



# visualize

NO. 16 // NOV 11, 2013

CHANGING THE WORLD THROUGH SCIENCE

## ***Defining the future: new PhD program starts Fall 2013!***

Gallaudet University's new interdisciplinary PhD in Educational Neuroscience (PEN) program enrolled its first students this fall, 2013. This advanced doctoral program in Educational Neuroscience (a sister discipline of Cognitive Neuroscience) is the first of its kind in the Washington D.C., metropolitan area and situates Gallaudet University as a leader in this discipline worldwide.

The PEN program utilizes the wealth of educational resources available in VL2.

Students will have access to a vast network of leaders in the fields of neuroscience, neuroimaging, visual cognition, language cognition and bilingualism, reading and literacy, and American Sign Language. Five other departments round out the curriculum for the program, including the Departments of Psychology, Linguistics, Interpreting, Hearing, Speech, and Language Sciences, and Education. Resources within the Consortium of Universities of the Washington Metropolitan Area will also be available to students.

PEN offers graduate students access to a state-of-the-art curriculum on how humans learn across the life span, from early childhood to adulthood, with a focus on the neuroplasticity of visually-

guided learning processes. That knowledge will be interfaced with the core challenges in contemporary education in ways that benefit science and society.

Our faculty are propelled by the goal of achieving great excellence in teaching and to provide students with the most cutting-edge knowledge, critical analysis and discussion, strong mentorship, and a diversity of career paths.

## **overview**

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VISUAL LANGUAGE  
AND VISUAL LEARNING





# visualize

VISUAL LANGUAGE &  
VISUAL LEARNING  
OFFICIAL NEWSLETTER

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*The PEN Program is utterly contemporary with an exciting focus drawn from prevailing questions and challenges in education.*

## Six Unique Highlights

The six unique highlights of this PEN program at Gallaudet University are (1) Innovative learning content and focus on visual attention, visual brain plasticity, the bilingual brain, and language, reading, and literacy in the young deaf visual learner. (2) Core required learning in Neuroethics, Neuroimaging Methods (plus optional opportunity to receive fNIRS Neuroimaging Certification) and Statistics. (3) Authentic two-way research and translation experiences, including Neuroimaging Lab Rotations across 2 summers, Guided Studies in multiple school settings and which, includes Translation Design (direct experience with educational translation literacy design in Herzig-Malzkuhn Motion Lab), and more. (4) Authentic writing and training experiences at the heart of knowledge and leadership in post-graduate professions, including required writing of a BRAC application (Benefits and Risk Assessment Committee application to ensure that the release of a

translational product will not cause harm to the consumer), an IRB application (to ensure that experimental procedures will not cause harm to the participant), Journal Articles, a Federal Grant, and more. (5) Authentic training experiences in professional public Presentations and direct graduate-level Teaching experiences. (6) Specific Leadership training through participation in the NSF-VL2 Center and the VL2 Student Leadership Activities, Students' Network, and Training opportunities. All throughout, students can expect to advance in critical and analytical thinking and reasoning at the heart of being an educated professional in today's world.

The PEN program is currently accepting applications for fall 2014. The deadline is February 1, 2014. Please check out the website for more information: [http://www.gallaudet.edu/educational\\_neuroscience.html](http://www.gallaudet.edu/educational_neuroscience.html)



L to R: Adam Stone, new PEN student; PEN Co-Founders Dr. Melissa Herzig, Dr. Thomas Allen, Dr. Laura-Ann Petitto; Geo Kartheiser, new PEN student.



# SIGNING CREATURES

## *Bridging technology to education*

More than 40 avatar, robotics, and visual language scientists will present cutting-edge research in educational technology, sign linguistics, robotics, and avatar development at the NSF Avatar & Robotics Signing Creatures Workshop, set to take place during November 15-16, 2013 at Gallaudet University.

Dr. Laura-Ann Petitto of Gallaudet University, Dr. David Traum of University of Southern California, and Adam Stone of Gallaudet University's PhD in Educational Neuroscience program will be leading a workshop that has been funded by the National Science Foundation on the Gallaudet campus. Using innovations from research in visual signed languages, avatar science, and robotics, workshop participants will advance ideas about avatar and robotic learning, language, and reading products aimed at enriching the lives of all children, all visual learners, inclusive of the young deaf visual learner.

*The NSF Avatar & Robotics Signing Creatures Workshop has three purposes:*

- ▶ To provide foundational science knowledge to avatar and robotics technology scientists in order to contribute to the creation and advancement of innovative educational resources.
- ▶ To support NSF's goal to promote groundbreaking interdisciplinary communication across avatar and robotics technology and the Science of Learning.
- ▶ To form new interdisciplinary networks, as well as to identify funding avenues for these networks, which will address the main issue of signing creatures/socially assistive robotics to facilitate learning, and especially to promote the acquisition and fluency of language and reading.



Dr. Laura-Ann Petitto (Gallaudet University) and Dr. David Traum (University of Southern California) Co-Workshop Chairs and Adam Stone serving as the Workshop Manager.

**KNOWLEDGE EXPLOSION:  
40+ TALKS BY WORLD'S  
TOP SCIENTISTS!**

**NOVEMBER 15, 2013**

**9:30 - 11:00 AM**

**FOSTER AUDITORIUM, GALLAUDET UNIVERSITY  
OPEN TO THE PUBLIC**



# *Trailblazing new grounds in educational neuroscience*

**Adam Stone** is a PhD student in Educational Neuroscience at Gallaudet University and a research assistant with the NSF Center on Visual Language and Visual Learning (VL2) and the Petitto Brain and Language Laboratory (BL2) for neuroimaging. Originally from San Diego, Adam earned his MA in ASL/English Bilingual Education at the University of California, San Diego in 2010, and taught kindergarten and first grade at P.S. 347, the ASL and English Lower School in New York City. His research interests are in educational technology and neuroscience perspectives on literacy development and bilingual reading. Adam is a student in Petitto's Brain and Language Laboratory (BL2) for neuroimaging. There he is pursuing scientific hypotheses about how the brain's establishment of visual sign phonological representations can have an advantageous impact on young deaf visual learners' acquisition of English and reading success.

Adam is also a published children's book author, trains teachers on best practices in using iPad technology in educational settings, and blogs at [www.foundinblank.com](http://www.foundinblank.com).



