

Transcript
VL2 Knowledge Festival
May 9, 2016

EL2: Dr. Thomas Allen

Hello, my name is Dr. Tom Allen. I'm the co-PI with Dr. Petitto of the VL2 Science of Learning Center. I'm also the director for one of the labs here, the Early Education and Literacy Lab like we have up here and there.

I'd like to briefly introduce you to my team pictured on the screen, especially Dr. Donna Morere. She is one of the faculty in the psychology department here at Gallaudet and she's an expert in neurocognitive assessment psychology. Her assessments are very important to the work we do in EL2 and very important to VL2 in general. I would also like to give special thanks to Ralph Fernandez as well. He is our fairly new database manager in the lab. He's responsible for putting a lot of the data into the computers in a good structured way. Then we also wanted to say hello to all of the — he creates our interfaces as well. So he's been working with us at VL2 for a while now. Then also pictured here is our three research scholars.

So what do we do in EL2? We do a lot of things but I'm going to talk about two areas specifically. Our first area, we have done studies on children in the real world. Now you've heard a lot about the Brain Lab and what occurs in the Brain Lab, in the lab, and what's going on in the brain in terms of plasticity. But what's happening in the schools and what's happening in the classrooms? What's happening in the homes?

In our labs we focus on what's going on in the real world, in the EL2 lab. We look at these two different settings and see what the similarities are, and what changes when we put a child in a classroom. The second area we're looking at is developing facts and distributing them for assessment tools. They measure language competency and skills that children develop. They measure reading skills, they measure the cognitive skills that children develop. We've been doing those and we haven't really had very good assessments historically for deaf children at a very young age. So it's an important part of what we do in EL2.

Now these two areas are very closely linked and the reason is because we want to study the children in the schools. We also need to measure things that they're doing, the activities. But if we don't have assessments, we're not able to do that. So before we even did the research, we had to develop the tools. We've been working very hard on developing different assessments at the VL2 center since the beginning of the center 10 years ago. We've made a lot of great progress over the years.

So Area One, studies in the real world, what's happening in the classrooms. We've collected quite a lot of data from the homes, from kids' schools, and we've compiled it. We'll talk about the exact types of data we've collected in a minute. We have a very large mountain of data in EL2 in our database. Ralph, of course, is responsible for that, thanks to him.

We also have EL2 students who are working in EL2 statistical labs. They've come up with some very great statistical models that they use to conduct their work. The models test hypotheses about what we expect to see in the classroom. They can be very complicated

statistical models with variables and it can get very dense. So some of those models that we published have been published in a variety of places, books, conferences, talks, and then we disseminate them to the schools as well.

In EL2 we work very closely as well with other hubs in VL2. We often ask what's going on in the Brain Lab and that informs us what we should be looking into in EL2. So the data looks like what? Here's some of the learning outcomes. We use it to measure these learning outcomes, what children are learning in schools. We ask what predictors are predicting learning outcomes. We get a lot of information but what will be the end result of what we find?

We divide the predictors into two parts. One are things we cannot change about a person. We can't change if a person is deaf or if they're hearing. If a person is born chromosomally male, we can't change that. But some things can become predictors for learning outcomes, right? Finally, there are things that we can change and those are the most important things to be looking at. What is it about a kid's life that we can change to increase their learning outcomes?

Our main project over the years has been a longitudinal study in early education. We've been working on that since 2008. So this is the planning, when the planning began originally in 2008. We collected data over a period of three years where we went to schools, collected information, brought it back to the lab. Then we spent the next year going back to the schools, to the same schools, collecting more information and back and forth we went until we had sufficient information. Then we looked at the growth, not only at one point in time, but we were able to evaluate it in patterns over time. What makes children change their behavior over time? So we studied deaf and hard-of-hearing children, and they receive most of the information in the world through their eyes. They were aged 3 to 5 in the first year, and then 4 to 5, 4 to 6, 5 to 7 and so forth. They were all over the country. We collected information from 20 different states. We collected information on 254 schools.

So we found three very important discoveries. I'll run through them real quick. Language is a single underlying trait of human development. You may be wondering what that means. In the longitudinal study, we studied the children's ASL skills. We collected information on their fingerspelling and we collected information on their English competency. So there's three language forms here. We separated them out and then we looked at each of them individually. Then we went into the homes and assessed how they were using them in their home. What we found was that ASL and finger spelling are highly correlative. Kids who master ASL also are typically mastering finger spelling as well. In our database we also found English was also correlated with these skills. Kids proficient in one language or one of these forms was also proficient in the other two.

