DASd  $r=.120$ ; DASH  $r=.351$ ), as were their correlations with BRIEF-A indexes (DASd  $r=.093$  to  $.185$ ; DASH  $r=.252$  to  $.283$ ). Multiple regressions controlling age, gender, ethnicity, and childhood SES confirmed the absence of significant associations between either Deaf or Hearing cultural identity and ADSA-SLV or BRIEF-A scores. Results indicate that cultural identity variations among deaf adults do not substantially influence ADHD rating scale scores on these tests and support their use for ADHD screening and assessment of deaf adults.



## Creating Flipped Classroom Lectures: Recommended Practices

*Mike Kane, lecturer, Business Studies*

*Heather L. Smith, lecturer, Visual Communications Studies*

**BACKGROUND:** Promoted by the RIT Innovative Learning Institute (ILI) and NTID Learning Center (NLC), flipped classroom lectures are touted as an innovative teaching approach for today's classrooms. Michael (Mike) Kane, lecturer for the NTID Business Studies Department, and Heather L. Smith, lecturer for the NTID Visual Communications Studies Department, have created a total of fifty-one flipped classroom lectures. Those videos are used as a teaching tool in their accounting and art classrooms, respectively. Kane and Smith consider the videos an additional visual component for student learning. Kane developed nine flipped classroom lectures for the Accounting 3 (NACC-203) course; he also developed 11 lecture videos for the Spreadsheet Applications for Business (NAST-160) course. Smith created 14 lecture videos and 17 demonstration videos for the Animation (NGRD-257) course.

### CROSS-DISCIPLINARY

**COLLABORATION:** Smith first created videotaped mini-tutorials for her Animation students to use as reference material in her course materials to allow students to work on their projects independently. After two academic quarters of

using the mini-tutorial videos in her classes, Smith saw an improvement from her students as they were demonstrating better understanding of animation concepts from watching her videos. This became clear when communicating complex processes in producing animation became easier and student retention of information was improved. With her positive results in hand, Smith later decided to flip her classroom for use in her Animation course. After two academic semesters of flipped teaching, Smith's classroom has since evolved into using the blended teaching model to allow for keeping her course content updated with the ever-changing use of technology in the classroom.

Kane became intrigued with developing flipped classroom lectures after viewing sample videos created by several NTID faculty members (including Smith) at an orientation workshop hosted by the NLC. After experiencing two academic years flipping his accounting classroom, Kane co-moderated the "Meet Experienced Flipped Classroom Instructors: Watch – Learn – Ask" panel sponsored by the NTID Professional Development Program two times during the 2014-2015

academic year. Smith participated as a panelist alongside five other instructors in both these discussions. The discussions among panelists and attendees indicated a need to promote flipped classroom lectures as a "doable" teaching strategy at RIT/NTID.

**RECOMMENDED PRACTICES WITH CREATING FLIPPED CLASSROOM LECTURES:** Kane and Smith's collaborative efforts led to mutual agreement on the need to disseminate recommended practices with NTID faculty and staff who are interested in developing flipped classroom lectures. This poster lists numerous recommended practices – based on Kane and Smith's experiences with creating videos while teaching diverse subjects – for creating quality flipped classroom lectures for deaf and hard-of-hearing students. The primary goal of this presentation is to guide "novices" with recommendations and videotaping tips – regardless of what discipline is being taught in their classrooms – to implement this pedagogical approach. A written summary of recommended practices and tips will also be distributed to interested faculty and staff.



## **Interactive Storybook Reading and Picture Vocabulary: A Replication Study**

*Jessica Trussell, Ph.D., assistant professor, Master of Science in Secondary Education*

### **INTRODUCTION**

Before a strategy can be considered an evidence-based practice, the strategy needs to be investigated by three different research teams in three different geographic locations in a minimum of five single case design studies with similar findings (Kratochwill et al., 2010). Replicating studies critical to deaf education because there are few strategies with an evidence-base (Luckner & Cooke, 2010). Further, involving teachers in research is one approach to closing the research-to-practice gap (Altrichter, Feldman, Posch, & Somekh, 2013). Replication studies are one way to get teachers involved in conducting research in the classroom because they can implement a strategy that has an emerging evidence base, much like interactive storybook reading.

Children who are deaf or hard-of-hearing struggle to acquire age-appropriate vocabulary (Easterbrooks & Baker, 2002). Interactive storybook reading incorporates questions and discussion to enhance vocabulary learning (Whitehurst et. al, 1988). Researchers found that interactive storybook reading positively affects vocabulary for DHH children who

use spoken language (Fung, Chow, & McBride Chang, 2005) and sign language (Trussell & Easterbrooks, 2014). The purpose of this study was to replicate the effects of a scripted interactive storybook reading intervention on the picture vocabulary of pre-school age deaf and hard-of-hearing children who use a variety of communication modalities. During this systematic replication, the intervention was implemented and planned by teachers. The primary research question was: What effect does interactive storybook reading have on targeted picture vocabulary of pre-school children who are deaf or hard-of-hearing?