**Geo Kartheiser** received his BS in advertising and public relations from Rochester Institute of Technology in 2009. While a student at Rochester Institute of Technology, he was involved with several studies spearheaded by **Dr. Peter Hauser** of Deaf Studies Laboratory. Prior to his graduate school studies, he served as the visiting research coordinator for **Dr. Matthew Dye's** Cross-Modal Plasticity Laboratory at University of Illinois at Urbana-Champaign. In his role at Dr. Dye's laboratory, he assisted with a project that utilized a new, non-invasive neuroimaging technique known as Event-Related Optical Signal (EROS) in order to learn more about the effects of deafness on visual functions. Geo currently resides at **Dr. Laura Ann Petitto's** Brain and Language Laboratory (BL2) for neuroimaging where he has been certified through advanced training to operate neuroimaging equipment comparable to EROS, functional Near Infrared Spectroscopy (fNIRS). He aims to apply his certification and advanced training to his PhD endeavor by studying the cognitive and neural impact of learning a signed language as a second language. Geo's scientific aims include the exploration of the boundaries of neural plasticity after individuals have passed particular critical or sensitive periods in human development. He also envisions the topic to have important translational significance as many deaf and hearing individuals learn signed language for the first time at varying ages across the lifespan. He is also interested in how scientists can improve their relationship with the public. When not wearing the lab coat, Geo enjoys cycling, running, and eating exotic food.



## *Introducing Adam & Geo*



## Bringing families together, language immersion a key factor



VL2 science has shown that early exposure to sign language bilingualism is critical for learning and cognitive development. That is one finding of many, and many more, that parents need to know to ensure their deaf child receives quality education and a linguistic immersive environment.

Released last June, "Growing Together: The VL2 Parent Information Package" contains accessible summaries of VL2 research, tips for parents and educators, a DVD with interviews with families, researchers, and scientists, along with other materials. This information is intended to bring together families, deaf children, and communities and stakeholders in ensuring a deaf and hard of

hearing child's success. This package is ready for you to read and share today.

Two ways to obtain your VL2 Parent Information Package materials:

1. A mailer, which can be requested on a limited basis from [vl2.gallaudet.edu](http://vl2.gallaudet.edu)
2. The [www.vl2parentspackage.org](http://www.vl2parentspackage.org), a website where all of the mailer materials can be downloaded (see PARENT PACKAGE tab at the top of the website). The website is an ongoing project, we will be adding more videos, stories, and material for parents.

For instance, an extra feature on the website is an "e-zine," a collection of life stories and reflections from successful young Deaf adults who are making their mark on the world.

## Revisiting a timeless fable in ASL

The next planned storybook app is The Boy Who Cried Wolf with storyteller **Justin Jackerson** and artist **Pamela Witcher**.

This story revisits a classic fable about a boy who fools the townspeople in his village, but then has to learn a hard lesson in the end. With a talented and experienced storyteller, telling this fable in ASL brings a new dimension to the story. We anticipate releasing the second app of VL2 Storybook Apps series this Winter.

Meanwhile, the first storybook app, *The Baobab*, remains popular with

children and educators in schools. The translation team is hard at work developing extended activities for the classroom with the materials from *The Baobab*.

We are also excited to have storyteller **April Jackson-Woodard**, and artist **Yiqiao Wang**, returning to work with us on the primer apps, an extended collection of *The Baobab* series! To keep up with news on our storybook apps, please visit [www.VL2storybookapps.com](http://www.VL2storybookapps.com). Sign up for our mailing list - we promise to keep you enthralled with more stories!



# Starting the eighth year of VL2, Co-Principal Investigators share their vision

*Hello to all!* Welcome to Year 8 of our NSF Science of Learning Center, Visual Language and Visual Learning, VL2!

The June 13-14 NSF Site Visit came and went without a break in the whirlwind work pace! There's been much going on here.

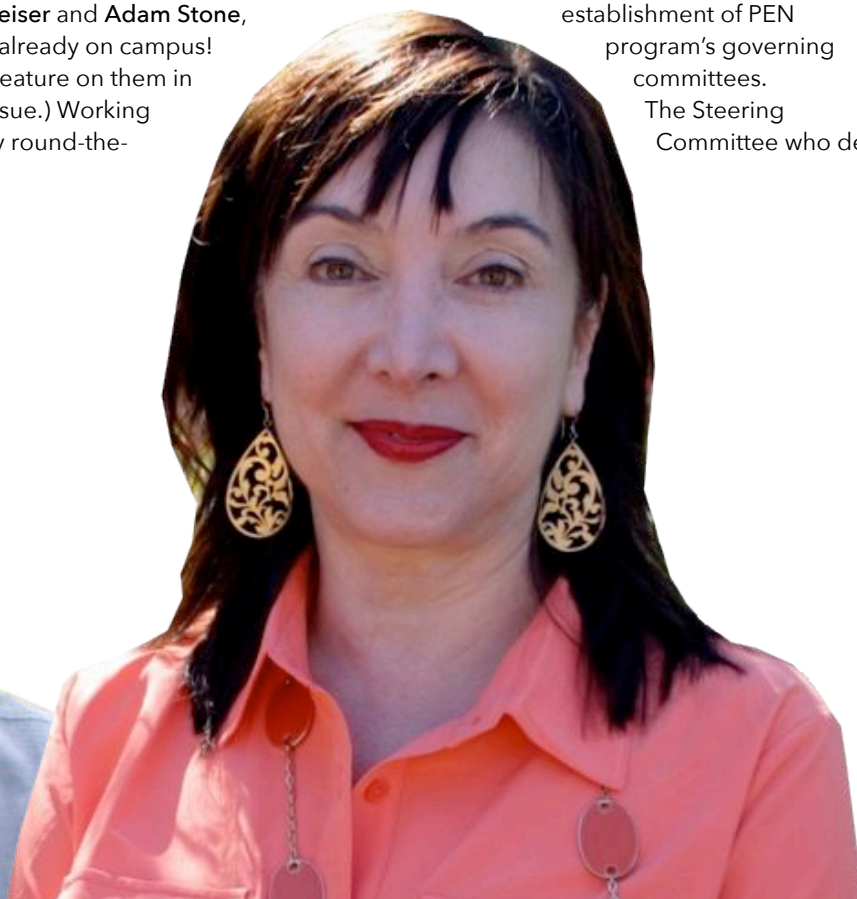
It was time for our wonderful **Dr. Kristen Harmon** (VL2 Communications Officer) to return to her earlier post as professor in the Department of English, and we thank her for her lasting impact in research and translation. We focused on conferences and outreach engagements throughout the summer, not to mention the writing of grants and publications. For Year 8, we also decided to present our VL2 news in accordance with the maturity of this center, so we are proud to present a re-design of our newsletter, thanks to the wonderful talents of **Melissa Malzkuhn**.

