

# 2017

**NTID  
Scholarship Symposium**

**Thursday, January 12<sup>th</sup>**

**CSD  
Student Development Center**

R·I·T

Updated 01/31/17



**NTID Scholarship Symposium**  
**Thursday, January 12, 2017**  
**CSD Student Development Center**  
**Rochester Institute of Technology**

Welcome to our third NTID Scholarship Symposium! Today's event showcases scholarly work 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 last symposium, and we are excited to have another opportunity to come together to share what we have been working on.

Kudos go to all the faculty, staff and students 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.

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; Communications, Marketing and Multimedia Services; and Facilities Management Services.

# NTID Scholarship Symposium Schedule

January 12, 2017

8:00-8:40	<p>Registration/Check-in and Continental Breakfast - Ellie's Place, CSD Student Development Center</p>	
8:45-8:55	<p>Welcome by Dr. Gerard Buckley, NTID President/Dean, RIT VP - CSD 1300</p>	
	<b>CSD-1300</b>	<b>CSD-1310</b>
9:00-9:25	<p><b>Stereotype Threat Effects on Deaf and Hard-of-Hearing College Students' Mathematical Performance</b> Ronald R. Kelly</p>	<p><b>The Many "Faces" of Online Instructional Materials at NTID</b> Linda Bryant, Wesley Blue</p>
9:30-9:55	<p><b>Developing the Personal Characteristics and "Soft" Skills Needed for Job Promotion and Career Growth</b> Ronald R. Kelly</p>	<p><b>Assessing Online Readiness</b> Linda Bryant</p>
10:00-10:25	<p><b>Seeking Self-Employment in the Deaf Community: The Results of a Grounded Theory Study of Deaf Entrepreneurs</b> W. Scot Atkins</p>	<p><b>Discipline-based Literacy Skills in the Astronomy Classroom</b> Jessica Trussell, Jason Nordhaus, Alison Cawley, Brittany Amari</p>
10:25-10:35	<p><b>Mid-Morning Break</b></p>	
10:40-11:05	<p><b>Communication Strategies in the Workplace Survey</b> Lisa Elliot</p>	<p><b>Quiet Science: Training Students who are Deaf and Hard-of-Hearing in Bioscience Research</b> Austin Gehret</p>
11:10-11:35	<p><b>Field Study of Using Automatic Speech Recognition to Facilitate Communication between Deaf Students and Hearing Customers</b> Michael Stinson, James Mallory</p>	<p><b>Attention in Deaf School Children: Paying Attention to Sequences</b> Matthew Dye, Sarah Kimbley</p>
11:40-12:05	<p><b>Making the Best of Imperfect Automatic Speech Recognition for Captioning One-on-One Meetings</b> Larwan Berke, Matt Huenerfauth</p>	<p><b>Career Longevity and Career Advancement Strategies for Full-Time, Non-Tenure-Track University Faculty</b> Alvin C. Merritt Boyd, III</p>
12:05-12:50	<p><b>Lunch</b></p>	
12:50-1:30	<p><b>Poster Session (CSD-First Floor) - (see descriptions on next page)</b></p>	
1:35-2:00	<p><b>Variation in Deaf and Hard-of-Hearing College Students' Knowledge of General-Purpose and Academic English Verbs</b> Gerald P. Berent, Susan Rizzo, Kathryn L. Schmitz, Kimberly Persky</p>	<p><b>ASLIE and VCS Department Collaborative Project</b> Jennifer Briggs, Heather Smith</p>
2:05-2:30	<p><b>NTID and Deaf Studies Archive Collections: How to Use in Classes</b> Joan Naturale</p>	<p><b>ASL Literature Resource</b> Miriam Lerner, Sarah Schneckeburger, Sarah Cannon</p>
2:35-3:00	<p><b>Developing Interpersonal Relationships with College Students: Interpreters' Tensions</b> Morgan Underwood</p>	<p><b>Researching and Addressing Students' Needs in the Workplace</b> James Mallory, David Lawrence</p>
3:05-3:30	<p><b>E-Portfolios and Digital Portfolios</b> Kathleen Szczepanek, Mary Beth Parker, Tracy Magin, Adriana Kulakowski</p>	<p><b>Confronting Common Myths about Online Classes</b> Pamela R. Conley</p>
3:35-4:00	<p><b>A Collaborative and Multi-Strategic Approach to Supporting the Success of Deaf and Hard-of-Hearing Students of Color and Their Sub-groups</b> Alvin C. Merritt Boyd, III, Mary Karol Matchett, Jessica Hurd</p>	<p><b>Invigorating the Curriculum: Developing and Offering New Courses</b> Nicole Chow, Heather Smith, Brian Trager, Marianne Gustafson (moderator)</p>
4:00-5:00	<p><b>Wine/Hors d'oeuvre Reception (Ellie's Place)</b></p>	

# Poster Presentations

## CSD-First Floor

12:50-1:30 p.m.

▼ **Earning a Spot on the RIT myCourses Top 50 Heavy Hitters: Practical Tips**

Michael Kane, senior lecturer, Business Studies

▼ **Implementing Full Access Video Lectures to Improve Understanding and Performance of All Students in a Large Science Classroom**

Sandra Connelly, Ph.D., assistant professor, College of Science, School of Life Sciences

▼ **Interpreting in Foreign Language Courses - Techniques and Travels**

Kathleen Darroch, senior interpreter, Department of Access Services

Denise Herrera, associate interpreter, Department of Access Services

Kira Webster, associate interpreter, Department of Access Services

▼ **Students Acquiring Skills through Projects in the Business World**

James Mallory, professor, Information and Computing Studies

Information and Computing Studies students

▼ **The Use of L1 as a Tool to Teach L2 American Sign Language (ASL)**

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

## **Stereotype Threat Effects on Deaf and Hard-of-Hearing College Students' Mathematical Performance**

Ronald R. Kelly, Ph.D., professor, Master of Science in Secondary Education; director, REACH Center for Studies in Career Success

*Authors: Ronald R. Kelly, Ph.D., professor, Master of Science in Secondary Education; director REACH Center for Studies in Career Success*

*Peter C. Hauser, Ph.D., professor; director, Center for Cognition and Language*

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Stereotyping and identity issues abound for deaf and hard-of-hearing individuals relative to educational and career performance. This research examines stereotype threat effects in deaf and hard-of-hearing college students and the extent that negative stereotype threat influences their performance when being evaluated, such as taking math tests. More generally, stereotype threat effects also can occur when performance is being evaluated in other educational and career settings. Stereotype threat occurs when a member of a stigmatized group feels at risk of confirming, as self-characteristic, a negative stereotype

about one's group. Awareness of the stereotype, beliefs that stereotypes are applicable to self-identity, and evaluation in the context of stereotypes are all necessary for the experience of threat to occur and impact one's performance.

