

visualize

CHANGING THE WORLD THROUGH SCIENCE

NO. 18 // SUMMER 2014

We are so excited by the publication of more bilingual ASL-English Storybook Apps! The beautiful artwork displayed here by Deaf Canadian artist Pamela Witcher is from the new ASL Storybook, *The Boy Who Cried Wolf*. It joins *The Baobab* in our growing library, and soon we will add *The Blue Lobster*, a colorful primer for emergent readers, ages 4-7, and *The Solar System*, an introduction to the Sun and its planets, designed for elementary school science classes. And very soon we will launch the *ASL Storybook Creator*, a set of web tools and training modules that will help story and curriculum writers create their own storybooks using the templates and code developed at VL2.

Our Storybook Apps are central to our translation work at VL2; they allow us to use the scientific principles that we have discovered in our labs and create technologies that we firmly believe will contribute to improving

the reading abilities of young children who are deaf. At the same time, the Apps themselves become the objects of study, as we design experiments to examine the interactions of young children with these emerging and ubiquitous visually rich and interactive technologies. What a great example of synergy and two-way translation!

We also cherish the opportunity to integrate art and science. Our products are aesthetically beautiful—the artwork, the writing, the ASL storytelling, and the overall presentation. Indeed, this beauty is critical to conveying story narratives to young minds, minds that need to understand the narrative structure of the stories they encounter as much as they do the meanings of letters and words on a page as they develop reading skills. As our creative team keeps telling us, this is STEAM, not STEM, and the “A” is for art. The arts ideally complement the sciences, especially in education and the Science of Learning where artistic

expression is so important.

We welcome you to the Summer 2014 edition of *Visualize*. In this issue, we present a broad brushed landscape of our multi-faceted center: from our forays onto the world stage of educational policy, to the reflections and contemplations of our Scientific Advisory Board; and from the legacy research being carried out within our Strategic Focus Areas and our science networks throughout the country, back to the halls of academia where we celebrate the first anniversary of our PhD program in Educational Neuroscience. ●

— Laura-Ann Petitto and
Thomas Allen, Co-PIs, VL2

overview

- 2 | Sharing VL2 Research
- 3 | VL2 In China
- 4 | NIH Award for Kartheiser
- 6 | Study Updates
- 11 | Scientific Advisory Board Meeting



VISUAL LANGUAGE
AND VISUAL LEARNING



visualize

VISUAL LANGUAGE &
VISUAL LEARNING
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Translation in Motion: Sharing VL2 Research With Parents and Teachers

Dr. Melissa Herzig, VL2's Education and Research Translation Manager, has an active speaking schedule sharing VL2 research findings with audiences that include parents and teachers of deaf children, interpreters, audiologists, administrators and professors. Dr. Herzig is spreading the message that young deaf children's brains are designed to absorb and process more than one language.

"It's important to give children opportunities rather than options," Dr. Herzig says. "Parents and teachers do not have to choose between spoken or signed language modalities; rather, they can promote both languages. By sharing current research findings and resources and erasing misconceptions, we can help parents feel more confident about making informed decisions that will benefit their children."

Dr. Herzig says participants at her events are interested in how they can help children succeed in school and also gain language skills at home. "I usually share an overview of

our research, as well as two-way translational projects connecting research and education, including educational resources and outreach materials," she explains. "I include information about our Parent Information Package, VL2 Storybook Apps, and other helpful resources."

Among other presentations, Dr. Herzig has recently been hosted by groups at the Pinellas County School System in St. Petersburg, FL; the South by Southwest Conference in Austin, TX; the Literacy Conference, Parent Group and Deaf Expo at Maryland School for the Deaf, Columbia, MD; and the Early Hearing Detection & Intervention Conference in Jacksonville, FL. On location at Gallaudet University, she has met with Fulbright Scholars from other countries, a director and pedagogical coordinator from the National Institute for Deaf Education in Brazil, and representatives from the Ministry of Education in Singapore.

Dr. Herzig has a unique perspective because, as a deaf child, teacher of the deaf, and parent, she can share personal stories as well as research findings. "Being exposed to multiple languages is beneficial for all family members, not just the deaf child," she continues. "As the young child acquires visual language, everyone learns."

Dr. Herzig says the responses to her talks have been very gratifying. "It's been tremendous—nearly all of the participants say they would like to know more, plus the groups' input helps us create new goals for VL2 in education, research and translation activities."