**New PEN Faculty:** The new year's gong rang minutes after we were released from the Friday morning June Site Visit meeting at 9:00am! As NSF sat in Kellogg deliberating our future, we raced back to VL2 central to prepare for the upcoming faculty search in the new PhD in

Educational Neuroscience (PEN) program, which was officially passed by the Board of Trustees on May 17, 2013 (yeah!). And you all know about searches - there was much committee work and many discussions, interviews and meetings spanning weeks into months, with the most wonderful part coming at very end. We are thrilled to announce that **Clifton Langdon**, who is scheduled to defend his dissertation this month, will begin as the new PEN program's Assistant Professor of Educational Neuroscience this January 2014. What a fabulous way to welcome in the New Year! We extend a heartfelt congratulations to **Clifton Langdon**!

**More PEN:** Both the summer and months of September and continuing through to today, have brought an extraordinary amount of planning and work involving the PEN program. The Board passed the program, but the implementation of this exciting new program had to occur, and rather instantly. And, wow, was it a scramble! The new PhD students were to walk through our doors in only a few weeks—in fact, these amazing graduate students, our first PEN class, **Geo Kartheiser** and **Adam Stone**, were already on campus! (See feature on them in this issue.) Working nearly round-the-

clock, the co-founders of the PEN program, **Dr. Tom Allen** (PEN Program Director), **Dr. Melissa Herzig** (PEN Program Associate Director), and **Dr. Laura-Ann Petitto** (PEN Steering Committee Chair), created the PEN Faculty and PEN Student handbooks. Based on the 200+ page PEN proposal submitted in fall 2012, the PEN handbooks are the primary organ of communication with the world about what is the PEN program (what is Educational Neuroscience). They also contain utterly vital policy information about program governance, as well as PEN Faculty and PEN Student responsibilities and program requirements. It was all the small details that took careful consideration; which we consider a major accomplishment because without the handbooks, the program had no legal standing: the creation of the many university forms associated with a student's passage through the program, forms to assure mechanisms of the "quality control" of the program (e.g., course evaluations, self evaluations), and the like. Regarding program governance, we had a series of meetings which led to the establishment of PEN program's governing committees. The Steering Committee who deals





with the day-to-day operations of the PEN program (presently consisting of **Allen, Herzig**, and **Petitto**, with **Langdon** to join in January) continued to work on the program structure. (Exciting program enhancements have already been made, for example, (i) creation of new PEN 702 Contemporary Methods in Neuroimaging, (ii) enhancements to the existing PEN 801 Two-Way Translation course by making the learning and training opportunities richer (i.e., expanding the types of school settings that the students will experience, expanding student training in translation design, as well as training in the ethical considerations that are essential before education translational tools are released, for example, writing of a BRAC application), (iii) obtaining additional Memorandum of Understanding (MOUs) with other universities to concretize and increase PEN student Neuroimaging Lab Rotation opportunities and options).

**Our Science:** Throughout this period, Tom and Laura-Ann made gallant attempts to march on in their science. Tom advanced his EELS studies, and made major advancements to the Data Sharing, Volunteer Participant Data Base, and ASL Assessment Web Portals (with important advancements, with **Dr. Lynne McQuarrie**, to the Visual Phonology Assessment Portal). Laura-Ann and the wonderful team of students in her Brain and Language Lab (BL2) for Neuroimaging were abuzz with preparation for the Tobii Eye-Tracking study of emergent readers and e-literacy (below). Of all, the most surprisingly demanding work (beginning summer through present) involved the preparation of the NSF Avatar Signing Creatures Workshop (Nov 15-16). Here, there are no words to capture fully the contributions, vision, help, and hard work that **Adam Stone** (Workshop Manager) has devoted to

making possible this exciting Workshop. During this time, both Tom and Laura-Ann wrote and submitted several scientific journal manuscripts and gave several scientific presentations spanning summer and well into the fall.

**NSF and VL2 Science:** Amidst the summer work frenzy, the 2013 NSF Site Visit Report arrived, for which we supplied a formal written response. Then, we finalized the Annual Report, and submitted in accordance, the Year 8 Budget, all of these which tied in with the big picture - the grand vision of how our science inquiries will be designed into research focus areas, with teams assembled to pursue scientific knowledge. Although intense discussion and planning for Year 8 began as far back as last February (All-Hands-On-Deck Strategic Focus Area meeting) and March (Scientific Advisory Board meeting), and during the past spring (Executive Team and project solicitations), the rhyme and reason for the coming Year 8 projects, and the Center's future directions, were finalized over the summer. Associated with all of this was the writing of our new Year 8 Action Plan. During this time, we went into high gear with NSF for Year 8 awards and study extensions. To do this, we solicited specific plans and goals of the Year 8 cohort's scientific projects, the Year 8 Scopes of Work, the Year 6 & 7 Extensions Proposals, and we reviewed the Year 6-7 Final Reports from those who completed their studies. The time spent on this contributed well to the strategic planning of Year 8, which we are going to outline now.

**Rhyme and Reason of Year 8:** So, what is it? What's the vision of the science to come? Our passionate mission to marry scientific discovery with its translational impact remains strong. The outstanding

Year 8 translational products and innovations led by **Dr. Melissa Herzig** (VL2 Research and Translation Manager) and **Melissa Malzkuhn** (VL2 Digital and Media Innovation Manager) are discussed in this issue. Here we will focus on the science of Year 8 to come, including the (i) Year 8 Center Structure, (ii) Science Cohort Design Features, (iii) SFA Leaders and Studies, (iv) Executive Team Members, and (v) Executive Team Goals. Following this, we list the (vi) Years 6-7 researchers with Extensions to May 30, 2014, and the (vii) Years 6-7 researchers who completed their projects. And last but not least we provide (viii) Surprising Good News. At the very end of our Co-PI report, we have surprising good news for you. See you there!

#### **(i) Year 8 Center Structure**

Following the strong directive from both NSF and our Scientific Advisory Board, our Strategic Focus Area (SFA) Center structure remains strong. The three scientific themes that bind the entire Center happily stay (see VL2 Strategic Implementation Plan, abbreviated only here, Theme 1: Differences in early visual sensory experience change brain structures and functions and affords higher cognitive processing advantages in young visual learners; Theme 2: The Critical or Sensitive Period Hypothesis-especially, the age of first language and first bilingual language exposure-impacts the emergence of complex reading knowledge in the young deaf visual learner; Theme 3: Visual Sign Phonology positively impacts learning to read a spoken language in the young deaf bilingual-bimodal visual learner).

