LOUI: Hello and welcome to UDL Research in 15 Minutes where researchers share their findings about UDL implementation, impact, and their introspective investigations of the UDL framework. I'm Loui Lord Nelson, UDL author and leader. Today, I am incredibly honored to be interviewing Peggy King-Sears who's a professor at George Mason University in Fairfax, Virginia. And today, Peggy and I are going to talk about research that she and a colleague conducted, which focused on chemistry instruction and published an article titled, "Universal design for learning: Chemistry instruction for students with and without disabilities", as well as a UDL focused edition that she edited. So, hi Peggy How are you?

PEGGY: I'm good, how are you doing?

LOUI: I'm great! Thank you so much for coming on. I really, I am, I'm deeply honored. I have to say this, she doesn't know that I was going to say this, but when I was doing my postdoc at CAST, of course, read a ton of her research, and even before that. And then she came to CAST one time and I was like, "Oh! [gasp] It's Peggy King-Sears."

PEGGY: [overtalking] Oh, that's delightful when I came there. Thank you so much!

LOUI: You're welcome, you're welcome. So, can you share with everyone a little bit about your background in education?

PEGGY: Yeah, I will. And I'll start with my teaching background because I think that's always pertinent for people to know where you got started with. And I actually started in Jacksonville, Florida, teaching some kids who were in urban settings. I was first in a self-contained elementary classroom for kids with, what we would say now mild to moderate disabilities. And then I in Jacksonville I was also at a middle school setting, teaching more what we would call the resource room with mathematics and language arts, reading. Then I applied for and got a job teaching in the Department of Defense dependent schools overseas. So, I spent four years in Schweinfurt, Germany, teaching secondary students in a resource room, and then spent one year in Okinawa, Japan. And I taught that that was, that was an elementary resource room it seemed like I got on the resource track pretty well. And then, then after that I did my doctoral studies, I came

back to the United States, did my doctoral studies at the University of Florida. And right after that I went to Johns Hopkins University, and Johns Hopkins University was probably the first time where I got interested in the universal design for learning and use a lot of the self-management component of that which I eventually got a research grant on that. I did some personnel preparation grants, where we, I worked with general and special educators for inclusion. So UDL came in real handy for that too. I've been at George Mason University since 2005. Self-management is still one of my research interest areas as well as co-teaching. And then, and universal design for learning.

LOUI: Wonderful. Wonderful. Well the article that I mentioned at the beginning that we're going to be talking about, it's a part of a body of UDL research that you cultivated for the journal Remedial and Special Education. So, can you talk about that edition? And then I know you have another piece that you're also going to be talking about for another journal so that's awesome.

PEGGY: So actually, all my, my kind of wandering into these journals as guest editors came about because although UDL, although individual research studies are available for specific components of UDL, many of them did not target UDL as a framework. And they also did not target learning outcomes for kids with and without disabilities.

LOUI: Right.

PEGGY: So, um, research to specific to UDL was sometimes focused on student satisfaction, teacher satisfaction, as well as things like writing lesson plans. So, research about student achievement data was not occurring. And because UDL is touted as being responsive to the needs of kids with and without disabilities, I was also curious about disaggregated data in general education settings where you've got kids with and without disabilities data. And, so that kind of took me into my first guest editor sit with Learning Disability Quarterly, which was published in 2014 and 2015, some of the requirements for researchers were that they had to target students learning outcomes, and that they had to disaggregate the data for students with and without disabilities, so that we would know that each group was learning. So interestingly, two of the four studies were favorable for students with and without disabilities, and two of them studies were not as favorable. Students without disabilities were doing well but students with disabilities were not necessarily doing well. And the social validity data

