The Data Inquiry- UDL Cycle

How Data Inquiry and UDL Implementation Work Together to Improve Teaching and Learning

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When teaching school-based teams about Universal Design for learning, educators are often surprised when we explain that during implementation they need to collect, analyze, and be responsive to data. We often see flashes of fear and hands raise to express discomfort or annoyance with the idea of collecting and analyzing data. Teachers shift in their seats, and administrators raise their hands to tell us that they cannot ask their teachers to give their students one more test. Once we start explaining how we would like teachers to collect and use data—we do not ask for additional testing, we expect teachers to use data to improve teaching and learning, and we think broadly about what "data" are—we are often met with sighs of relief. "Of course, it makes sense to use data in that way. How else would we know that what we are doing is impacting students?" a principal recently asked.

In working with schools implementing UDL, we find it necessary for school-based teams to use a process of data-based inquiry. We ask teams to look at and think about data with the goal of creating a team that is inquiry-minded. We want the team to understand that improving teaching and learning is an intentional and ongoing process (Rallis &

MacMullen, 2000), and we believe that Data inquiry and UDL are the frameworks that can be used in that process.

Universal Design for Learning

Universal Design for Learning, or UDL, is a framework based on research in neuroscience and the learning sciences that can be used to develop high quality, flexible learning environments designed from the outset that address the skills and challenges of all learners and help all learners achieve to high standards.

Educators can use the framework as they figure out how to address learning and teaching needs, sometimes known as problems of practice.

The framework of UDL consists of three principles: Multiple Means of Engagement Multiple Means of Representation, and Multiple Means of Action and Expression, (Figure 1). Under each principle there are guidelines, and under the guidelines there are checkpoints to consider as you develop lessons and curriculum. UDL considers that the curriculum can be the barrier to all learners achieving high-level goals, rather than limitations of the learner him or herself.

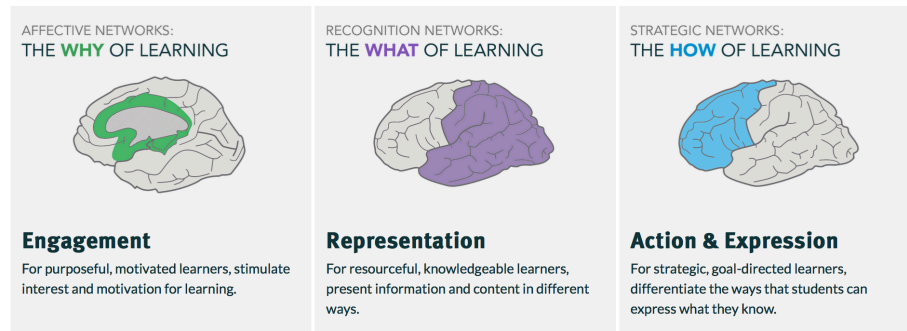**Universal Design for Learning Guidelines**

GO TO THE UDL GUIDELINES

AFFECTIVE NETWORKS: THE **WHY** OF LEARNING	RECOGNITION NETWORKS: THE **WHAT** OF LEARNING	STRATEGIC NETWORKS: THE **HOW** OF LEARNING
Engagement For purposeful, motivated learners, stimulate interest and motivation for learning.	**Representation** For resourceful, knowledgeable learners, present information and content in different ways.	**Action & Expression** For strategic, goal-directed learners, differentiate the ways that students can express what they know.

Figure 1. Overview of the Universal Design for Learning Guidelines (go to

http://www.udlcenter.org/aboutudl/udlguidelines to see the full guidelines)

The framework is not a checklist. A lesson designed with Universal Design for Learning will not include all of the checkpoints. Instead, a thoughtfully designed UDL lesson will have a clear goal that is the same for all students. Flexibility will be built in so that all students can achieve the goal using varied methods and materials. The teacher will have decided which checkpoints are necessary to address in order for all students to reach the goal. Moreover, the teacher will have problem solved in order to figure out how to best implement UDL in his or her environment for that lesson. For example, if a teacher sees that his or her students are disengaged, he or she might turn to the checkpoints under the engagement principle. If he or she sees that not all students are able to effectively express what they know, the teacher might turn to the checkpoints under the Action and Expression principle. Rather than being reactive, the teacher will design the lesson proactively by looking carefully at the lesson, considering barriers that

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might arise using the UDL guidelines (e.g., are there barriers in the ways that students access information or concepts in this lesson?) before the lesson is delivered.