While still in process, this research study to date has collected data on 496 deaf, hard-of-hearing and hearing college students (deaf = 216; hard-of-hearing = 128; and hearing = 152). Students in each group were randomly assigned to either the Threat Condition (instructed that hearing students out performed deaf and hard-of-hearing students on these types of math tests) or the Non-Threat Condition (instructed that deaf and hard-of-hearing and hearing students performed equally well on these types of math problems). Instructions prior to the math tests were provided via video (signed, spoken and captioned). Each participant was tested individually via a computer program, which took approximately one hour. Students were randomly assigned one of six orderings of three math tests consisting of: 144 arithmetic problems;

50 modular math problems; and 30 GRE type problems. Participants were instructed to complete as many problems as possible within the time limit for each math test: Arithmetic problems = 5 minutes; Modular Math Problems = 10 minutes; and GRE type problems = 20 minutes.

Preliminary results show that the students assigned to the stereotype threat condition performed significantly more poorly than the students assigned to the Non-Threat Condition for both the arithmetic problems and the modular math problems. The GRE type problems posed a far greater challenge to the deaf and hard-of-hearing participants where they performed significantly more poorly regardless of Threat or Non-Threat conditions. Additional results will be presented with respect to the hearing participants and gender.

These preliminary results have implications for the teaching and learning process, as well as how deaf and hard-of-hearing people identify within the context of stereotypes.

### The Many “Faces” of Online Instructional Materials at NTID

Linda Bryant, Ed.D., director, NTID online initiatives, NTID Learning Consortium

Wesley Blue, NTID online program operations coordinator, NTID Learning Consortium

Assigning recorded instructional materials for students to watch is prevalent in higher ed. After all, where would we be without Netflix, YouTube

and TED Talks? In this presentation, you will see some of the different ways NTID instructors are producing their own recorded materials for their

flipped, blended and online courses. Attendees also will receive a list of resources associated with producing online instructional materials.

### Developing the Interpersonal “Soft” Skills Needed for Job Promotion and Career Growth

Ronald R. Kelly, Ph.D., professor, Master of Science in Secondary Education;

director, REACH Center for Studies in Career Success

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*Andrew B. Quagliata, lecturer, School of Hotel Administration, College of Business, Cornell University*

*Richard DeMartino, professor, Simone Endowed Chair for Innovation and Entrepreneurship, Saunders College of Business*

*Victor Perotti, professor and chair, Marketing and Digital Business, Saunders College of Business*

Annually, more than 90% of NTID graduates who go into the work force find employment. While NTID graduates are clearly employable, the question is whether they are also prepared for future promotions and career growth and success. Twenty-eight years ago, NTID research findings revealed that deaf and hard-of-hearing bachelor’s degree graduates showed a stunning lack of vertical mobility (Welsh & Walter, 1988). More recent NTID research (Kelly, Quagliata, DeMartino, & Perotti, 2015) paints a moderately improved situation for RIT deaf and hard-of-hearing bachelor’s degree alumni, but

still shows that hearing RIT graduates with comparable bachelor’s degrees are 15 times more likely to receive job promotions. More broadly, an analysis of the 2010 U.S. Census data reveals that only .011% of the deaf and hard-of-hearing people employed are in middle management positions while .02% are in senior management positions. Based on the 2010 U.S. Census, there are approximately 70 times the percentage of hearing people in middle and senior management positions compared to the percentage of deaf and hard-of-hearing people in those positions (Kelly et al., 2016). Thus, the evidence shows that deaf and hard-of-hearing people, including those with college degrees, do not experience job promotions and career growth comparable to their hearing counterparts.

In addition to academic and technical “hard” skills necessary for employment, there are interpersonal “soft” skills requisite for job promotion and career success. Based on research in the field of business and communication, these interpersonal “soft” skills include:

1. How one shares points of view and ideas, as well as presents one’s self to others within the work environment
2. Ability to write clearly and concisely in communicating with/to others within the work environment
3. Making a concerted effort to understand the perspectives of others within the work environment
4. Confirming that one understood what was discussed or conveyed in conversations and meetings within the work environment
5. Self-monitoring of one’s behavior and compartment within the work environment.

These and other strategies will be discussed further with respect to the extant research literature. Developing such interpersonal “soft” skills will increase the probability for job promotions and career success. Furthermore, there are implications for education to emphasize the importance of developing these interpersonal “soft” skills.

### Assessing Online Readiness

Linda Bryant, Ed.D., director, NTID online initiatives, NTID Learning Consortium

Opportunities for learning online are exploding. Massive Open Online Courses (MOOCs) now are part of RIT's portfolio via our partnership with edX in 2015. But how do we know if a student is ready for online learning? Especially if he or she has never been exposed?

In this presentation, I will mention commercial tools that are available, but will focus on how I developed, administered and analyzed an online readiness quiz to help place Summer Vestibule Program (SVP) 2016 students into fall semester online/blended courses. I also will discuss

progress made since SVP and future considerations for utilizing this important tool with other NTID-supported students.