#### **(ii) Year 8 Science Cohort Design Features**

The SFAs are now comprised of PIs with a high track record of scientific productivity and those who consistently bring their

*Our passionate mission to marry scientific discovery with its translational impact remains strong.*

science to completion. They share scientific questions and goals to understand, broadly defined, the science of learning in children across child development (from infants, children, and, for the first time, young adolescents), visual sign phonology, bilingualism, and reading in young visual learners. The PIs further head research teams or “networks” that span labs, and, importantly, the specific study (theoretical questions and hypotheses) that each PI heads has been judged to constitute “breakthrough science,” (that is, high impact studies with the potential to make lasting contributions to science and society). As an additional design feature, on average, Year 8 scientific studies bridge strongly and directly with their translational impact. A feature of note is that although reduced funds required a reduced number of labs this year, the total number of researchers participating in the studies below is now higher than previous years!

### (iii) New Year 8 SFA

#### Leaders and Studies

**SFA 1: Visual & Cognitive Plasticity**, led by **Rain Bosworth**

Study 1: PI, **Rain Bosworth**,

University of California, San Diego (UCSD)

Title: Development of

Visual Phonology in Deaf Infants: The Role of Rhythmic-Temporal Properties of Sign-Phonetic, Sign-Syllabic & Prosodic Language Perception using Eye-Tracking.

Network: Post-Doc **So-One Hwang**, UCSD, and **Laura-Ann Petitto**, Gallaudet University and **David Corina**, University of California Davis  
Population: Infants

Study 2: PI, **Laura-Ann Petitto**, Gallaudet University

Title: The impact of early visual language experience on visual attention and visual sign phonology processing in young deaf emergent readers using

early-reading Apps: A combined Eye-Tracking and fNIRS brain imaging investigation.

Network: **Rain Bosworth** (University of California, San Diego), Gallaudet's new PhD in Educational Neuroscience (PEN) Graduate Students **Adam Stone** and **Geo Kartheiser**, Gallaudet University PEN and NSF-VL2 **Clifton Langdon**, and NSF-VL2 **Melissa Herzig**, **Thomas Allen**, **Melissa Malzkuhn**, and Haskins Laboratory/Yale University, **Kaja Jasinska**  
Population: Children ages 4-7 years

Study 3: PI, **Keith Rayner**, University of California, San Diego

Title: The Development of Perceptual Span in Beginning and Developing Deaf Readers.

Network: Post-Doc **Natalie Bélanger**, UCSD and **Jill Morford**, University of New Mexico

Population: Children (spanning ages 7-15 years)

## *Year 8 scientific studies bridge strongly and directly with their translational impact.*

**SFA 2: Language Development & Bilingualism**, led by **Erin Wilkinson**, University of Manitoba, Canada

Study 4, PI: **Erin Wilkinson**, University of Manitoba, Canada

Title: Do young deaf bilingual-bimodal readers access ASL forms while reading English words?

Network: **Jill Morford**, University of New Mexico, **Pilar Pinar**, Gallaudet University  
Population: Children in Grades 6-8 (~ages 11-14 years)

Study 5, PI: **David Quinto-Pozos**, University of Texas

Title: Speed of visual sign language processing, and visual sign phonological

awareness processing, in young deaf typically and atypically-developing bilingual-bimodal readers.

Network: **Thomas Allen**, Gallaudet University

Population: Children, ages 8-16 years

**SFA 3: Reading and Literacy in Visual Learning**, led by **Lynne McQuarrie**, University of Alberta, Canada

Study 6, PI: **Lynn McQuarrie**, University of Alberta, Canada

Title: Learning to Read with Visual Languages: Investigation of the Impact of Visual Phonology (L1) Training on Emergent and Developing Literacy in L2.

Network: **Charlotte Enns**, University of Manitoba, Canada

Population: Children, grades K-4 (~ages 4-9 years)

Study 7, PI: **Thomas Allen**, Department of Education, Gallaudet University

Title: Home, School, and Early Language Factors Impacting the Acquisition of Reading Skills among deaf children with and without cochlear implants, and with and without early-exposure to sign

language.

Network: **Donna Morere**, Department of Psychology, Gallaudet University, and Gallaudet University Graduate Student **Amy Letteri**

Population: Ages 3-7 years

**SFA 4: Translation in Education: Translational Products, Tools, and Dissemination**, led by **Melissa Herzig**, Gallaudet University (VL2 Research and Education Translation Manager; see more in this issue).

**SFA 5: Integration of Research and Education (IRE): Student Training for the Next Generation**, led by **Peter Hauser**,



# *The year's topics will include sustainability, and discussion of burning questions in science.*

National Technical Institute for the Deaf/  
Rochester Institute of Technology

## **(iv) New Year 8 Executive Team Members**

SFA1, Leader: **Rain Bosworth**, University of California, San Diego  
SFA 2, Leader: **Erin Wilkinson**, University of Manitoba  
SFA 3, Leader: **Lynne McQuarrie**, University of Alberta  
SFA 4, Leader: **Melissa Herzig**, VL2, Gallaudet University  
SFA 5, Leader: **Peter Hauser**, NTID, Rochester Institute of Technology  
VL2 Co-PIs: **Laura-Ann Petitto & Thomas Allen**, VL2, Gallaudet University  
VL2 Center-Wide Representative: **Jill Morford**, University of New Mexico  
VL2 Graduate Student Representative: **Paul Twitchell**, University of New Mexico

## **(v) Executive Team Goals for Year 8**

The Executive Team will engage in exciting and important leadership discussion, generation of new ideas, and creative problem solving over Year 8. The year's topics will be wide-ranging, including, for example, dire sustainability issues involving

(a) How to keep former, present, and future PIs engaged (also, for example, how to promote new growth in the future –to invite new PIs into the Center—with dwindling funds),

(b) How to solidify VL2 as a tangible resource Center that can offer past, present, and future PIs, as well as the public, resources that will help them leverage their grant-writing and perhaps provide a small revenue for VL2 (e.g., access to VL2's Participant Pool, Data Sharing, ASL and Neurocognitive Assessment Toolkit designed for use with deaf individuals, VL2 Bilingual Reading Apps, VL2 Parent Information Package,

our Benefits and Risk Assessment Committee/BRAC, etc.)