UDL Implementation

Educators are increasingly faced with a broad range of learners in today's classrooms; students who are challenged in some areas, those who are gifted in some areas, students with varied backgrounds and cultural experiences, and those with varied learning experiences – this is but a small representation in the range of variability that exists in classrooms. Consciously or subconsciously, educators often design for the mythical average learner and may differentiate or individualize instruction for specific students or subgroups of students rather than planning from the outset for all learners.

UDL allows educators to systematically address the variability that exists in their classroom and to address problems of practice that arise.

Like students, educators are also variable in terms of their knowledge, skills, and experiences. Providing information about UDL—describing the framework and providing examples as is typical in traditional forms of professional development—is ineffective for creating change in schools through UDL. These forms of professional development do not lead to changes in teacher practice or improvement in student learning (Gulamhussein, 2013). In order to build educators' practices, to change mindset around teaching and learning, and to create a culture where lessons are designed from the

outset for all learners, we have begun to engage educators in a structured, guided UDL Implementation process. This UDL Implementation Process is based on research in educator change, implementation science, and Universal Design for Learning. Implementation is a process, not an event, and implementation requires more than the adoption of a new program (LaTurner & Lewis, 2013). According to Fixsen et al (2005), two to four years are generally required to implement an innovation that is sustainable and scalable.

Implementation is noted to be most successful when:

- practitioners have coordinated training, are coached, and have frequent performance assessments;
- the system provides an infrastructure for training, skillful supervision and coaching, and regular, ongoing evaluations;
- stakeholders are fully involved with the selection and evaluation of programs and practices; and
- state and federal agencies, policies, and regulations create an environment conducive to implementation and program operations. (Southeast Comprehensive Center at SEDL, 2011).

The UDL Implementation process recognizes that classrooms, schools, and districts are complex systems and that no two classrooms, schools, or districts are the same. Context matters and the identified needs of the classroom, school and district directly

impact the implementation process.

The UDL Implementation process is an iterative, continuously improving cycle of learning, practice, reflection, and growth.

There are five phases that make up the UDL Implementation Process (Figure 2). Within these phases there are three key components: 1) Implementation is a team based approach; 2) implementation requires systematic collection and analysis of data; and 3) UDL is used to improve instruction once the problem of practice is determined through exploring data.

Data Collection in UDL

Data are key to effective UDL implementation. When we began engaging teams in UDL implementation during the 2012-2013 school year, we did not put sufficient emphasis on data gathering or analysis. After schools begin to engage in the UDL implementation process, we ask teams to consider problems of practice and to create a goal for implementation. During 2012-2013 we did not ask teams to use data to determine their goal. Moreover, though we asked teams to determine how they knew their goal had been achieved, we did not sufficiently support teams to determine what kind of data they would collect or ensure that it was the right data to collect to show achievement of the goal.

During the 2014-2015 school year, we again engaged teams in the UDL implementation process. Learning from our 2012-2013 work, we recognized the importance of using data to understand if and how UDL is effective. We also recognized the importance of using data to set a goal around UDL implementation. One team, for example, confirmed their desire to work on engagement in their school by using a pre- UDL survey to understand students' experiences and feelings toward school. After their survey, they redefined "engagement" as "motivation," and they found specific ways of measuring motivation through exit tickets and repeated surveys.

UDL implementation requires teams to use data at several different points.

Step 1: First, we ask teams to start thinking about the data they have during the pre-phase when they are first considering engaging with UDL implementation. We hope to get teams considering what data they have that we could ultimately leverage during implementation.

Step 2: During Phase 1 Teams examine data they have to consider where problems of practice lie—for example, in some specific subject area, overall in some aspect of engagement or motivation, in writing or expressing ideas. Once the teams use data to determine their area of focus for instructional improvement using UDL, they set a goal.

Step 3: Then, as they begin to infuse UDL into practice, the team first collects baseline data, and then collects data before every Trial, during which they use one UDL guideline to improve lessons.

Step 4: Following the Trial, they collect data again to see if student performance or experience improved.