### Seeking Self-Employment in the Deaf Community: The Results of a Grounded Theory Study of Deaf Entrepreneurs

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

Authors: W. Scot Atkins, Ed.D., assistant professor, Business Studies

Richard DeMartino, Ph.D., director, Simone Center on Entrepreneurship

Robert Barbato, Ph.D., professor, College of Business

This paper outlines the results of a grounded theory study of 25 deaf and hard-of-hearing entrepreneurs. The goal was to find out about factors and antecedents that contribute to their entrepreneurial efforts. Four main themes emerged from the data in the study, including

the phenomenon of unplanned and happenstance entrepreneurship, the dynamic role of family role models, technology as an entrepreneurial enabler and the phenomenon of existing deaf-friendly industries. These themes will be discussed along with their implications for future research.

### Discipline-based Literacy Skills in the Astronomy Classroom

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

Jason Nordhaus, Ph.D., assistant professor, Science and Mathematics

Alison Cawley, graduate research assistant, Master of Science in Secondary Education

Brittany Amari, graduate research assistant, Master of Science in Secondary Education

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

Jason Nordhaus, Ph.D., assistant professor, Science and Mathematics

Project Assistants: Alison Cawley, graduate research assistant

Brittany Amari, graduate research assistant

#### INTRODUCTION

Scientists report that knowledge of Latin and Greek affixes and roots (i.e., morphographs) is critical to reading scientific texts (Zygouris-Coe, 2012). When a scientist analyzes morphographs during reading, he/she is utilizing a meaning-oriented decoding strategy that provides clues about the unknown word's meaning (Reichle & Perfetti, 2003). During reading, unfamiliar words can be broken down into their component

morphographs, the smallest units of language that retain meaning (Reed, 2008), helping the reader understand the word within the context of the sentence.

However, deaf and hard-of-hearing students' experience delayed morphographic knowledge that begins at an early age (Gaustad, 1986) and persists to college (Gaustad & Kelly, 2004). A reader's morphographic knowledge consistently predicts

reading comprehension above and beyond phonological skills (Nunes, Burman, Evans, & Bell, 2010) and makes a unique contribution to reading comprehension via vocabulary (Kieffer & Lesaux, 2012). These findings paired with the skills scientists need to read discipline-based texts indicate that morphographic knowledge may be critical to discipline-specific literacy (Zygouris-Coe, 2012), particularly in science. Scientists and teachers of the deaf and hard-of-hearing (TODHHs) should partner to develop and implement instructional strategies that would positively influence deaf and hard-of-hearing students' morphographic knowledge and, in turn, their discipline-specific reading skills. The primary research question was: What effect does morphographic instruction have on the word analysis and affix meaning knowledge of deaf and hard-of-hearing college students in an astronomy class?

## METHOD

### Participants and setting

Twelve deaf and hard-of-hearing college-age students taking an astronomy class were participants in the study. Both the intervention

and data collection occurred in the college class.

### Research design

A multiple probe across behaviors single case experimental design was employed to best answer our demonstration research questions (Gast & Ledford, 2014).

### Procedures

An astrophysicist and TODHH collaborated to develop morphographic instruction for astronomy vocabulary. The researchers choose possible multi-morphographic words (words with two or more morphographs) that are required vocabulary for the class. The TODHH pre-tested the student participants to determine the target words for intervention. The TODHH provided direct instruction to the student participants about how to analyze the words as well as the definitions of the morphographs. The intervention was implemented in 20 to 25 minutes, two times a week. Data were collected through repeatedly measuring if the student participants could analyze the word's structure and define the morphographs before, during and after instruction.

## RESULTS AND CONCLUSIONS

A preliminary look at the data indicates that morphographic instruction has a positive effect on deaf and hard-of-hearing college students' science vocabulary. It appears that collaboration between discipline-based teachers and TODHHs is beneficial for deaf and hard-of-hearing students.

## IMPORTANCE TO SESSION ATTENDEES

This presentation is important to attendees because it demonstrates the benefits of cross-discipline collaboration to increase students' academic skills. Further, this study utilizes single-case design research methods to empirically test an intervention. Single case design methods are optimal for deaf education because they allow researchers to build evidence for instructional strategies through quantitative research with a low-incidence, heterogeneous population.

### Communication Strategies in the Workplace Survey

Lisa Elliot, Ph.D., research associate professor, Office of the Associate Dean of Research

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*Michael Stinson, Ph.D., professor, Master of Science in Secondary Education*

*Donna Easton, research assistant, Office of the Associate Dean of Research*

*James Mallory, professor, Information and Computing Studies*

*Matt Huenerfauth, Ph.D., associate professor, Golisano College of Computing and Information Sciences*

What communication strategies have our students used when participating in off-campus co-op placements and other workplace situations? How satisfied have

students been with the strategies they have tried? How do communication strategies differ between one-to-one meetings and small group meetings? This survey-based study investigated deaf and hard-of-hearing students' use of and satisfaction with strategies and technologies that may facilitate communication when meeting one-to-one or in small groups with hearing colleagues in the workplace. Survey respondents were RIT/NTID students who participated in co-op placements and capstone experiences at workplaces with hearing employees within the past two years. Respondents participated in a 16-question on-line survey that was presented bilingually with English text

and American Sign Language (ASL) videos. The survey was constructed with the help of students from the NTID Spring 2015 Applied Computer Technology capstone course. More than 100 students responded to the survey. Participants' responses to the survey indicated that they were generally not satisfied with their current strategies and technologies for communicating with hearing persons in small groups. The presentation will discuss the preparation of the survey, examine survey findings and discuss implications of the findings with regard to future efforts of applying technology solutions to communication challenges.

### Quiet Science: Training Students who are Deaf and Hard of Hearing in Bioscience Research

Austin Gehret, Ph.D., assistant professor, Science and Mathematics

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

An undergraduate research experience can provide a unique opportunity for students to learn and grow as scientists; when positive, this experience often is transformative in helping motivate students to pursue post-graduate degrees and/or careers in the STEM fields. Conversely, a negative research experience can

sour a student's opinion of research, propagate misconceptions of graduate school and turn students away from careers in STEM. Negative research experiences can equally be as devastating for faculty mentors and likely result in refusal to mentor future research students. Although d/Deaf and hard-of-hearing students learn differently than their hearing peers, their experiences in undergraduate research mirror those of their hearing counterparts.