(c) Discussion of the important burning questions in science today and how the VL2 Center is addressing them (and, if not, how to make this happen!)

(d) Identification and promotion of new Center-wide and Network grant writing opportunities,

(e) Identification and advancement of innovations and initiatives in Center Translation,

(f) Identification of new ways for linking Center discoveries with policymakers,

(g) Creative ideas and problem solving involving the support and advancement of our Center PIs and their studies, and more.

## **(vi) Years 6-7 researchers with Extensions until May 30, 2014**

**Jenny Singleton**, PI. Gaze-Following in Deaf Infants (Singleton, Brooks & Meltzoff)

**David Corina**, PI. Electrophysiological Indices of Visual Language Experience on Auditory and Visual Function.

**Matthew Dye**, PI. Optical Imaging of Visual Selective Attention in Deaf Adults.

**Jill Morford**, PI. Cross-Language Activation During Sentence Comprehension in ASL-English Bilinguals.

**Peter Hauser**, PI. Executive Function in Deaf Bilingual School-Aged Signers.

**Charlotte Enns & Lynne McQuarrie**, PIs. Visual Language Training to Enhance Literacy Development.

**Brenda Schick**, PI. Fingerspelling Development as Alternative Gateway to Phonological Representations in Deaf Children.

## **(vii) Years 6-7 researchers who completed their projects on time.**

Yeah! Thank you so much! We

congratulate our distinguished researchers for wrapping up their studies, and we look forward to seeing their results in publications soon.

**Rain Bosworth**, PI. Visual Processing in Deaf Toddlers.

**Guinevere Eden**, PI. Visual Processing in Deaf Adults.

**Karen Emmorey**, PI. Neural Representations of Print, Fingerspelling & Sign in Deaf Readers.

**Thomas Allen**, PI. VL<sup>2</sup> Early Education Longitudinal Study.

**Matt Traxler**, PI. Individual Differences in Deaf Readers.

**David Plaut**, PI. Modeling Semantic-Orthographic-Manual Networks with Reduced Auditory Input.

**Keith Rayner**, PI. Orthographic Processing Effects on Eye Movements in Deaf Readers.

**Carol Padden**, PI. The Role of Gesture in Learning.

\*\*\*

Before closing, we want to acknowledge and thank all of our Center's researchers, students, managers, and staff who have worked diligently to answer important questions in science and to translate our findings in meaningful ways for society. While we've had an exceedingly busy six months, through this newsletter, and more, we look forward to being in lively communication with you all.

Looking forward to an exciting year ahead!

Warmly,  
**Laura-Ann and Tom**

# YEAR 8

## breakthrough science

The Center's Years 1-5 gave rise to foundational discoveries, from which core scientific themes began to emerge in Year 6, and important "Legacy" (high impact) findings in Year 7. In Year 8, our scientific goals and momentum rise even higher. We have hit our stride. Building strength and agility of reasoning from our earlier studies, our vision now is at its sharpest, and most powerfully focused, with a direct bullseye aim towards the achievement of "Breakthrough Science" (high impact science with lasting contributions to society). The Year 8 cohort of researchers and their studies are united in their honed focus on explorations into the revolutionary role that visual phonology may have on children and reading. Drawing strength from our Center's Strategic Focus Areas involving Visual and Cognitive Plasticity (SFA1), Language Development and Bilingualisms (SFA 2), and Reading and Literacy in visual language (SFA 3), new and more expansive networks of researchers have been formed in this historic effort to advance the Science of Learning.

***visual phonology***

***children***

***reading***

***network science***

***visual and  
cognitive  
plasticity***

***language  
development  
and  
bilingualism***

***reading  
and  
literacy  
in visual  
learning***





## ***Translation in Education: Translational Products, Tools, and Dissemination***

Led by Dr. **Melissa Herzig**, VL2 Research and Translation Manager, in collaboration with VL2's Digital Innovation & Media Strategies Manager, **Melissa Malzkuhn**, this part of the center focuses on the translation of research for greater community impact, from supporting literacy development in young children to supporting educators and parents working with visual learners. Since 2012, as our science and scientific discoveries have sky rocked, so has an explosion in the translational work. VL2 has developed a transformative synergy of research across all investigators and activities within and across SFAs and education with amazing teams.

Our priorities for YEAR 8, 2013-2014 includes:

Running and maintaining the PhD in Educational Neuroscience program at Gallaudet University.

Releasing more planned bilingual storybook apps, *The Little Airplane That Could* and *The Boy Who Cried Wolf* and working on primer storybook apps, to focus on early readers (children ages around 3-4 years old).

Distributing the Parent Information Package, along with surveys and focus groups. We will also conduct user characteristics and user experience evaluations with VL2 Storybook Apps.

Sharing our Center's research findings and translational products at different conferences, seminars, summits, schools and centers, and with National Association of Deaf (NAD) Educational Policy Committee. Continue to work on two-way communication especially with people who work with deaf children from birth through high school age.

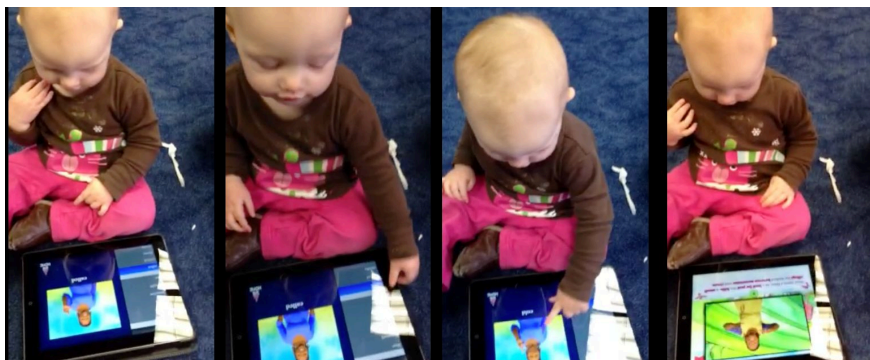
Be sure to stay tuned -- check VL2 website, connect with us through Twitter, Facebook, and subscribe to our newsletter!

## ***Integration of Research and Education: Student Training for the Next Generation***

Led by Dr. **Peter Hauser** of the Rochester Institute of Technology.