noted that the kids liked UDL the teachers liked UDL, but I was focused on the learning outcomes. So, if you fast forward to this past August for Remedial Special Education, I was again guest editor of that special issue, and featured in that Jenny Root and her colleagues looked at math and UDL techniques for kids with significant learning needs. Jamie Basham and colleagues focused down on how UDL could be observed in the classroom, and Kavita Rao and colleagues focused on researchers for how you could carry out studies and have all elements needed of UDL, as well as, as, examining studies to make sure that, that some specific components that would really provide the field more direction about what is used of UDL, how it was measured, and so on. So, all together race had something for everyone. Jamie for school administrators observing UDL in classrooms, Kavita for UDL researchers, Jenny UDL for students with significant learning needs, and then for me and Todd Johnson, we replicated an earlier study from learning disability quarterly for high school students with and without LD, and that's kind of our focus for today.

LOUI: Yeah, perfect. So I'm hoping to interview all of these authors from each of these studies that you just talked about, so it was perfect to, to start with you, and then I'm going to be building out from there and many of them have already said yes, so I'm excited. Let's move into your study. First, like you stated above your study included both students with disabilities and then students who do not have disabilities, but you also had two environments. One was inclusive and one was self-contained. So, before we get into the overall design, I'd love for you to talk about the purpose of that design. Why did you choose that particular design?

PEGGY: Um, well let me first talk about what we did for the UDL intervention because that kind of sets the stage for, for the design. First, we had a self-management strategy and we use the mnemonics, the mnemonic ideas. And then we had video where the ideas was demonstrated. We had Student Workbook and we had other things that were components of the UDL intervention, all geared towards students solving some specific chemistry problems. Now, back to your question. Researchers doing research in schools, the best laid plans go astray. So, we had UDL treatment, and business as usual comparison group for co-taught settings, and we actually plan to have a comparison group of UDL treatment and self-contained classroom for students, but

things didn't pan out that way. So, in making the most of our research, instead of writing two studies, we thought more strength to feature the co-taught UDL and business as usual comparison as study one, then UDL self-contained as study two. So, because of attrition, we lost some kids from the co-taught groups. We didn't have enough data to separate the achievement for students with disabilities which we'd done previously, and so, all of the students had LD, so we were down to learning disabilities as our only disability category. So for study one, we found that UDL kids scored 17 points on a post test, the business as usual comparison, just over nine points on the post test. But in study two where we had all kids with learning disabilities in the self-contained classroom, they outperformed the co-taught class slightly with almost 18 points on the post test. So, the UDL treatment kids were the ones, whether they were in the in co-taught class or in the self-contained class, they did better than the comparison kids. So, we also had good social validity data where kids told us, this is what we like about what was done. And the kids always give us good information to, to change this, use more of that, I didn't like that, so we always listen to them as well as the teachers when we're refining interventions.

LOUI: Yeah, yeah. It's just so interesting. Those, those results and like you said, just showing the improved outcomes for students with disabilities in both of those settings. I would love to have you talk about those. Those results were interesting but then even more interesting when you compare them to an earlier study.

PEGGY: Sure. Sure. So, in our earlier chemistry study, and this is the one that was published and Learning Disability Quarterly and mine was one of the two that that kids with disabilities did not do so well. We've got a different kind of scoring pattern so I'll just, just go straight to, we had kids, we had two, two groups UDL treatment and the comparison group The UDL, and this is where we disaggregated the data, of the UDL for kids with disabilities, was 113 points for kids without disabilities UDL was 110 points. Okay, so for business as usual, students without disabilities, 131 points. So higher. But the business as usual, the comparison group for kids with disabilities was 74 points. So quite a bit lower, almost twice as low as their counterparts in the same classroom getting the same kind of instruction. Whereas in the UDL group, although it was not as high as kids in the comparison group, both the kids with and without disabilities were

more comparable in their scores. So, this goes along with the original question. Do we know that students with disabilities learn more in classes where UDL is occurring? The answer was no for that study, but then comes the wisdom of disaggregating the data because we also know UDL, the students with and without disabilities scored approximately the same, and in the, in the one group, but then in the other group that they, they did not. So, this uncovered that if we only use the class mean and do not disaggregate data, things may look good, but have students with disabilities really learned? The answer is no. And so, we realized some things back in 2015 that we needed to give attention to in 2020.