Until recently, most researchers have focused on how to understand and improve the learning environments

for deaf and hard-of-hearing students in the classroom. Here, we discuss several challenges and strategies derived from survey results associated with the undergraduate research experience for deaf and hard-of-hearing students who were actively involved in undergraduate research. The challenges and strategies outlined aim to shape future mentoring and training efforts of deaf and hard-of-hearing students with the goals of enriching their research experiences, increasing their engagement with research, and improving their pursuit of higher STEM degrees and/or careers in STEM.

## Field Study of Using Automatic Speech Recognition to Facilitate Communication between Deaf Students and Hearing Customers

Michael Stinson, Ph.D., professor, Master of Science in Secondary Education

James Mallory, professor, Information and Computing Studies

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*Matt Huenerfauth, Ph.D., associate professor, Golisano College of Computing and Information Sciences*

In contrast to educational settings, where legislation and practice promote accommodations such as sign language interpreting, cost-effective methods to facilitate deaf and hard-of-hearing individuals' communication in the workplace are not available. Automatic Speech Recognition (ASR), software that converts audio input of human speech into text displayed on the screen, holds exciting promise for making spoken content accessible for people who are deaf or hard-of-hearing.

This presentation will report on an in-progress study that has completed 10 field trials, five with ASR technology, including display of speaker's comments, with students in the NTID Information and Computing Studies program. The study has been examining the extent that ASR has potential, whether

participants can adapt to the use of ASR and whether they modify their speech or behavior to enable communication. These deaf and hard-of-hearing students, as part of their project or work experience, have regularly interacted with hearing customers without interpreting support.

Five field trials occurred with ASR and five occurred without ASR. The ASR that was used was a feature in the WhatsApp mobile application. The field trials were conducted at three local businesses and an organization. Participants were 21 signing deaf students and six hearing customers who did not know sign language. The study used observational checklists, field notes and participant ratings to identify ways that deaf and hard-of-hearing and hearing workers may use an ASR tool. For the trials with ASR, the transcripts that were produced with ASR and with students using texting were examined.

Results indicated that ASR may benefit communication between hearing and deaf individuals in small group communication where an NTID instructor oversees the project but often is not at customer-student meetings. Observations of the five field trials without ASR indicated that deaf students typically used writing

or text messaging to communicate with hearing customers or depended on hard-of-hearing students who could both speak and sign. Hearing customers tended to write out basic information in response to questions or comments of deaf students. When they needed to initiate conversations with deaf students, customers wrote basic information. Observations of trials with ASR indicated that customers needed to become familiar with using ASR, as using ASR to communicate with deaf students was new. Once they began to use ASR, customers appeared to use it with relative ease, and the ASR seemed to ease communication with deaf students. Based on visual inspection of transcripts and observations of students and owners, ASR was generally accurate enough for participants to rely on the text display. In the surveys of deaf students' perceptions of ASR, all 12 students rated ASR as either somewhat or very helpful for communicating with hearing customers. A few more students stated that they received more information from hearing customers with ASR than those who stated they received about the same amount of information without ASR. Whether a student was deaf or hard-of-hearing made a difference in responses, with hard-of-hearing students being less reliant on ASR.

### Attention in Deaf School Children: Paying Attention to Sequences

Matthew Dye, Ph.D., assistant professor, Liberal Studies

Sarah Kimbley, undergraduate student, College of Liberal

Arts

To achieve behavioral goals, actions must be executed in appropriate sequences. Thus, the ability to store, maintain and retrieve temporal sequential representations is an important aspect of the human capacity for successful action. For many years, the human auditory system has been considered as that best able to support such sequential processing, with the human visual system having corresponding strengths in spatial representation (Lieberman, 1974). Correspondingly, many studies have reported spatial biases and enhancements in deaf individuals (Codina et al., 2011; Dye et al., 2009; O'Connor & Hermelin, 1976) with corresponding deficits in the temporal domain (Bolognini et al., 2011; Quittner et al., 1994; Horn et al., 2005).

While spatial enhancements have been interpreted in the context of cross-modal neural plasticity

(Bavelier & Neville, 2002), the only available testable hypothesis regarding temporal deficits in deaf individuals is a cognitive theory: the auditory scaffolding hypothesis (Conway et al., 2009). This hypothesis argues that an inability to process auditory information (in a multisensory world) results in domain general deficits in temporal processing across all spared modalities. Much of the evidence in support of this hypothesis comes from studies of temporal visual sequence processing in deaf children and has led to the proposal that sequence processing deficits in deaf children are best mitigated by the early restoration of auditory input via cochlear implantation.

An alternative hypothesis is that hearing loss is confounded with impaired access to sequentially-structured natural language, and that this is the source of any deficit. Here we will report initial cross-sectional data from the early stages

of an ongoing longitudinal study of visual sequence processing in deaf children, alongside comparison data from typically hearing peers. The deaf children vary in terms of both their hearing loss and in terms of exposure to and acquisition of a fully perceivable natural language – American Sign Language. Sequence processing tasks include single target identification in a rapid serial visual presentation, a continuous performance task where children are asked to detect a sequence of two targets, an N-back working memory task and an implicit sequence learning task. The data will be analyzed in terms of competing claims regarding the influence of hearing loss versus the influence of early natural language exposure and acquisition. The findings will have important implications for policy regarding early intervention for infants and young children with hearing loss.

### Making the Best of Imperfect Automatic Speech Recognition for Captioning One-on-One Meetings

Larwan Berke, Ph.D. student, Golisano College of Computing and Information Sciences

Matt Huenerfauth, Ph.D., associate professor, Golisano College of Computing and Information Sciences

Authors: Larwan Berke, Ph.D. student, Golisano College of Computing and Information Sciences

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Matt Huenerfauth, Ph.D., associate professor, Golisano College of Computing and Information Sciences

Michael Stinson, Ph.D., research professor, Master of Science in Secondary Education

Deaf and hard-of-hearing individuals often use a range of communication services such

as in-person ASL interpreting, captioning and Video Relay Service. However, in some work or education contexts, some of these services may not be available, e.g., for impromptu meetings. Some deaf and hard-of-hearing users, such as those who lose their hearing as older adults, may prefer text-based accessibility tools.