THE VL2 Meeting: On a weekly basis, guest lecturers are invited to present their research via Fuze. Students and researchers across the nation all converge for the weekly insights. Presentations are offered in ASL, with interpreters provided for non-signing participants. This year we'll have International guests presenting in International Sign, starting with **Marieke Kusters** from Catholic University College in Limburg, Belgium. Innovations for the present year will build on those that were successful last year (the successful debate in IS moderated by **Dr. Carol Padden** with invited researchers from different fields)--thereby increasing our inter-disciplinary knowledge and collaborations! The lecture series we have established for the year is exciting; please contact **Jessica Contreras** at [jmc8191@rit.edu](mailto:jmc8191@rit.edu) for more information about the meetings.

Student Leadership Team (SLT): The SLT is up and running. They are responsible for the management of the student database, communication among students, communication between the VL2 Executive Team and students, the planning and running of student conferences, retreats, and workshops, and the evaluation and funding of VL2 student research travel and activities.



# brilliant minds + three labs = amazing

This new year, 2013-2014, is a very exciting time here at VL2 at Gallaudet University. The beginning of the year brings new students and interns into VL2. Student interns and graduate assistants arrive with a wealth of experiences from their studies, internships, and careers. Here at VL2 they will build on these experiences and grow from opportunities to work with dedicated faculty and staff. They will engage in hands on research, with the goal of making original scientific discoveries. They will work collaboratively to create new knowledge important for the dissemination and translation of their science into meaningful and useful information for society. We at VL2 welcome our new students. We look forward to seeing them blossom as scientists during their time in VL2.



“

*Being a VL2 student offers a rich experience unlike any other! I'm honored to be part of a team that is dedicated to improving language learning experiences for deaf/hard of hearing children through research and creativity.*

*-Andrea Sonnier*

## **Translation & Motion Lab Team**

L to R:

Erica Wilkins, Clinical Psychology PhD

Cara Keith, Critical Studies of Education of Deaf Learners (CSEDL) PhD

Andrea Sonnier, Critical Studies of Education of Deaf Learners (CSEDL) PhD

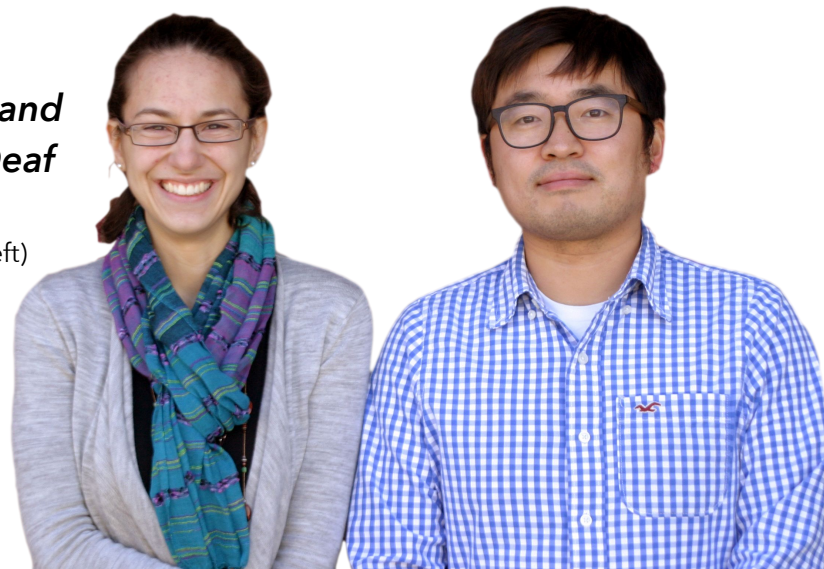
## **Early Communication Experience and Early Language Skills (EELS) for Deaf Preschoolers Team**

Donna Guardino, Clinical Psychology PhD (left)

Daqian Dang, BA Mathematics (right)  
(not pictured)

Amy Letteri, Clinical Psychology PhD

Amarilys Galloza, Clinical Psychology PhD





# team.

“

*I am enthusiastic to learn more about BL2 and do work with children through the research projects. I'm especially looking forward to receiving training for the use of fNIRS so that I can continue contributing my best work to BL2.*

*-TraciAnn Hoglind*



## PETITTO'S BRAIN AND LANGUAGE LAB (BL2) FOR NEUROIMAGING

Back row, left to right: Clifton Langdon, Geo Kartheiser, Don Cullen, TraciAnn Hoglind, Elizabeth Steyer, Diana Andriola, Lorne Farovitch

Front row, left to right: Casey Cochran, Erin Spurgeon, Kristine Gauna-Day, Laura-Ann Petitto, Adam Stone



“

*I look forward to working with children through the eye-tracking project to identify what they are doing with their eyes while they read. I am excited to see the results of this project in order to better understand how deaf eyes are perceiving the world.*

*-Elizabeth Steyer*

### Undergraduates:

TraciAnn Hoglind, Sophomore, Psychology  
Lorne Farovitch, Senior, Chemistry and Biology  
Don Cullen, Senior, Business Administration and Information Technology

### Graduates:


Elizabeth Steyer, Linguistics MA  
Diana Andriola, Linguistics MA  
Casey Cochran, Linguistics PhD  
Erin Spurgeon, Interpreting MA  
Clifton Langdon, Linguistics PhD  
Adam Stone, PEN  
Geo Kartheiser, PEN



A high-angle, top-down photograph of a group of approximately 15-20 young adults lying on their backs in a large circle on a grassy field. They are all looking towards the camera and smiling. The students are dressed in casual attire like t-shirts, jeans, and shorts. One student in the lower-left foreground is wearing a grey t-shirt with "O'BRYEN COLLEGE" printed on it. The scene is brightly lit by sunlight, casting shadows on the grass. In the top-left corner, there are some items on the ground, including a blue box and a clear plastic water bottle.

# ***Student Retreat Washington DC '13***





# *Annual Student Retreat hosted at Gallaudet University!*

A unique opportunity was provided for students involved with VL2 from the following universities: Rochester Institute of Technology, University of Illinois at Urbana-Champaign, University of California San Diego, University of California Davis, University of New Mexico, and Gallaudet University. Faculty presenters from these colleges as well as University of Manitoba were present to provide workshops on a variety of topics. To start of the retreat Co-Principal Investigators **Laura-Ann Petitto** and **Tom Allen** provided the welcome to kick off the weekend. Attendees participated in a poster session and had numerous networking opportunities throughout the weekend.