Step 5: Decisions about the subsequent trials and how the team will use UDL to improve lessons are based on what was found in the data. Data, in the case of UDL is collected on the student and on the teachers in order to understand what practices impacted student results. If improvement in performance was seen, for example, then the team might decide to continue on with a given practice, refining that practice and perhaps adding just one more technique so that all students' performance or experience improves.

Not Just Another Test

Because UDL is not a curriculum, there are no specific tests that come along with UDL. UDL is a framework that is overlaid on an area or multiple areas of instruction; therefore, it is often best if data that the team already collects is used for UDL Implementation. One team we worked with used a district-developed rubric in order to measure if performance was improving with systematic infusion of UDL guidelines. In some cases, schools do not have ways to measure what they would like to measure. For example, schools that would like to look at students' attitudes toward school and see if those attitudes change as a result of UDL implementation, likely do not have that type of data. In most cases, we ask that teams use data they collect regularly, but in other cases teams decide that they need to collect other types of data. What we have found, however, is that if data is not able to be collected within the course of the school day in

a seamless manner, then it will not be collected and analyzed, and it will be seen as a

burden.

Overall, UDL Implementation cannot be done without data collection and analysis.

Decisions using the UDL framework can only be done if there is data to help teams

Pre-phase
1. A school based team is created
2. Team determines if they are ready to engage in the UDL Implementation process.
3. **Team understands that collecting, analyzing, and reflecting on data is an inherent part of the UDL implementation process and will drive how the team implements UDL:**
   a. **Team determines the data that is available in the district to measure progress throughout the implementation process and identify data sources that will influence decisions on where and how UDL implementation will take place.**

Phase 1
1. Team builds capacity around the team process.
2. **Team builds data literacy knowledge.**
3. Team learns about UDL and how to identify aspects of UDL in practice.
4. **Team decides on an area of focus for the year using data.**
5. **Team ensures that they have the data they will need to monitor students' progress as they implement UDL.**

Phase 2
1. Team determines which classrooms will infuse UDL into instruction.
2. **The team confirms the data they will collect over the year including student data and data on instruction.**
3. **The team engages in three, two-week-long guided "trials" of data collection, trying out a guideline, and measuring changes in instruction and students' performance and experience.**
4. **Based on data, the team determines what aspect of UDL to try in the subsequent Trial**

Phase 3
1. UDL Teams plans to scale across the school

Phase 4
1. UDL team plans to scale across the district

make those decisions.

Figure 2. UDL Implementation Phases

Data Inquiry

"Data-based inquiry and decision making is a process in which school personnel engage in ongoing data analysis from multiple sources to provide a comprehensive picture of a school's strengths and challenges" (Feldman, Lucey, Goodrich, & Frazee, 2003). Data based inquiry and decision making is made up of five steps as discussed by Feldman and Colleagues (2003):

Step 1: Set a vision. Staff create a vision for their school

Step 2: Collect and analyze data. During the analysis process each person considers what he or she sees in the data in order to reach an objective consensus.

Step 3: Determine strengths and challenge areas. After examining the data, teachers list areas in which they find strengths and challenges and vote on the one challenge that they believe is the most significant barrier to student achievement—" the priority challenge."

Step 4: Plan action. Staff brainstorm why the barrier exists and determine if there is other data necessary to collect to understand the root cause of the problem. Once the cause is determined, the group develops solutions, implementation plans, and a process for assessing the plan's impact on the challenge.

Step 5: Assess annually. The school assesses to see if it has reached its measurable annual goals.

When looking at the steps in UDL implementation involving data, they mirror the data inquiry process. The UDL implementation process essentially uses the Data Inquiry process. The key difference is that the Action Plan in Data Inquiry could be built upon any number of different strategies, while the UDL implementation process requires that the guidelines be used to guide the solution determination process. The guidelines are not a specific set of strategies, but rather they are used to systematically try to test solutions to the problem that are based on research from the learning and neurosciences. Because the guidelines are meant to support all learners, trying out a range of solutions using the guidelines ensures that all learners' needs are met and that the solution, or solutions in many cases, works for everyone.