"Traveling to conferences and schools is my favorite part of my job," she continues. "I learn so much from those who interact directly with deaf children, and helping to improve the lives of those children is what motivates all of us." ●



Dr. Melissa Herzig at the Early Hearing Detection & Intervention Conference in Jacksonville, FL.



International Impact of VL2 Science: Bilingualism Research Showcased at Conference on the Science of Learning

In March Dr. Laura-Ann Petitto, Science Director and Co-PI of VL2, was a featured speaker at the International Conference on the Science of Learning in Shanghai, China.

The conference, sponsored by the National Science Foundation, United Nations UNESCO, OECD (Paris, France), The University of Hong Kong, East China Normal University and The University of Shanghai, provided a rare opportunity for specialists in language, bilingualism and reading to showcase their disciplines and promote optimal education for young children around the world.

In her presentation, Dr. Petitto shared her VL2 research on bilingualism, including neuroscientific findings about brain development in young children, bilingualism in early childhood development, and children's acquisition of reading skills. The program also overviewed current Science of Learning research and explored how to best share this information for the benefit of children and educators worldwide.

According to Dr. Petitto, the major scientific theme of conference presentations was that "the human brain is highly responsive and adaptable to its environment, and this knowledge can be applied towards establishing optimal learning environments for the young child. Now our core challenge is to connect expanding bodies of knowledge in neuroscience and Science of Learning

with educational methods and practices."

The four-day event began with presentations by heads of U.S. Science of Learning Centers, specialists in social learning, math and spatial knowledge, science and technology, and neuroscience and temporal dynamics. These were followed by panel discussions on topics related to Science of Learning and its implications for policy-making. Attendees included representatives from universities in China, as well as government officials from Europe, the Middle East, Africa, Asia and South America.

Dr. Petitto says participants agreed that the Science of Learning model can help create effective and equitable learning environments for children around the world.

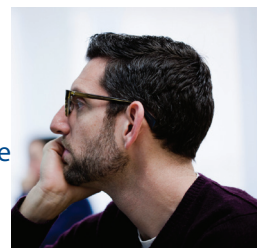
"There is a clear need for 'translators' who understand both neuroscience and the challenges of education," she says. "I was thrilled and proud that Gallaudet University and VL2 are providing not only advanced training in Educational Neuroscience in our new PhD in Educational Neuroscience program (PEN) to train these experts, but translation mechanisms to increase awareness and share information."

A Successful Inaugural Year: Celebrating VL2's PEN Program

In their first year, our cohort of brilliant **PhD in Educational Neurosciences (PEN)** scholars has excelled in their interdisciplinary coursework and research. Through their training, they are developing skills that uniquely position them to produce new knowledge for the benefit of both science and society. As we send them off for their summer neuroscience lab rotations, we realize how quickly they are moving through their training. (As we mentioned in the March issue of *Visualize*, **Adam** (pictured top) will be a valued contributor in Dr. Rain Bosworth's lab at the University of California at San Diego, furthering his interest in reading research using eye-tracking methods.

Geo (pictured bottom) is headed to Karen Emmorey's lab at San Diego State to participate in Dr. Emmorey's ongoing research on working memory.)

We want to savor each moment of their time with us, and yet amidst graduation season here at Gallaudet, we are also excited to anticipate the day when we will stand on the hooding stage with our Graduate School colleagues and present this first cohort with their doctoral hoods. We are also looking forward to welcoming our second class of PEN students, who will matriculate in the fall. We will feature these new students in an upcoming issue of *Visualize*. ●



NIH Graduate Fellowship Award: Congratulations To Geo and VL2!

VL2's Geo Kartheiser has been awarded the prestigious individual National Research Service Award NIH graduate predoctoral Fellowship (often referred to as the F31). Geo recently completed his first year in Gallaudet's new PhD In Educational Neuroscience (PEN) Program, and is Dr. Laura-Ann Petitto's graduate student in her Brain and Language Laboratory for Neuroimaging (BL2).

"We congratulate Geo on this wonderful achievement! This award is a great honor for him and for us at our NSF Science of Learning Center, VL2, as well as an affirmation of Gallaudet University as a top-tier site for significant, impactful research," says Dr. Petitto. "Importantly, it is a wonderful sign of support for our Educational Neuroscience doctoral program, as Geo won this award while standing in a new program that was only three months old at the time of his application!" In addition to being mentored by **Dr. Petitto**, Geo received enthusiastic support from **Dr. Peter Hauser** of RIT (VL2's Science Mentor and SFA 5 Leader) in Hauser's 2014 VL2 Mentorship program.