LOUI: Beautiful. The concept of disaggregating the data and just taking a closer look or a different look coming in from a different avenue, and gosh, I wish everybody had that afterthought, but then also it's taking the time, right? Because usually we have our data sets, we have to do something with them, get it done, get it published, move.

PEGGY: Sure.

LOUI: So, so it's so lovely that you all had that kind of introspective time to go, "Hmm. We should take this time and really look at this in a different way," because it just gave you beautiful information.

PEGGY: It did.

LOUI: Yeah, so I do have one final question, so in the study you really focused hard on fidelity and that's a word that is just bandied around education so much. And I'd love for you to talk about the place that it had in your study and the place that it has in UDL implementation.

PEGGY: Okay, I'd love to do that. Actually, I'll, I'll pick up with the 2015 study results because that was where we really found we needed to focus the most. We found that in one of our two UDL treatment classes, we had low fidelity. So, fidelity of treatment in a nutshell is when teachers are implementing the instructional technique, whatever it is, as it was intended to be implemented. And for us, fidelity was teachers using the UDL materials, and language, and process, prompting the students to use those as we have prepared them to do. We watch teachers using the UDL and determine how well or how much they're using the materials and so on, and that's how we how we get our fidelity data. So, low fidelity with one of the classrooms in 2015 meant that the teacher was

leaving things out or changing the sequence, or not using the right language. And so high fidelity means that the things are being put in as they are supposed to. The right language is being used and so on. So, when we found in our 2015 study that in one of the classrooms, the fidelity was low. We wondered if we would have gotten higher UDL scores if UDL was implemented as designed, but that was kind of water on the under the bridge at that point. And so, what we what we did in the 2020 study was we really amped up what we were doing for fidelity of treatment is we made sure that we are modeling, that we were demonstrating, we had a fidelity handbook for the teachers that went along with the student's workbook. We really, we really hunkered down on that. So, ensure fidelity is hugely important for researchers to measure, because without that information. we do not know that UDL instruction is implemented as it was intended. So, in we did get our better results in 2020. So, right now of course, we don't have plans to get into the school to replicate this study or to develop other chemistry UDL interventions. Like everyone else, we are waiting to see what happens when schools and teaching get back to a more normal pace and routine. And at some point in the future, though, I expect we will be more UDL studies. Meanwhile, we've been able to do add to the research by doing the UDL studies we've done, and which we believe have been important to do, and still more studies are needed, so maybe some listeners to this podcast will be motivated to develop their own UDL interventions and determine how well students with and without disabilities are doing. That would be great to occur in the future, both for researchers and practitioners.

LOUI: Absolutely. I absolutely agree. Well, Peggy thank you so much, we have definitely hit our 15 minutes and this has just been so wonderful. And again, I'm just giddy because I've gotten to interview you

PEGGY: [overtalking] Oh, you're so sweet

LOUI: [laughter]

PEGGY: You're a delight.

LOUI: Well, thank you so much, and thank you again for all your contributions to research. It's, it's such a power factor for all of us to read your work and to see how you have led others to kind of up, up the ante right in their research around UDL and you've, you've set a bar you've set it high and just really appreciate that. Thank you.

PEGGY: You're welcome. Thank you very much.

LOUI: All right. For those who are listening to this podcast, you can find supplemental materials like a recorded video of this interview with closed captioning and a transcript at my website, which is www.theUDLapproach.com/podcasts. The citation for the article we discussed as well as any others that were referenced can be found below the video representation of this podcast on my UDL research in 15 minutes YouTube channel. And finally, if you are a UDL researcher, or know of UDL research you'd like to hear about contact me through my website, which is www.theUDLapproach.com. I'd love to hear from you. And thanks to everyone for your work in revolutionizing education through UDL and making it our goal to develop expert learners.