Recent improvements to speech and language technologies have raised the question of whether modern Automatic Speech Recognition (ASR) technology can assist deaf and hard-of-hearing users during live meetings.

When deaf and hard-of-hearing individuals have one-on-one meetings with a hearing person, there are some factors that may be advantageous for the use of ASR for automatic caption production. There are fewer people speaking at one time (than would be in a multi-party meeting) and there is a potential that the hearing person in the conversation may modify their speaking rate or articulation if they notice problems with the ASR text captions. Since ASR systems will continue to be imperfect in their accuracy of recognizing speech for many years, our research team is investigating how deaf and hard-of-hearing users may be able to use these technologies in the current, imperfect form. As part of the way they process audio to produce text, ASR systems

assign confidence values to the words they predict are being spoken. Typical applications that utilize ASR do not convey this confidence information to the viewer, but we are investigating whether there is a benefit from doing so with deaf and hard-of-hearing users in one-on-one meetings. This information could help the user decide which words in the text output can be trusted, and it may convey to both participants in the conversation when the ASR system is working well or having difficulty.

Our research team at the Linguistic and Assistive Technologies Laboratory at GCCIS is collaborating with researchers at NTID to investigate several methods to improve the usability of automatic captioning technology for deaf and hard-of-hearing users. In one line of research, we are supplementing the ASR's output with visual markup (e.g., making some words bold or italic) to signify the confidence of the ASR system. In another project, we are

investigating computational linguistic algorithms for automatically selecting which words in the output of an ASR system are most trustworthy or at risk of being a source of confusion, as part of an automatic captioning system.

We will be presenting the results of our preliminary studies that explored those ideas. As part of this research, we have recruited approximately 50 deaf and hard-of-hearing participants from RIT/NTID and asked them a variety of comprehension/preference questions in order to analyze the best methods of improving the ASR output (and to obtain their judgments about which text outputs from an ASR system are most understandable). This presentation will discuss the feasibility of using ASR for one-on-one meetings, some new methods for overcoming limitations of automatic captioning systems and future applications of the technology to enable deaf and hard-of-hearing individuals achieve greater communication access in more settings.

**11:40 a.m.-12:05 p.m. Place: CSD-1310**

### **Career Longevity and Career Advancement Strategies for Full-Time, Non-Tenure-Track University Faculty**

*Alvin C. Merritt Boyd, III, Ed.D., lecturer and special assistant to the NTID president for diversity and inclusion, Business Studies*

Over nearly 40 years, full-time, non-tenure-track college and university faculty have been increasing in numbers while the traditional tenured and tenure-track faculty populations have declined (Curtis, 2014). There are no guarantees of annual contract renewals for full-time, non-tenure-track faculty which might lead to faculty members' anxiety about job security (Baldwin & Chronister, 2001). Additionally, some full-time, non-tenure-track faculty might feel worried because they lack opportunities for career advancement (Baldwin & Chronister, 2001).

The purpose of this study was to examine the experiences and perceptions of full-time, non-tenure-track faculty who have been employed for three or more years at one university, regarding career longevity and career advancement. The theoretical rationale applied to this study was the organizational socialization theory by Van Maanen and Schein (1979). This qualitative phenomenological study captured the perceptions and experiences of 12 full-time, non-tenure-track faculty (nine senior lecturers and three lecturers).

Five themes emerged from this study: (1) socialization as support, trust and acceptance, (2) it's like being a second-class citizen, (3) the workhorse carries a heavy load, but it's worth it, (4) what's your niche? To make yourself needed, and (5) moving forward with an unclear path. The results of this study may equip lecturers with navigational tools to better inform their career path and advancement options. Implications and recommendations for full-time, non-tenure-track faculty will be discussed.

# Lunch 12:05-12:50 p.m.

## POSTER PRESENTATIONS

12:50-1:30 p.m.—CSD, First Floor

### **Earning a Spot on the RIT myCourses Top 50 Heavy Hitters: Practical Tips**

*Michael (Mike) Kane, senior lecturer, Business Studies*

**BACKGROUND:** Usage of the RIT online course management platform—myCourses—is strongly encouraged by the RIT Innovative Learning Institute (ILI) and NTID Learning Center (NLC). Michael (Mike) Kane, senior lecturer for the NTID Business Studies Department, earned RIT Top 50 Heavy Hitters rankings with myCourses 11 times in the past four academic years. While Kane utilizes myCourses for all his classes, myCourses usage is notably extensive for two Business Studies courses: Spreadsheet Applications for Business (NAST-160) and Accounting Capstone (NACC-204). The primary goal of this presentation is to guide NTID instructors toward greater use of myCourses. A written summary of recommended practices and tips will also be distributed to interested faculty and staff.

**RIT INNOVATIVE LEARNING INSTITUTE (ILI):** According to the ILI, interaction within myCourses

is averaged by the number of people in the class. Interaction includes: news announcements and calendar items, messages posted in online discussions, number of chat rooms created, feedback left in the dropbox and public/private comments left in the gradebook. The RIT ILI considers high numbers of interactions between instructor and students a characteristic of active learning.

#### **INSTRUCTOR OBSERVATIONS:**

Kane notes that his students value feedback from the instructor. Kane often utilizes the “student view” option to gain a better visual understanding of what myCourses looks like from the student’s perspective. Talking with other colleagues who have earned Top 50 Heavy Hitters rankings is an invaluable tool for gaining additional knowledge related with myCourses. Kane receives quick responses from the myCourses support team at the ILI via their [tlsupport@rit.edu](mailto:tlsupport@rit.edu) e-mail.