The F31 fellowship was designed to foster mentored research training

in health-related fields and promote diversity in the scientific community. It was established in honor of **Dr. Ruth Kirschstein**, the first woman director of an NIH Institute.

Kartheiser believes his grounding in VL2's training, education and research were very instrumental in his winning the award. "NIH is especially interested in those who have identified a specific research interest or project that has been sponsored by a laboratory... and demonstrate a strong background (through coursework and laboratory rotation) in research design and methods," he says.

Kartheiser's research as outlined in his F31 explores how the timing of signed language acquisition yields change in the neural resources facilitating spatial

working memory. "By studying a spatial syntax based language like ASL, a unique window that would not be possible with spoken language is gained into the structural and functional plasticity of the human brain," he explains. Kartheiser says the BL2 lab, affiliated facilities at Gallaudet, and the VL2 network provide a supportive, ideal environment including research infrastructure, facilities, and intellectual community, for conducting this research.

"Being a part of VL2 has afforded me a wealth of resources that has helped me incredibly in my personal and academic endeavors," he says. "The network created by VL2 has permitted me to develop key relationships and receive training from astonishing students and faculty from many different laboratories across the country."

Kartheiser says he would especially like to thank members of the VL2 and Gallaudet communities for their "overwhelming support! This achievement would not be possible without my wonderful, dedicated primary advisor, Dr. Laura-Ann Petitto, who always made herself and her brilliant mind available to me regardless how occupied she was or where she was located on the planet at the moment; the impeccably designed Educational Neuroscience program and team at VL2 and Gallaudet University; **Dr. Clifton Langdon**, for letting me pick his brain whenever I faced a roadblock; my 'co-pilot' **Adam Stone**, for his humor, critical insights, and words of encouragement; Dr. Peter Hauser for his enthusiastic mentorship and devoted support; and the wonderful administrative team at Gallaudet University." ●

NIH Graduate Fellowship Award Winner Geo Kartheiser





Growing the App Library: VL2's Motion Light Lab (ML2)

Director: Melissa Malzkuhn

Our latest Storybook App, **The Boy Who Cried Wolf**, has launched and is receiving excellent reviews and accolades from parents and educators. A recent review from Best Apps for Kids (<http://bestappsforkids.com/2014/04/the-boy-who-cried-wolf-vl2-storybook/>) rated the App "Highly Recommended" and included comments such as "Parents of deaf children can use the App to assist in their own education about ASL," and "This book can also provide a step in the process of becoming bilingual. Young children's minds are especially receptive to language learning, and most can benefit from learning two or more languages at the same time."

The App is designed and built using the same research-based framework the Motion Lab developed for VL2's first Storybook App, **The Baobab**. Melissa Malzkuhn says "Justin Jackson, our ASL storyteller (pictured top), is extraordinarily talented, and I think he's only complimented by the amazing visuals of Pamela Witcher, our artist. Having these two very different Apps means deaf children can experience the breadth and depth of ASL storytelling, and makes their reading experience even more compelling." ●

Research Informing Science: VL2's Brain and Language Lab for Neuroimaging (BL2)

Director: Laura-Ann Petitto

Here are some of the current studies being conducted in our BL2 Lab. We will feature additional studies in upcoming issues of *Visualize*.

"The Biological Basis for Language and Cognition in Infants, Children, and Adults With Cochlear Implants."

In this study, we ask if early exposure to a visual signed language impacts classic spoken language tissue development in deaf individuals with cochlear implants, in order to provide new insights on how early life language exposure can facilitate language processing in these individuals.

"The Linguistic Structure and Neural Representation of Classifier Constructions: Through the Lens of fNIRS neuroimaging of Adults."

In this study we investigate whether the visual resources in signed languages result in American Sign Language classifier constructions engaging additional neural systems for non-morphemic processing, in order to understand the extent to which biological variations in signed and spoken language modalities influence language structure.

"The Biological Basis for Language and Reading in Monolingual and Bilingual Infants, Children and Adults."

This project seeks to reveal how the brain processes two languages and the impact that first bilingual exposure age has on the bilingual's capacity to process and read in two languages. The discoveries from this project uncover the biological foundations and environmental influences underlying reading and linguistic and cognitive processing in monolingual and bilingual infants, children and adults.

"Infant Sensitivity To Natural Language Rhythms in Fingerspelling."

Here we aim to reveal the nature of visual-manual rhythmic-temporal patterns which are central to visual sign phonology, and study how infants' visual language experience changes their sensitivity to these patterns. With this investigation, we will be better able to identify components of the language signals to which infants are most sensitive, and the contribution of visual sign phonology to language and literacy acquisition.