On Saturday, students were involved with the Personal Discovery Program on Gallaudet's campus by participating in a Ropes Course. One student, commenting on their experience at the retreat said, *"I enjoyed meeting other VL2 students, learning about what projects other people are working on and having the opportunity to discuss them, learning about research techniques and methodology, and being at Gallaudet. The ropes course was a nice team-building activity, and a good chance to have fun together."*

*Students from ten labs arrived at the start, through the retreat it became clear that that we are all part of something bigger; a shared vision in VL2, and the emphasis on interaction and socialization with each other over the weekend, at the end we felt we were one large group.*

*-Morford Lab*

*(Paul, Corrine, Teri, Benjamin)*





# Recognizing student ambassadors of science

The National Science Foundation, Science of Learning Center, Visual Language and Visual Learning, VL2 Student Scholar Recognition Ceremony 2013.

Co-PIs **Laura-Ann Petitto** and **Tom Allen** hosted the second VL2 Student Scholar Recognition Ceremony 2013 in order to recognize our new student scholars at VL2 central.

Students were recognized individually and thanked for their contributions to the VL2 family as Petitto has

coined our group. The ceremony was attended by the Graduate School Dean **Carol Erting** who shared a few words encouraging students as they are the "...future of science. If you don't see yourselves as scientists now, it will start to emerge through your time here".

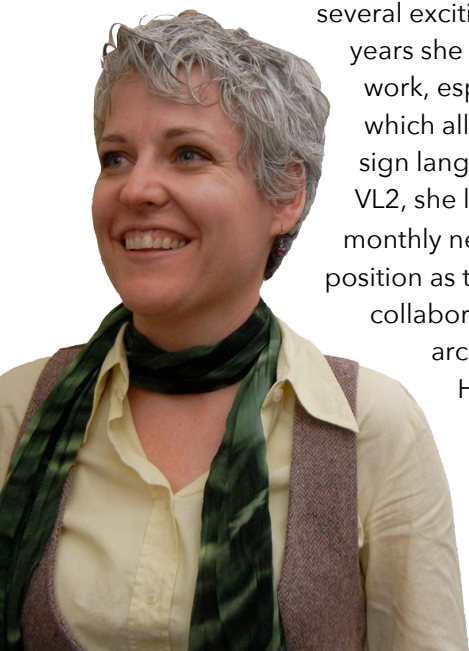
At the conclusion of the ceremony students had the opportunity to talk about the past month and their new experiences working in VL2 and BL2.



## Leaving behind a legacy in research to translation work

For the past three years, VL2 was blessed to have **Dr. Kristen Harmon** working as our Communications Officer in the Integration of Research and Education division of the Center. **Dr. Harmon** is returning to the Department of English, and has several exciting publications and book editions coming up. The three years she spent at VL2 has left a great impact in defining translational work, especially with her spearheading the Parent Information Package which allows families with a deaf child to learn about the advantages of sign language bilingualism and visual learning. During her time with VL2, she led the publication of ten Research Briefs, and maintained monthly newsletters to keep our center communications, a very integral position as this center spans a number of labs across the country, and her collaboration on *The Baobab* story development as one of the story architects.

Harmon was also instrumental in introducing VL2 science to the public through plugging in with social media (Twitter, Facebook, ISSUU, to mention a few). Her impact and absence are already felt. Not only did she make great contributions to VL2, but she was also a terrific colleague and friend, and we miss her greatly!



### hashtag this!

Following VL2 news & happenings have never been easier. Simply use [#VL2Science](#) when talking about us, or add this in your tweet and other posts, and we'll be able to see you too.

Our goal is to stay connected, and be connected, so we can use what we've learned to make lasting social impact and change.

# *The Student Leadership Team is gearing up for another amazing year.*

Contributed by Casey Cochran

We are hard at work planning many great events for students in VL2 this year. We started with the retreat, which was a time for students from all of our affiliated labs to come to Gallaudet University for a weekend of science, networking, learning, collaboration, and fun! In addition to our weekly VL2 meetings, we are busy planning other workshops and training opportunities. Here are a few items for you:

We completely upgraded our VL2 Student Database to stay better in touch with all VL2 students and alumni. If you think you're not in our database, please email Shane Blau ASAP at [srblau@ucdavis.edu](mailto:srblau@ucdavis.edu).

The Student Review Committee has already started receiving training, travel, and research grant applications from VL2 students! Please look at the VL2 Student Folder on Google Drive for the SRC Proposal Guidelines and instructions on how to apply, as well as what expectations are required at the close of your travel (all travel award recipients must provide a reflection on the science and translation significance of their conference experience for the VL2 Newsletter upon return). (If you don't have access to this folder, email Shane Blau.)



We are extending VL2 membership to any undergraduate or graduate student whose interests align with VL2 and who are in VL2 funded laboratories. Individuals who are interested in joining VL2 may fill out an application (with their VL2 PI sponsor's brief support statement), and all will be considered by our SLT!

We are gauging interest in hosting a Sign Language Assessment Workshop (SLAW) in mid-January 2014 and will be sending out a form shortly to collect people's thoughts.

We are considering adding an extra day to the SL2-Hub, Gallaudet's student-run research conference in March 2014, so attendees can discuss ethics and terminology used in deaf-related research (directly borne out of our Ethics Discussion at the Retreat).

We are looking forward to another great year!  
*Jessica Contreras, Paul Twitchell, Ben Anible, Adam Stone, Shane Blau, Casey Cochran*

## **November 8th:**

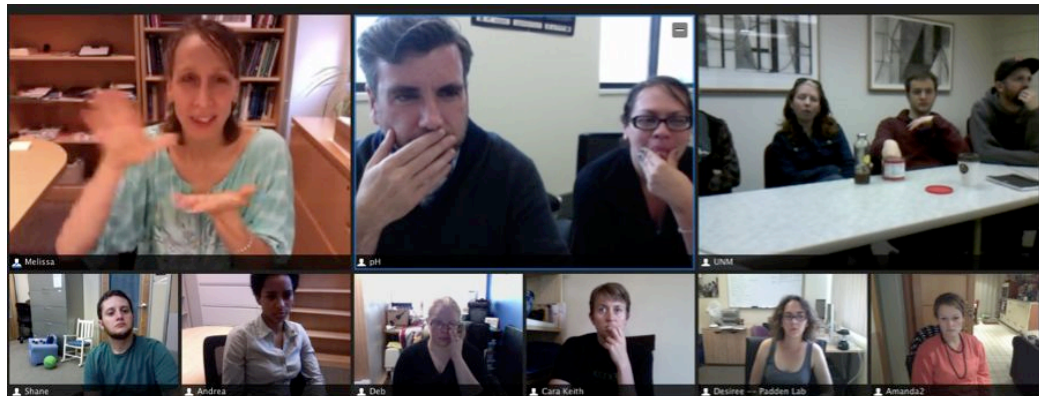
*Nature of Deaf Mentoring Dyads:  
Role of the Subjugated*  
Dr. Jason Listman, NTID/RIT