#### **RECOMMENDED PRACTICES:**

While keeping the ILI philosophy in mind, Kane uses the following myCourses components prominently: gradebook, calendar, discussion, news announcements, dropbox and feedback.

This poster lists tips, such as:

- using the calendar to remind students of classes, tests and final examinations;
- choosing the “student must respond first before seeing other responses” option for discussions;
- posting class agendas for news announcements;
- taking advantage of accompanying rubrics to automatically update the gradebook; and
- simultaneously writing general comments for the entire class and specific comments for the individual students.

## Implementing Full Access Video Lectures to Improve Understanding and Performance of All Students in a Large Science Classroom

Sandra (Sandi) Connelly, Ph.D., assistant professor, College of Science, School of Life Sciences

Authors: Sandra (Sandi) Connelly, Ph.D., assistant professor

Christine Spencer, sign language interpreter, Department of Access Services

There is a need to increase the accessibility of science (STEM) materials in the general education classroom. The underlying causes of the difficulties that students face in an introductory science class are often multifaceted, and while approaching every need of every individual is ideal, it is not realistic or feasible in most learning structures. However, a significant realm of teaching tools exist to help decrease the individual nature of some difficulties and cast a wider net of inclusion of all students in the

learning process in these classes. Some of these tools, such as active learning in the classroom, would be thought of as foundational in some curricula, but have lagged in the STEM disciplines, and in particular, the general education STEM courses. Engaged faculty who have implemented active learning/critical thinking/adaptive learning strategies in the classroom often are encouraged by the results, and so are the students.

This project aims to improve the accessibility of a general education freshman-level biology course to all students, particularly those for whom English is not a first language, including deaf and hard-of-hearing

students, through the production of short content videos that are captioned, interpreted and annotated. These videos have been used as the primary resource for both a “flipped” classroom (videos as homework, active learning in the classroom) and a fully online class, and the same content is delivered in a traditional lecture classroom. Overall learning gains are assessed through homework, quiz and exam scores in each of the class types. Further, the project considered the variable success of student populations (hearing, deaf and hard of hearing) in each class type (flipped, online and lecture). Quantitative learning gains and qualitative survey results will be presented.

## Interpreting in Foreign Language Courses—Techniques and Travels

Kathleen Darroch, senior interpreter, Department of Access Services

Denise Herrera, associate interpreter, Department of Access Services

Kira Webster, associate interpreter, Department of Access Services

Deaf and hard-of-hearing students enroll in foreign language courses at RIT not only to fulfill academic requirements but also to participate in global, experiential activities sponsored by RIT/NTID. Interpreting in foreign language courses and Study Abroad is a fluid process that must adapt to the communication styles and educational goals of students.

Three staff interpreters from the Department of Access Services will highlight and share their research and strategies in the provision of access services for both classroom and international travels with students. From visual mapping of spoken language, to inclusion of technology that supports foreign language literacy, to incorporation of signed

languages of other deaf communities supporting cross-cultural learning, these interpreters have been witness to deaf students’ academic growth and access to the global community of work and scholarship. Interpreting access support is a vital and varied component of that success.

## **Students Acquiring Skills through Projects in the Business World**

*James Mallory, professor, Information and Computing Studies*

*Information and Computing Studies students*

Post co-op employer reports showed that students in the Information and Computing Studies (ICS) major had strong technical skills, but potential for full-time employment was often limited by a lack of awareness and competency in other selected skills areas. Data was collected over a 10-

year period from employers analyzing students' strengths and weaknesses. A capstone course was developed and offered for the first time in 2012 to address those weaknesses and improve skill areas with low employer ratings.

A poster created by the students will show their experiences in capstone while working with area businesses in addition to sharing statistical data showing the impact that this course has had their performance after taking the course.

## **The Use of L1 as a Tool to Teach L2 American Sign Language (ASL)**

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

*Project Assistants:*

*Alaine Thibault, research assistant*

*Kalyna Sytch, research assistant*

The efficacy of using a person's native language (their L1) to teach them a second language (L2) has been debated for years in the fields of second language acquisition and American Sign Language pedagogy (Cook, 2001). Currently, the most

popular method of teaching ASL to L2 adult learners is known as the Direct Experience Method (DEM) (Newell, Mallery, Menkins, Holcomb, & Arthur, 1980). DEM advocates exclusive use of the target language (ASL in this case) with no use of English as a learning tool in the classroom. To date, there are no existing studies that examine the effectiveness of different teaching approaches for teaching ASL to L2

adult learners. The purpose of this poster presentation is to exhibit the results of a mixed study comparing the two teaching approaches: the Direct Experience Method versus a second approach which uses L1 (English) as a learning tool to teach L2 learners about ASL grammatical structures. Participants' opinions about the teaching methods will be discussed as well.

## Variation in Deaf and Hard-of-Hearing College Students' Knowledge of General-Purpose and Academic English Verbs

Gerald P. Berent, Ph.D., professor, Liberal Studies-Research

Susan Rizzo, staff research assistant, REACH Center for Studies in Career Success

Kathryn L. Schmitz, Ph.D., associate professor and associate dean for academic administration, NTID Academic Affairs

Kimberly Persky, 2016 NTID graduate

*Authors: Gerald P Berent, professor, Ph.D., Liberal Studies-Research*

*Ronald R. Kelly, Ph.D., professor, Master of Science in Secondary Education; director, REACH Center for Studies in Career Success*

*Project assistant: Hannah Ginther, Master of Science in Secondary Education*

Functional knowledge of academic English vocabulary is essential to college students' educational success. Academic vocabulary knowledge facilitates access to college-level reading materials, comprehension of class lectures, participation in class discussions and written communication for demonstrating knowledge of course content. Yet many deaf and hard-of-hearing college students encounter English language challenges, including limited knowledge of academic English vocabulary.

In this presentation, the researchers present the findings of their current investigation of deaf and hard-of-hearing students' knowledge of general-purpose and academic English vocabulary with a focus on English verb knowledge. This investigation is a research component of their NSF grant (BCS-1251342), "Deaf Learners' Lexical Acquisition of English Verbs and Their Component Properties." Verb acquisition is the focus because a verb forms the propositional core of a sentence and determines its structure and interpretation.