"Neuroplasticity of Spatial Working Memory in Signed Language Processing."

This study asks if the age of signed language acquisition yields changes in the neural resources facilitating spatial working memory. Findings will provide advancement to scientific debate about the nature of brain plasticity and reversibility of the critical period for language acquisition in adult learners. ●

Knowledge from New Data:

VL2's Early Education Literacy Studies Lab (EL2)

Director: Thomas Allen

The Early Education Literacy Studies Lab (EL2) has been having weekly meetings to develop an analysis and publication plan for our longitudinal EELS data. During the Spring, the team submitted three articles to journals for publication, and a fourth is all but complete. Two are under review and one has been accepted pending revisions.

Later this summer, EL2 researchers **Dr. Thomas Allen** and **Dr. Donna Morere**, along with student **Amarilys Galloza**, will participate in a Symposium at the Annual Meeting of the American Psychological Association on the relationship between visual attention and language. This symposium is a collaborative effort with Howard University, and presenters **Drs. Danielle Brown** and **Porsche Boddicker** from the Developmental and Early Language Lab at Howard will join the EL2 team for a discussion of the interplay of visual attention and language development for young children from different linguistic cultures.

Also this summer, EL2 will be the unit responsible for managing the VL2 ASL Assessment portal, which will be installed on the Gallaudet servers in mid-June. Dr. Allen says, "We are very excited to finalize the development of the portal and receive training in how to create and manage ASL-based tests." ●

Breakthrough Science Networks:

Year 8 SFA Leaders and Studies

Study 1

Development of Visual Phonology in Deaf Infants: The Role of Rhythmic-Temporal Properties of Sign-Phonetic, Sign-Syllabic and Prosodic Language Perception Using Eye Tracking

PI Rain Bosworth, University of California San Diego (UCSD)

Network: So-One Hwang, UCSD

Laura-Ann Petitto, Gallaudet University

David Corina, University of California Davis

This study uses cutting-edge, high-resolution eye tracking technology to investigate where infants and children look while viewing a signer using American Sign Language. With the support of VL2 funding, Dr. Bosworth and her colleagues used this method to investigate infants' early looking preferences for visual language and non-language stimuli, with the goal of unveiling the early precursors of language learning in infants. Their results show that young infants between 5 to 6 months of age, despite never seeing sign language, are able to discriminate between real signs and other non-language stimuli like gestures or "unnatural" signs played backwards. This result suggests that infants do have an early language bias that is found for natural languages conveyed both manually or orally

SFA 1: Visual and Cognitive Plasticity

Led by Rain Bosworth,
University of California,
San Diego

Study 2

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

PI Laura-Ann Petitto, Gallaudet University

Network: Rain Bosworth, UCSD

PEN Students Geo Kartheiser and Adam Stone, Gallaudet University

Clifton Langdon, Melissa Herzig, Thomas Allen and Melissa Malzkuhn, Gallaudet University

Kaja Jasinska, Yale University

In this study we ask if differences in early life visual language experience impact visual attention and allocation in the young emergent deaf reader. If early visual language experience affects aspects of reading in early sign-exposed deaf children, it may suggest that select visual properties of visual sign phonology selectively enhances visual sight word recognition and provides advantages to deaf children's acquisition of reading in English. Results from the present study will provide first-time research-based insights into all young children's visual attention to linguistic and non-linguistic visual information in dynamic moving scenes, as are commonly used in today's e-literacy technology. Our findings will also provide new knowledge for the optimal design of e-literacy and avatar translational learning and reading tools.

Study 3

The Development of Perceptual Span in Beginning and Developing Deaf Readers

PI Keith Rayner, UCSD

Network: Natalie Belanger, UCSD

Jill Morford, University of New Mexico

We are examining how visual language experience can impact visual linguistic perception and reading span in the growing reading child (ages 7-9, and 13-15 years). We test the hypothesis that early exposure to ASL, and/or knowledge of visual sign phonology, may cause a larger perceptual span, having an impact on reading capacity. We have completed the development of study tasks and protocols, hired a deaf research assistant who will work closely with our lab and with contacts in schools to guarantee fluid communication with deaf children and their teachers and ensure fidelity of experimental procedures throughout data collection, and have established contacts in two schools for the deaf in California, who will collaborate with us in conducting the study.



Science

SFA 2: Language Development and Bilingualism

Led by Erin Wilkenson,
University of Manitoba,
Canada

Study 4

Do Young Deaf Bilingual-Bimodal Readers Access ASL Forms While Reading English Words?