### **METHOD**

#### **Participants and setting**

Eighteen students and two teachers from a self-contained deaf and hard-of-hearing preschool in the northwest portion of the United States were the participants in this study. Both the intervention and implementation of the data probes occurred in the teachers' classrooms.

#### **Research design**

The researchers utilized a single-case multiple baseline across

content design. The independent variable was a teacher-implemented interactive storybook intervention. The dependent variable was target picture vocabulary identification.

#### **Procedures**

The teacher participants and primary author determined three books from the units of study in the preschool classroom and five target vocabulary for each book. The teachers implemented intervention that included: scripted questions written to target the pre-determined vocabulary, vocabulary picture prompts, and PEER cycle (Provide the prompt, Evaluate, Expand, Repeat the prompt; Whitehurst et al., 1988). The intervention was implemented for twenty minutes per day, four days per week for three weeks. Lastly, the teachers assessed the students' ability to label the item or action pictured on the card.

### **RESULTS AND CONCLUSIONS**

The results of this study are being analyzed. Conclusions are forthcoming.



### **A Deaf-Friendly Adaption of a Manufacturer's Equipment Aids Deaf Students' Learning Process**

*Wendy A. Dannels, lecturer, Engineering Studies*

*Edward Schwenzer, lecturer, Engineering Studies*

*Gary Behm, assistant professor, Engineering Studies*

We present an approach to improve deaf and hard-of-hearing students' trade skills using a coordinate-

measuring machine that many companies use nationwide. How NTID faculty and co-op students

overcame a manufacturer's deficiency in its equipment and made it deaf-friendly will be discussed.

### **Assessment and Design of a Learning Environment**

*William LaVigne, assistant professor, Engineering Studies*

*James Fugate, assistant professor, Engineering Studies*

*Students from the Computer-Aided Drafting Technology Program*

Curriculum does not remain static. Neither should the physical environments in which students learn. For the past two years, faculty and students within the Department of Engineering Studies (DES) have been documenting,

assessing, and rethinking lab spaces for the Computer Aided Drafting Technology and Computer Integrated Machining Technology programs. Using the latest 3D computer graphic technologies, students have proposed sweeping changes

to their environment with the goal of leading DES well into the next decade. These proposed changes will be presented in a poster session for NTID community feedback.

### **Energy Modelers: Teaching Students and Learning from Them**

*Pam Berkeley, Ph.D., assistant professor, Engineering Studies*

Accurately modeling the energy use of buildings is the critical first step in decreasing their energy use. Energy models currently are not reliable, and past research has shown that a lot of variability is introduced by decisions made by the modeler. Modifications to a popular building energy

modeling program will be made in the attempt to reduce variability between modeler decisions. Students, as novices to the energy modeling process, make an important test demographic – if the program modifications can help students make similar decisions to each other,

there is a reasonable chance that later-career energy modelers will also make similar decisions. In the process of testing the program, students will be taught the skills necessary to become a professional energy modeler.

**Sitting Height: An Adult Correlate of Physical and Neurocognitive Growth Dysregulation by Early Childhood Adverse Events***Vincent Samar, Ph.D., associate professor, Liberal Studies-Research*

Early adverse events (EAEs), such as placental insufficiency, childhood infections and environmental and drug-related toxicities are common causes of childhood deafness. More generally, EAEs dysregulate childhood metabolic growth pathways and energy metabolism, leading to poor adult physical and neurocognitive development, which, in turn, can affect educational success and lifelong health. Furthermore, the risk of exposure to EAEs follows a social gradient, being disproportionately greater among fetuses and children from low childhood socioeconomic status (CSES) backgrounds. It has proven difficult to study adult educational and neurobehavioral consequences of childhood exposure to EAEs in hearing and deaf adults without an adult marker of likely exposure to EAEs.

We propose that one or more height components (leg or trunk-length/sitting-height) is such a marker. Prior studies indicate that individuals exposed to EAEs experience initial growth restriction followed by rapid catch-up growth in height and weight, with disproportionately greater weight than height growth, leading to childhood and adult obesity and contributing to poor

adult health outcomes. This disproportionality implies that height or one of its components should positively correlate with BMI in adult populations at prior risk for EAEs, but not in unexposed populations. We report four studies supporting this proposal that sitting height is a simple adult anthropometric marker of individual differences in growth dysregulation within populations at-risk for EAEs. As such, sitting height may be a useful measure for future research on childhood adversity and adult health outcomes in many populations. Study 1: 130 deaf and 531 hearing undergraduates. We collected self-reported standing height, weight and parents' education (CSES proxy). Study 2: 19 deaf undergraduates. We measured standing height, sitting height, weight, parents' education and occupations (CSES proxies), and EEG activation from mediofrontal inhibitory self-regulation networks. Study 3: 36 hearing undergraduates - followed Study 2 methods. Study 4: 50 deaf undergraduates. We used Study 2 methods and also collected self-reported histories of EAEs from both low and high CSES groups. We compared low and high CSES groups within studies. Study 4: we compared

participants who reported EAEs (EAE+) with participants who did not (EAE-), controlling for CSES.