This investigation involves the assessment of English verb knowledge of deaf and hard-of-hearing NTID students at three different overall English proficiency levels defined on the basis of their Michigan Test ranges: Low English ( $\leq 59$ ), Mid English (60-75) and High English (76-100). Comparative data on hearing native English-speaking RIT students' assessed knowledge also is provided.

To assess verb knowledge, the researchers constructed a 300-item online multiple-choice sentence-level vocabulary assessment test. The test design and format will be illustrated. The inclusion of both general-purpose and academic English verbs is motivated by the fact that both verb categories are prevalent in academic English discourse.

The following is a sample of verbs representing the two verb categories, each occurring within three distinct high, mid and low frequency ranges, as designated in the Corpus of Contemporary American English: [corpus.byu.edu/coca/](http://corpus.byu.edu/coca/)

### GENERAL-PURPOSE ENGLISH VERBS BY FREQUENCY BAND

HIGH: die, report, spend, lose, break

MID: select, tie, direct, jump, attack

LOW: free, characterize, withdraw, confront, sink

### ACADEMIC ENGLISH VERBS BY FREQUENCY BAND

HIGH: focus, tend, generate, seek, initiate

MID: consolidate, merit, elaborate, confer, complement

LOW: impute, enmesh, catalyze, monopolize, conjecture

The results of this investigation will reveal whether frequency effects are operative in deaf and hard-of-hearing students' verb acquisition. Preliminary data suggest that frequency of occurrence does play a role in verb acquisition and that, to an extent, greater verb knowledge correlates with higher English proficiency level (values indicate percentages correct). GEN = "general-purpose" verbs; ACAD = "academic English" verbs:

#### GEN HIGH, GEN MID, GEN LOW

Low Michigan (n = 42) 80.4, 65.6, 61.4

Mid Michigan (n = 33) 91.0, 82.4, 78.3

High Michigan (n = 20) 98.0, 97.2, 92.7

#### ACAD HIGH, ACAD MID, ACAD LOW

Low Michigan (n = 42) 43.8, 29.0, 33.9

Mid Michigan (n = 33) 63.3, 36.5, 43.7

High Michigan (n = 20) 88.6, 62.5, 60.7

The researchers will discuss the implications of this research investigation for deaf and hard-of-hearing students' academic progress and success, and they will suggest novel English teaching strategies for promoting verb learning in deaf and hard-of-hearing college students.

1:35-2:00 p.m. Place: CSD-1310

### **ASLIE and VCS Department Collaborative Project**

Jennifer Briggs, lecturer, ASL and Interpreting Education

Heather Smith, senior lecturer, Visual Communications Studies

The ASL and Interpreting Education (ASLIE) and Visual Communications Studies (VCS) departments saw an opportunity to combine departmental expertise to develop a curriculum targeting non-traditional students who are interested in learning ASL online.

Online learning efforts by colleges are also growing because of the growth in non-traditional student enrollments (Goldberg, 2015). This collaborative effort will focus on developing strategies and educational materials used primarily for teaching ASL online using a combination of video and

animation. This effort will be used to expand the educational offerings of NTID's ASLIE department to a wider audience, while simultaneously giving students in the VCS department work experience in developing animated materials and video editing for the online ASL curricular materials.

2:05-2:30 p.m. Place: CSD-1300

### **NTID and Deaf Studies Archive Collections: How to Use in Classes**

Joan Naturale, Ed.D., NTID library liaison, Wallace Library

We have more than 100 NTID and Deaf Studies Archive collections which encourage scholarship in the interdisciplinary areas of language, anthropology, sociology, education, science, literature, poetry, visual arts, drama, history, technology, engineering, political science, social work and journalism as it pertains to the NTID and Deaf communities and Deaf Culture. These materials enhance the educational and research programs

at NTID and provide a source of primary documentation related to the international Deaf world.

Examples of assignments are: analyzing the Ahira Webster diary, in which a Deaf student (from Fredonia) recounts his days at the New York Institute for the Deaf in White Plains, New York, during 1849-1850; reviewing Robert F. Panara's works in Deaf Literature, Deaf Theater and Deaf Studies; Deaf technology such

as the first videophone used at NTID in the late 1960s-early 1970s, the New York-New Jersey TTY business, TTYs, light signaling systems and caption decoders; reviewing the "Silent Press" print and online papers such as *The Silent Worker*, the *Deaf-Mute Journal*, *The Cavalier* and the *Deaf American*; and learning about the first bilingual-bicultural school in Los Angeles, Tripod, which also was influential in distributing captioned films in U.S. theaters in the late 1980s-1990s.

### ASL Literature Resource

Miriam Lerner, interpreter, Department of Access Services

Sarah Schneckeburger, interpreter, Department of Access Services

Sarah Cannon, interpreter, Department of Access Services

Native users of American Sign Language (ASL) find that there is a paucity of conceptually accurate signs for concepts and vocabulary in the study of Literature. This lack of source material presents an obvious problem to deaf students taking Literature courses, as well as ASL/English interpreters working in Literature classes in postsecondary education. There are no simple signs for the concepts of ANTAGONIST, PROTAGONIST, HERO, LEGEND, MYTH, NARRATIVE VOICE, etc. Fingerspelling and ad hoc signs have been the predominant strategies to deliver renditions of the material, but not always in a satisfactory way.

This ongoing project sponsors deep translation work and the creation of a website of resources which will provide 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 will have a resource to solidify their

understanding of vocabulary and concepts they encounter in Literature 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 Literature constructs and vocabulary rendered in ASL and English. Dr. Edna Edith Sayers, professor emeritus from Gallaudet University, served as our scholar-in-residence for five days, acting as the primary consultant to the master signers (Willy Conley, Pam Conley, 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, with more being added in this subject as well as eventually other content areas.

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 Literature and render clearer and more correct representations of these abstract ideas.