PI Erin Wilkenson, University of Manitoba, Canada
Network: Jill Morford, University of New Mexico
Pilar Pinar, Gallaudet University

Building on earlier VL2 research conducted by Morford and her colleagues at the University of New Mexico demonstrating that ASL signs are activated when adult ASL-English bilinguals read English words, this study seeks to understand the developmental trajectory of this bilingual activation. Do the lexical relationships between the two languages change over time, as children become better readers? We hypothesize that they do, and that lexical co-activation will be in evidence among children in the middle school years. We have developed age appropriate tasks for children in grades 6-8 and have contacted the five schools throughout Canada where data collection will take place starting in early fall.

Study 5

Speed of Visual Sign Language Processing, and Visual Sign Phonological Awareness Processing, in Young Deaf Typically and Atypically-Developing Bilingual-Bimodal Readers

PI David Quinto-Pozos, University of Texas
Network: Thomas Allen, Gallaudet University

At the University of Texas Signed Language Lab, we have crafted ASL, fingerspelling, and written English measures in order to investigate visual language processing in bilingual-bimodal deaf children and adolescents. Numerous studies have documented evidence that rate of processing is a primary factor in developmental language disorders of hearing children who acquire spoken language. To date, no study has investigated rate of processing in deaf children who are suspected of having a signed language disorder. We are excited to continue our line of research on atypical development by manipulating rate of language presentation (slow, regular, and fast) and measuring processing and comprehension across modalities (visual-gestural and print). In addition, we have been working with various schools for the Deaf in order to identify atypically- and typically-developing early signers who qualify for the study, and we look forward to the data collection phase of the project. We expect that our results will inform VL2's continued work on visual sign phonological awareness.

Study 6

Learning To Read With Visual Languages: Investigation of the Impact of Visual Phonology (L1) Training on Emergent and Developing Literacy in L2

PI Lynn McQuarrie, University of Alberta, Canada
Network: Charlotte Enns, University of Manitoba, Canada

This is a multi-site, school-based training study designed to examine the effects of intensive small group ASL phonological awareness training both on ASL language and on English literacy outcomes over time (children grades K-4, approximately ages 5-9 years). It will also examine the individual characteristics and contextual conditions that impact reading and signed language vocabulary growth in K-4 students, with the goal of identifying powerful predictors of reading success in young signing learners.

Study 7

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

PI Thomas Allen, Gallaudet University
Network: Donna Morere, Gallaudet University
Graduate Student Amy Letteri, Gallaudet University
Matthew Traxler, University of California, Davis

Analyzing data from the Early Education Longitudinal Study, the EL2 team are completing cross sectional analyses of Wave 1 data (when the participants were between the ages of 3 and 5) looking at predictors of early literacy skills, early visual attention skills, and early social adaptability skills. Verification of Wave 2 data is completed, and data entry and verification for Wave 3 are under way. We have only just begun an exploration of the two-year longitudinal patterns for children with and without cochlear implants and for children with and without early sign language exposure. We hypothesize that early visual language exposure will have a beneficial impact on early literacy for both implanted and non implanted children, thus corroborating findings from VL2 lab studies with data collected in naturalistic settings.

SFA 4: Translation in Education: Translational Products, Tools and Dissemination

Led by Melissa Herzig, Gallaudet University

SFA 5: Integration of Research and Education (IRE): Student Training for the Next Generation

Led by Peter Hauser, National Technical Institute for the Deaf/
Rochester Institute of Technology



Science In Action: VL2 Study Updates

Here is a sampling of additional updates from our Year 6-7 VL2 researchers, who are continuing to make new discoveries that benefit children, parents, educators and the scientific community. Some Year 6-7 study updates were featured in the March 2014 Visualize, and we will highlight even more of our research in upcoming issues.

Dr. Jill Morford, University of New Mexico: Cross-language Activation During Sentence Comprehension in Deaf Bilinguals

Our lab has been on the move this spring with students presenting research papers at the NSF iSLC Conference in Pittsburgh, and then at Gallaudet's SL2HubDC student-led conference on sign language as well as at the International Symposium on Sign Language Interpretation and Translation Research. Research findings corroborate VL2 findings emerging from other labs that deaf ASL-English balanced bilinguals process English sentences as quickly as hearing monolinguals. Evidence of cross-language activation on lexical processing in sentences is proving to be more elusive than when tested with single-word tasks. Findings from an earlier VL2 study that demonstrated cross-language activation in German deaf bilinguals was recently published in *Applied Psycholinguistics* (<http://journals.cambridge.org/action/displayAbstract?fromPage=online&aid=9158879>).