So when psychologists look at research like this, they just see a big overlay of these three forms of language. They may think, oh these are just three measurements. They may all occur under the same trait. They may put them in one category, language. So we see in the classroom something that, we see language occurring, sign language, English, and they're measuring the same thing about the human brain. So next we saw signing in the home. If there was signing in the child's home, it improved their cognition. Parents would give statements to the child that we gave them as prompts to test the child's cognitive skills to see if they had mastered those skills.

Then we divided the children into three groups. Children who had deaf parents in the home who use sign language, children who were deaf with hearing parents in the home who also use sign language, and then deaf children in homes with hearing parents who didn't use sign language. Those were the three groups. So one example the topic we gave them was to exceed at least six, list at least six items in a category. It's a very important skill for children to develop. If you're to tell a child name animals to me, they need to be able to name six different animals in that category. Or if you say to a child a bird and a horse and a whale, why are they all the same, they should tell you that those are all animals.

So we divided them into these different kinds of categories. Then we calculated the percentage of the children in each group that were able to master this skill. What we found was that we saw many, many times the highest performing group was the deaf kids with deaf parents. However, deaf children with hearing parents who did also sign also showed big benefits as well from using sign language. So it doesn't necessarily have to be deaf parents signing to their deaf children. Any sign language will help. So the results show that a lot has to do with whether the parents sign, not whether or not they're deaf or hearing. That's what really leads to cognitive advantages.

Finally, in terms of ASL and fingerspelling, it does contribute to reading and literacy. Remember I said we did a longitudinal study where we continuously went back to the schools. We divided the children into different groups in terms of their mastery. So we looked at the rate of change. We put them all on the same graph. Now obviously that's a little complicated, but you see different kids growing different ways. They're not growing in different abilities, some are just growing quickly rather than others, and some are growing more slowly. Because we measured their skills in ASL, what we did was we cut the top 25% and the bottom 25% of the skills. Then we averaged them for the rates to see what the average was. We found that yes, kids who have high ASL competency excel in reading when compared with kids with lower competency in ASL. But at the same time we also found that the rate of change was different. The slope is much steeper, the learning is faster.

The longitudinal study, you see language acquisition is distributed over the development of language for reading cognition. The thing is that language can be taught with the right tools, the right mechanisms, and we have those at VL2. So briefly now I'll talk about ASL assessments, Area Two of our work. Now we've been talking about long history in the work of ASL. We've developed different tools and made them available for readers, teachers, parents. It gives you psychological ways of measuring mastery.

I do want to spend the most time talking about our most recent tool assessment, the Visual Communication and Sign Language Checklist. Now it was published and distributed to a lot of different locations. It's been given to over 4,000 kids nationwide in the U.S. Now this is where communication experts judge the level of mastery that children have accomplished based on different behaviors. Recently we had an e-version published, so it's now available online.

So we'll give you a couple of examples of the mastery of cognitive skills we're measuring. For example, when a kid turns their attention to someone talking, that's a communication skill. Or if you were to ask a kid a two-word question, they should be able to say an answer to it. If you're just saying where should I put this, where's the dog, they should be able to give

you a response. Then it reports on what the expectations are for kids to be able to have mastered at a specific age. So I want to show you one example and then I will leave the stage. So this is a skill, understanding conversational turn-taking. This is an important skill for kids to learn because it indicates to them whose turn it is in a conversation. So we'll look at it real quick. It's available online in the online version, and all of the transcripts have the videos attached to them.

Adult: Hey do you remember what happened when the police came? What happened yesterday? Something was--

Child: Stole it. The bad guys.

Adult: Right, bad guy came yesterday. That was yesterday, what happened this morning?

Child: It was this morning.

Adult: Yeah, so what happened yesterday?

Child: The door was open. The bad guy came in and took the camera.

Okay so you can see here in the checklist we have an example of different skills. So the assessor can then look at the child, look at the checklist, and see if they've mastered this skill or not. Then you total them up for a very good estimate of the child's level of competence in the language. So that one item we see that deaf children who are native signers acquire that skill at about 2 years, 8 months, based upon the research we have. Each item has an age of development level that we typically expect to see children reach this mastery.

So we've studied the classroom, we've developed these assessments, but you're probably wondering what's the future of VL2. We have a lot more research to do with our lab. We have a lot more assessment work to do. It's good now that many states are involved. Many states are now passing laws that require assessments for communication skills for kids from birth to five. So we're already getting a lot of calls about the VCSL. In fact, it's used I think in a couple of different states already.

So we have a lot of work left to do, and we want to make our work spread to all of the states and all of the communities so that they have a valid assessment for their deaf children at their schools. Thank you very much.

Video available at <https://youtu.be/eEhqCoSQ0m8>

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