Results showed standing height for deaf but not hearing participants (Study 1) correlated positively with BMI within low but not high CSES groups. Sitting height, but not leg length or standing height, correlated positively with BMI within low but not high CSES deaf and hearing groups (Studies 2/3). In study 4, which dissociated CSES from EAE history, sitting height but not leg length or standing height correlated positively with BMI in the EAE+ but not EAE- group. Taller sitting heights in low SES or EAE groups were associated with greater weight dysregulation. Further, low CSES (Studies 2/3) and EAE+ (Study 4) groups showed impaired EEG activation of mediofrontal inhibitory networks, and taller sitting heights predicted greater neurocognitive impairment. Generally, deaf and hearing adults' data agree with the prediction that adult sitting height is a useful simple marker for childhood growth dysregulation and subsequent physical and neurocognitive dysfunction within populations at-risk for exposure to EAEs.



## **Automatic Speech Recognition Systems as Tools to Enhance Spoken Communication in the Workplace**

*Linda Gottermeier, Au.D., associate professor, Communication Studies and Services*

*Carol L. De Filippo, Ph.D., professor, Master of Science in Secondary Education – Research*

*Raja S. Kushalnagar, J.D., LL.M., Ph.D., assistant professor, Information and Computing Studies*

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The workplace presents many challenges for deaf and hard-of-hearing individuals, partially because a wide array of strategies to accommodate the communication needs of people with typical hearing, and flexibility in their use, are essential for upward mobility (Foster & Walter, 1992). Job-related demands also make the workplace a more difficult communication situation for those who are deaf compared to those who are hard of hearing (Boutin & Wilson, 2009). Both groups, however, tend to experience less success in securing higher level jobs than their peers with typical hearing and are limited by level of college degree (Kelly, Quagliata, DeMartino, & Perotti, 2015). For both deaf and hard-of-hearing workers, communication on the job reportedly involves English about 80% of the time, whether through writing,

speech or sign language with speech (Kelly et al., 2015).

Given the spoken-language communication requirements of the workplace, to what extent does current speech recognition technology, especially as available in mobile apps, enhance access by deaf and hard-of-hearing individuals? Are speech recognition apps usable tools to enhance exchanges between deaf or hard-of-hearing persons and individuals who have typical hearing, whether it be a coworker or a boss?

To investigate the capabilities of newer Automatic Speech Recognition (ASR) applications/software as tools to support auditory access of spoken communication, we asked 26 deaf and hard-of-hearing college students to use a variety of applications and software in everyday, job-related

settings and to provide evaluative feedback on their experiences. Our evaluators' findings will be shared in this workshop.

Additionally, participants will learn about outcome trials with a beta app called AVA by Transcense Labs. AVA focuses on a seamless conversational experience for deaf and hard-of-hearing persons and is described as being like Siri, but for group conversations. The app shows a real-time, color-coded transcript of a discussion for use in situations such as meetings and on-the-job conferences.

## Preliminary Analysis of Second Language (L2) Learners' Discrimination of Phonological Contrasts in ASL

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Our hypotheses predicted movement and handshape contrasts were more difficult for L2 learners than orientation and location.

As an important area for future research, this unpublished research study's purpose is to describe variation in signed languages and explore its impact on L2 acquisition from the perspectives of both production and perception; specifically focusing on the ability to effectively distinguish contrastive from non-contrastive differences among L2 learners.

In our study, L2 learners with different levels of ASL proficiency were asked to produce sets of items illustrating contrasts in each of these parameters by engaging in a sentence repetition task (SRT). Three hypotheses are provided below:

1. Beginners would make more mistakes than intermediate learners, with advanced learners making the fewest mistakes.
2. Movement and handshape contrasts would be the most difficult for L2 learners to acquire, therefore, they would persist to some degree even in advanced learners.

3. Orientation and location contrasts would be the easiest to learn, therefore, they will rarely occur in intermediate-advanced learners.

Error patterns should reflect hypotheses both in terms of number of errors by category and type of error (for example, movement category should reflect movement errors).

Fifty subjects consisting of Liberal Arts students, ASL-English interpreting students, and college employees participated in the main study. All subjects had completed or were currently enrolled in an ASL class. The stimuli consisted of 48 sentences performed by a native ASL user on a video-recording.

With the primary data analysis completed, preliminary findings demonstrated that the beginner level students made more production errors than the intermediate level students in the areas of marked and unmarked locations and movement than in the area of palm orientation. Furthermore, the findings reveal that rate of errors across all L2 learners is highest with movement (24%), followed closely by location (20%) and palm orientation (19%).

The lowest rate of error by far was handshape (13%), going against our working hypothesis.

Currently in progress, our secondary analysis cross references error rates against subjects' demographic information in order to better understand the impact that factors such as subject's language history and age can have on production and perception of each phonological contrast.

This study will bring new insights into L2 teaching and theoretical linguistics in the field of phonology, as well as how to improve ASL curriculum needs to match students of different skill levels and backgrounds.