Drs. Carol Padden and So-One Hwang, University of California, San Diego: The Role of Gesture in Learning

Recently, we have discovered that *where* the hands are in gestural production also reveal children's state of knowledge about concepts. Our undergraduate intern Micaela Trujillo (Linguistics Major) presented these findings at the *inter-Science of Learning Center Conference* in March 2014. We have been focusing on how the gestures of deaf and hearing children reflect conservation knowledge. The results suggest that lexical forms, and productions that do not rely on perceptual information, promote categorical and abstract thinking among children. Gestures that supplement these categorical forms can promote learning by allowing for two different modes of thinking, but gestures that are used in lieu of categorical forms may limit both expressive and cognitive power.

Dr. Guinevere Eden, Georgetown University Medical Center: Impact of Language and Sensory Experience on Brain Anatomy

Most research into brain function and brain anatomy in people who are deaf has involved deaf and hearing signers, and hearing non-signers. Because the majority of individuals who are deaf are born to hearing parents and therefore use English or another spoken language as their first language, we asked whether conclusions drawn about the effects of sensory experience in native users of sign language would hold when studying deaf and hearing subjects who are native users of English (i.e., they consider English their first language). In a paper published in the *Journal of Neuroscience* (Olulade, Koo, LaSasso, and Eden, 2014) we studied deaf and hearing native users of American Sign Language and deaf and hearing native users of English. Our findings demonstrate that restricting investigations of brain structure and function to native users of ASL means that the results cannot be generalized to all deaf people. We are now continuing this line of investigation with functional brain imaging data acquired during a visual task.

Dr. Karen Emmorey, San Diego State University: Neural Representations of Print, Fingerspelling and Sign in Deaf Readers

At the Laboratory for Language and Cognitive Neuroscience, we are studying deaf adults who have achieved reading success and comparing their neurobehavioral profiles to matched hearing readers and to less-skilled deaf readers. These comparisons allow us to determine whether successful reading processes for deaf individuals are comparable to those for hearing readers and to identify the cognitive and linguistic factors that predict individual differences among deaf readers. Our results thus far indicate that college-level deaf readers activate the same brain regions when reading words for meaning as their hearing peers, while less-skilled deaf readers exhibit weak and highly variable neural activation within the reading circuit. In addition, reading ability appears to be strongly correlated with activation in left inferior temporal cortex (a region involved in semantic processing of visually presented words). Better deaf readers exhibit greater neural activity in this region, and we hypothesize that these skilled readers are better able to use their semantic knowledge to process written English words. ●



Scientists of the Future: Student Updates

Helping to train the scientists of the future is one of VL2's most vital missions. Our VL2 students make significant contributions to our research, translation projects and relationships in the larger community. As this year comes to a close, we would like to express our appreciation to our wonderful Student Leadership Team, mentored by SFA 5 Leader Dr. Peter Hauser, for organizing and promoting student activities and keeping students at our various sites connected.

We also want to commend VL2 students who are being awarded undergraduate, Master's or PhD degrees. We are thrilled for you and proud that you are members of the VL2 team. **CONGRATULATIONS!** ●

Recent VL2 Graduates

Stephanie Aguirre	BA Psychology	University of California, San Diego
Belinda Bustillos	BA Linguistics	University Of California, Davis
Lorne Farovitch	BS Chemistry/Biology	Gallaudet University
Teri Jaquez	BS Interpreting	University of New Mexico
Veronica Looney	BS Communication Sciences and Disorders	University of Texas, Austin
Dorri Dagget	MS Clinical Psychology	Gallaudet University
Erica Israel	MS Psychology	Rochester Institute of Technology
Erin Spurgeon	MA Interpreting	Gallaudet University
Elizabeth Steyer	MA Linguistics	Gallaudet University
Paul Twitchell	MA Linguistics	University of New Mexico
Deborah Cates	PhD Linguistics	University of California, Davis
Anna Crisologo	PhD Psychology	Gallaudet University
Wyatte Hall	PhD Psychology	Gallaudet University
Kaja Jasinka	PhD Cognitive Neuroscience	University of Toronto
Clifton Langdon	PhD Linguistics	Gallaudet University
Jason Listman	PhD Educational Leadership	Rochester Institute of Technology
Greg Witkin	PhD Psychology	Gallaudet University

2014
Upcoming Issues of
Visualize

Awards and Honors
for the VL2 Team!

VL2 student graduates Veronica Looney (below left) and Wyatte Hall and Gregory Witkin (right).