## **November 15th:**

*Visual World:  
Looking at lexical access in a signed language*  
Dr. Robin Thompson,  
University of Birmingham (UK)

## **November 22nd:**

*PhD in Educational Neuroscience*  
Geo Kartheiser & Adam Stone,  
Gallaudet University



## **FUZE VL2 Meeting Schedule for November**



# ENGAGE

## Interaction Design and Children 2013 (New York City, NY)

June 2013

Melissa Malzkuhn, Dr. Melissa Herzig, and Adam Stone

Presentation: Bilingual Storybook App Designed for Deaf Children Based on Research Principles



## New York City



## Jackson Hole

## Western Regional Early Intervention Conference on Sensory Disabilities (Jackson Hole, Wyoming)

June 2013

Dr. Jill P. Morford

Presentation: Why is the Critical Period  
Critical to Language Acquisition?

## Deaf Academy Congress (Lisbon, Portugal)

July 18-20, 2013

Dr. Peter Hauser, Erica Israel, Kailea Colayori,  
Jessica Contreras, and Adam Stone

Poster Presentations:

- What makes deaf people resilient?
- Deaf students' performance on the Color Trails
- Test: Effect of early sign language acquisition



## Lisbon

# London

## Theoretical Issues in Sign Language Research (TISLR) Conference (London, UK)

July 10-12, 2013

Attended by over 20 VL2 students, faculty, and PI's from all over the United States.

The Theoretical Issues in Sign Language Research (TISLR) Conference was held in London, UK, and brought together experts from all over the world to engage in scholarly discourse about current issues, research findings, and future directions in the field of linguistics. Compared to the TISLR conference that was held three years ago at Purdue University, VL2 had a stronger presence, with participation from VL2 members all over the USA delivering both presentations and posters. **Dr. Peter Hauser** (RIT) presented one of the Plenary Addresses entitled, "Sign Language Assessment: A bridge between theory and practice." **So-One Hwang** (see photo below) was recognized as having made the Best Presentation by a Young Investigator. **Dr. Jenny Singleton** said, "So-One gave a stellar talk. She pre-recorded her own voice which was played, and then she signed her presentation in ASL, doing a fantastic job." **Erica Israel** (RIT), noted the following about her experiences, "I was inspired and enriched by the experience I had at TISLR, from presenting my research work to engaging in discourse with my role models in the field."

For more information on presentation and poster titles, please go to the TISLR website:

<http://www.ucl.ac.uk/dcal/tislr/>



VL2 students and new friends at Harry Potter's famous 9 3/4 train stop in London! (L to R: Erica Israel (VL2), Naomi Berlove (Tufts University), Jessica Contreras (VL2), Rachel Benedict (Boston University), and Adam Stone (VL2))



Peter Hauser, presenting one of the plenary keynotes, showing a picture of the student interns working in his lab at RIT.



## EYE-TRACKING CLUB

Dr. Rain Bosworth, Clifton Langdon, Geo Kartheiser, and Adam Stone, have established an eye tracking journal club with the participation of Dr. Melissa Herzig and Dr. Laura-Ann Petitto. All members are in the research network for Study 2 (Petitto, PI: The impact of early visual language experience on visual attention and visual sign phonology processing in young deaf emergent readers using early-reading Apps: A combined Eye-Tracking and fNIRS brain imaging investigation). Members rotate weekly responsibilities of selecting an article and leading discussion. Articles are chosen based on how it utilizes eye tracking methodology. Discussions focus on how the authors test a particular hypothesis using eye tracking, and whether it was successful. During their weekly meetings, they have an opportunity to discuss their own Study 2 network project, stimuli, and how eye tracking is used with brain imaging and behavioral responses.

## FORMER BL2 INTERN, DEFENDS AND PASSES PHD DISSERTATION

Dr. Kaja Jasinska (Petitto Advisor) defended and passed her dissertation this past August and is now working at Haskins Laboratory, Yale University with Dr. Ken Pugh!



## PHI KAPPA ZETA COMMUNITY SERVICE SUPPORTS VL2 OUTREACH

We would like to recognize and give heartfelt thanks the sisters of the Phi Kappa Zeta Sorority for their community service efforts by helping with the assembling of our Parent Information Package. We have 2,000 packages, and with all of their help, we are now ready to distribute the packages out to professionals and families!



## R01 PROPOSAL SUBMITTED TO NIH AND NIDCD

Dr. Rain Bosworth of UCSD submitted an R01 proposal to study the Impact of Deafness and Visual Language Experience on Visual Perception from Infancy to Adulthood, as the Principal Investigator, with Laura-Ann Petitto, Tom Allen, and Peter Hauser as collaborators. The current proposal tests different aspects of visual sensitivity in deaf infants, children, and adults, to differentiate which aspects of visual functions are impacted by deafness and/or sign language experience. A group of children with cochlear implants will be tested to determine whether there is a critical period for changes in visual perception due to early deafness.

## WINNING PEOPLE'S CHOICE AWARD AT MEDIA RISE NOW FESTIVAL

Melissa Malzkuhn and her brother Matt Malzkuhn participated in the Media Rise Now Festival, which focuses on using media for community impact. The two worked together on an app called The ASL App, which is designed to introduce conversational ASL, thus the tagline: ASL for the people. The siblings won the People's Choice Award for their app, which was voted on by the audience. With this support, they plan to work with sound engineers to add voice overs. They plan to release it in early winter. For more information, please see [www.theASLapp.com](http://www.theASLapp.com).



## BE A PART OF BREAKTHROUGH SCIENCE: THE VL2 RESEARCH VOLUNTEER PROGRAM

We, at VL2, are looking for children or adults to participate in research projects. Sign up if you or your child are: Deaf, hard of hearing, or hearing; and exposed to American Sign Language (ASL). For more information contact us at [VL2@gallaudet.edu](mailto:VL2@gallaudet.edu) and sign up here: <http://signupVL2.gallaudet.edu>.

vl2.gallaudet.edu



EMAIL  
[VL2@gallaudet.edu](mailto:VL2@gallaudet.edu)



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