This innovative learning tool was successful with the first iteration that was created last year (ASL Philosophy Resource), and will be expanded to include STEM content areas next, then more Humanities as monies become available. This will benefit not only deaf and hard-of-hearing students and interpreters, but anyone interested in discovering lexically appropriate ways to engage in discourse about the content areas in the site.  
<https://aslliteratureresource.wordpress.com/>  
<https://aslphilosophyresource.com/>

### Developing Interpersonal Relationships with College Students: Interpreters' Tensions

Morgan Underwood, interpreter, Department of Access Services

The sign language interpreter/college student relationship is a unique one. The interpreter is present in order to allow two people who use different languages to communicate effectively. Within a college environment, it is not uncommon for interpreters and students to work together for an extended period of time and build relationships and even friendships. However, professional dimensions of the relationship are paramount, especially to the interpreter.

Interpreter/student relationships are also affected by relational dialectics. Relational dialectics theory is guided by the premise that interpersonal

relationships are characterized by different forms of tension between people (Baxter & Montgomery, 1998). There are opposing forces at play that must be managed and negotiated for a relationship to progress. To date, there is a gap in research that focuses on the relational dialectics experienced by sign language interpreters.

The current research explores communication considerations and relationship tensions as experienced by sign language interpreters. Relational dialectics are used to frame this investigation. In-depth semi-structured interviews with interpreters begin with general questions about interpreters' experiences. Questions

then progress to discover and discuss examples where dialectics have occurred and what strategies are used to manage these dialectics. Responses are categorized and analyzed by theme.

While this study focuses on post-secondary environments, it is easily applicable to many interpreting situations and can be utilized as a teaching tool to allow future interpreters insights on the tensions that they may face. Additionally, seasoned interpreters can use the relational dialectics model to further understand and analyze their own decision making process and how it impacts their professional relationships with interlocutors.

### Researching and Addressing Students' Needs in the Workplace

James Mallory, professor, Information and Computing Studies

David Lawrence, associate professor, Information and Computing Studies

Post co-op employer reports showed that students in the Information and Computing Studies (ICS) major had strong technical skills, but potential for full-time employment was often limited by a lack of awareness and competency in other selected skills areas. Data was collected over a 10-year period from employers analyzing

students' strengths and weaknesses. A capstone course was developed and offered for the first time in 2012 to address those weaknesses and improve skill areas with low employer ratings.

This presentation discusses some employer concerns that led to the development of the course as well as

some of the thought process that went into developing an effective capstone course. The authors will share their "lessons learned" in addition to sharing statistical data gathered from teaching the capstone course and the impact that this has had on students' co-op performance after taking the course.

**3:05-3:30 p.m. Place: CSD-1300**

### **E-Portfolios and Digital Portfolios**

*Kathleen Szczepanek, senior lecturer, Business Studies*

*Mary Beth Parker, associate professor, Business Studies*

*Tracy Magin, senior lecturer, Business Studies*

*Adriana Kulakowski, senior lecturer, Business Studies*

Employers are increasingly interested in viewing prospective employees' portfolios in order to evaluate their work readiness skills. Our deaf and hard-of-hearing students' ability to compete in a competitive job market is enhanced because of their portfolio creation. During this, presentation we will show how building an e-Portfolio provides students an opportunity to

see the significance of their education and their versatility using various software and website builders such as Weebly.com and Wix.com. It allows for more meaningful and in-depth evaluation of our students' technology literacy, information literacy and communication literacy.

The e-Portfolio is a capstone project for the learning process and for

program outcomes assessment. We will share our e-Portfolio rubric used for our Administrative Support Technology (AST) program outcomes assessment. It prepares our students to be work-literate, to be able to contribute in the business world and to become a part of the lifelong learning process.

**3:05-3:30 p.m. Place: CSD-1310**

### **Confronting Common Myths about Online Classes**

*Pamela R. Conley, associate professor, Liberal Studies*

More and more students and faculty are choosing online education for work/study-life balance. The demand for online classes at RIT is stronger than ever. In spite of this

growth, certain assumptions about online classes still exist. Let's debunk a few myths about how the online classroom compares to the traditional classroom.

### **A Collaborative and Multi-Strategic Approach to Supporting the Success of Deaf and Hard-of-Hearing Students of Color and Their Sub-groups**

*Alvin C. Merritt Boyd, III, Ed.D., lecturer and special assistant to the NTID president for diversity and inclusion, Business Studies*

*Mary Karol Matchett, Ed.D., assistant vice president for student and academic services, Student and Academic Services*

*Jessica Hurd, programming coordinator, NTID Student Life Team*

A brief overview of the book, *Black Deaf Students: A Model for Educational Success*, by C. Williamson (2007) will be presented. The author strongly supports the resilience model, which concentrates on the factors that aid student success rather than the widely used deficit model which focuses on the reasons student fail. Williamson discusses the protective factors (both individual characteristics

and environmental supports) that have contributed to the success of African-American deaf and hard-of-hearing students and the development of resiliency. The environmental supports will be emphasized in this presentation.

We will discuss how the author's findings and recommendations have been applied in a university

setting by cross-departmental colleagues to support the retention of deaf and hard-of-hearing students, particularly those students of color and their sub-groups. Specific college recommendations will be reiterated.

### **Invigorating the Curriculum: Developing and Offering New Courses**

**Panelists:** *Nicole Chow, speech/language professional I, Communication Studies and Services*

*Heather Smith, senior lecturer, ASL and Interpreting Education*

*Brian Trager, assistant professor, Information and Computing Studies*

**Moderator:** *Marianne Gustafson, associate dean for curriculum and special projects, NTID Academic Affairs*

Panel discussion on how each individual conceived ideas for new/revised courses in their departments, how they developed those courses, and whether the courses initially were offered as

Special Topics. Where appropriate, panelists will describe how that experience was used as a type of proof of concept for an eventual new degree program. They will discuss how they were inspired to undertake

the curriculum action: as a result of student interest/request, professional judgment that this was an area of potential, or other reasons.