Showcasing VL2 Technology and Research: South By Southwest Conference

VL2's Digital Innovation and Media Strategies Manager Melissa Malzkuhn and Education and Research Translation Manager Dr. Melissa Herzig were presenters at two different venues of the South By Southwest (SXSW) Conference event in Austin, Texas.

SXSW is the largest annual music, film, and interactive media festival anywhere in the world attended by nearly 60,000 registrants and spanning ten days every March. One of its several strands (SXSWedu) focuses on educational technology and how gaming tools provide innovative vehicles for learning. At a SXSWedu session, **Dr. Herzig** shared research findings and translation projects and Malzkuhn led a discussion in a meet-up tent at SXSW Film and Interactive. VL2 graduate assistant **Erica Wilkins** also attended the event.

"At SXSWedu we shared VL2's work, our findings, and resources we created with participants, using the title 'Revolutionary Research on How Children Learn to Read,'" Dr. Herzig explains. Organizers of SXSWedu rated the proposal for this session among the very best from over 700 submissions.

At SXSW Interactive's Meet-Up tent, Malzkuhn talked about the design process for VL2's Bilingual Storybook Apps and the Center's research on visual learners. "More than 60,000 people come to SXSW, so this was a big deal for us all," says Malzkuhn. "We met people from a wide range of fields, including multimedia content developers, storytellers, teachers, designers and company owners."

"The SXSW organizers and the steering committee want to showcase new ideas, so our work was especially interesting to them—it was fun to see them so excited by its great potential, most especially because it benefits children who are visual learners," she continues. "Plus the people I met, the presentations and talks I attended, the exchange of ideas and inspiration, all gave me so much material to bring back to VL2." ●

Translation



Dynamic Community Collaborations: VL2 Clerc Center Webinar

On May 1, VL2's Co-PI and Science Director **Laura-Ann Petitto** shared her findings with the Gallaudet and larger communities via a webinar hosted by the Clerc Center. Her topic was **What the Eyes Reveal About the Brain: Advances in Human Language Acquisition—Insights from Visual Language and Visual Learning (VL2) and the Brain and Language Laboratory for Neuroimaging (BL2).**

Dr. Petitto shared breakthrough research related to the visual modality and what happens when, as she says, "the lion's share of knowledge comes from the eyes." She addressed the impact of visual learning on brain structure and function, and discussed how these findings provide greater understanding of the mechanisms of early language acquisition. Included in the webinar was a pre-recorded tour of the BL2 brain-imaging laboratory conducted by Dr. Petitto and her lab assistants, as well as a live question-and-answer session with Dr. Petitto.

The BL2 lab conducts neuroimaging and behavioral studies of infants, children, and adults to provide new knowledge about the biological mechanisms and environmental factors that together make possible the human capacity to learn and convey language, achieve reading mastery, and become a skilled bilingual. For those who would like to revisit the webinar, it can be viewed in the Clerc Center archives at http://www.gallaudet.edu/clerc_center/webinars.html. ●

Team Enrichment and Support: VL2's Scientific Advisory Board Meeting

The Scientific Advisory Board (SAB) Meeting, hosted at the Center on March 16 and 17, provided an excellent opportunity for the VL2 team to share its research findings, outreach and vision for the future with valuable and trusted advisors. The SAB expressed enthusiastic support for the Center's Year 8 science, translation activities and proposed mechanisms for sustainability. The meeting consisted of formal presentations with breaks for discussion and questions. The Board also met privately, and held a gathering with VL2 student attendees.

This year's program featured intensive scientific discussion of the reading process; the neural mechanisms underlying reading; the relative roles of orthographic, phonological, and semantic cues in the young emergent reader; and the role of Visual Sign Phonology in the young deaf visual learner, among other topics. The SAB also reviewed the Center's scientific hypotheses, overarching scientific themes, and Year 8 breakthrough science networks and studies with the team.

Areas of strength identified by the SAB include VL2's cumulative science discoveries; the training VL2 is providing to the next generation of scientists; the synergy between the core mission of Gallaudet and the core mission of the Center; and the many possibilities translation activities like the Storybook Apps have for communicating to a worldwide audience. The Board also recommended that VL2 further advance Science of Learning and its science and translation mission in ways that include utilizing Visual Sign Phonology (VSP) studies to achieve greater clarity regarding VSP cues and their relation to literacy; building a next generation of early reading/primer apps with creative games and depictions; and further developing the Center's translation plan to communicate important information to hearing parents of deaf children.

As always, the VL2 team benefited greatly from the synergistic discussion, exchange of new ideas and scientific analysis this meeting provides. The team extends its profound thanks to the SAB for their time, thoughts and insights. ●

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Back row, from left: Dr. Ronald Stern, Dr. Melissa Herzig, Dr. Laurene Simms, Dr. Rain Bosworth, Dr. Steven Pinker, Dr. Laura-Ann Petitto, Dr. Anne Fernald, Dr. Bruce McCandliss, Melissa Malzkuhn, Dr. Peter Hauser, Dr. Thomas Allen. Front row, from left: Dr. David Quinto-Pozos, Dr. Clifton Langdon, Dr. Charlotte Enns, Paul Twitchell.



NEWS makers

New Book by Dr. David Quinto-Pozos

Congratulations to our VL2 colleague **Dr. David Quinto-Pozos**, whose book, *Multilingual Aspects of Signed Language Communication and Disorder* (Communication Disorders Across Languages) was recently published by Multilingual Matters. Dr. Quinto-Pozos, an Assistant Professor in the Department of Linguistics, University of Texas at Austin, is currently conducting one of our Year 8 studies. The book, which is available from www.multilingual-matters.com, describes different types of atypicality in language communicated in the signed modality, such as linguistic impairment caused by deficits in visual processing.

DEVICE Award for The Baobab

The Interuniversity Consortium for Optimization and Operations Research (www.icoor.it) based in Reggio Emilia, Italy, recently

awarded VL2's Storybook App "The Baobab, A Bilingual Storybook App Designed for Deaf Children" Second Prize of the DEVICE Project

Award in the Professional Category.

Melissa Malzkahn and Dr. Melissa Herzig submitted a paper describing The Baobab's innovative approach to help children learn to read and sign. The award committee noted that the App was a "very useful idea, tested with users in a natural setting, and is needs-driven with a technology solution." *Congratulations to the entire Baobab team!*

Wei Wang's Film Selected for Festival

VL2 Digital Media Technician **Wei Wang's** (shown below)

documentary film *Blue* was featured in the 4th Hong Kong International Deaf Film Festival in August 2013. The festival, with the theme "Screening Deafhood," featured films that help reduce the gap between Deaf and hearing to create a more harmonious society. Wang says *Blue* was selected "because it motivates us to hold on to our dreams despite the struggles and misconceptions we may face as deaf individuals."

Wang's 30-minute film tells the inspiring story of skydiver John Woo, who is deaf and blind in one eye. Woo, born in China, eventually settled in the United States and graduated from Gallaudet University. He wanted to be a skydiver, but many clubs refused to admit him due to his deafness. Despite these obstacles, Woo persevered and made his first successful dive in 1982. He has since competed in many skydiving events and, among other accomplishments, he was the only Deaf member of The Divine Dragons skydiving team.

Gauna Attends Women's History Project Gala

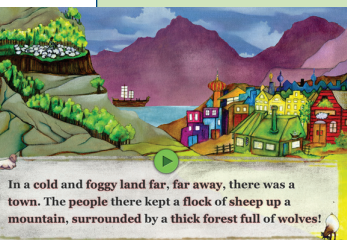
BL2 Administrative Assistant **Kristine Gauna** attended the **National Women's History Project**

Gala Dinner in late March, representing National Women's History Month honoree Agatha Tiegel Hanson who was named as a women of "Character, Courage and Commitment." Tiegel Hanson was the first deaf woman to graduate from Gallaudet with a four-year degree (Class of 1893) and she was also selected as one of the University's Visionary Leaders during its sesquicentennial celebration.

Gauna, with **Dr. Arlene Blumenthal Kelly**, Professor in Gallaudet's Department of ASL and Deaf Studies, researched and wrote a short biography of Tiegel Hanson in 2012 in an independent study class. She has sent the Tiegel Hanson biography, along with those of two other deaf women (Sophia Fowler Gallaudet and Alice Cogswell, also written with Blumenthal Kelly) to the organizers of a new National Women's History Museum (NHW) being planned in Washington D.C.

VL2 Alum Receives Recognition

Dr. Melissa Anderson, a VL2 alumna in Clinical Psychology who worked on EELS and a number of other studies, was awarded the 2014 *University of Massachusetts Center for Clinical and Translational Science Clinical Research Scholar Award*. The award provides funding for training and research on developing evidence-based psychotherapies for Deaf survivors of trauma and addiction. Anderson is currently a Postdoctoral Fellow and Instructor in the U Mass Department of Psychiatry. ●



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