The UDL/Data Inquiry Cycle

The UDL implementation cycle fits around the data inquiry cycle and can be conceived of as follows:
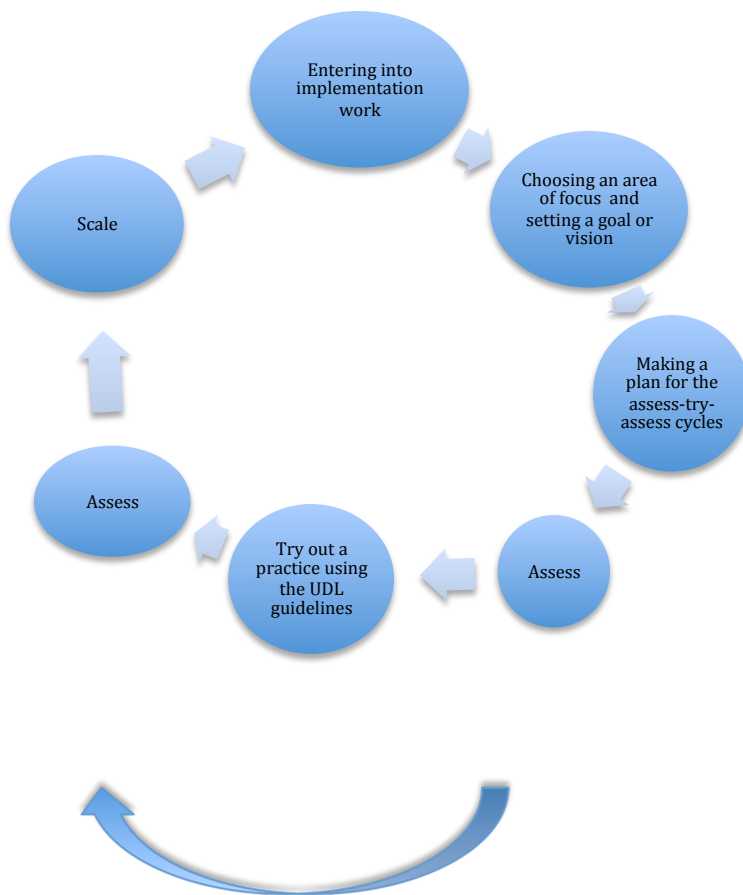
Step 1: The team enters into implementation work

Step 2: The team chooses an area of focus based on data and sets a goal or vision

Step 3: The team makes a plan for the assess-try-assess cycles (assessment includes both assessment of students and gathering data on how teachers are infusing UDL)

Step 4: The team engages in assessing, trying, and assessing using the UDL guidelines to determine what practices to try. This step could be repeated as many times as desired

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Step 5: The team scales to new individuals or teams who begin the process of entering

into implementation.

Structures Necessary for Successful UDL/DBDM implementation

There is often a sense of fear about collecting and analyzing data in schools. School reform efforts have increased the importance of data collection and analysis. Though using data to inform instruction is often a positive step toward improving teaching and learning practices, the increased amount of data required has had negative implications in many schools. Teachers and administrators are overwhelmed by the amount of data they collect and do not have the time or the knowledge to analyze the data effectively. Additionally, because data is used to evaluate teachers or students, educators have learned to be wary of data and defensive when it comes to discussing it. Additionally, as with any new concept that is introduced in schools, the idea of implementing UDL to find solutions to problems of practice can seem daunting, overwhelming, and like just "one more thing" if not presented appropriately.

We have found that there are a number of key structures that allow for successful implementation of UDL and effective data discussions.

A Learning Community or Team

The research base on the link between collaborative and reflective practice of educators and improvement in student learning is well established (Louis, Kruse, & Marks, 1996; McLaughlin & Talbert, 2001). When educators engage with one another in ongoing, collaborative, opportunities focused on inquiry around teaching and learning, and when

they make effective use of data, they improve student results and their own experiences. In our work we have found that a trusting, collaborative team can support honest conversations about data and student results that help to modify or create lessons using the UDL guidelines.

We have further found that a thoughtful make-up of the collaborative team can impact the success of implementation and add to conversations around data. We ask that UDL implementation teams be made up of at least one administrator, a special education teacher or representative, and two to three general education teachers. The administrator can provide support with finding time to meet or can help to find coverage if teachers want to observe one another. A supportive administrator can encourage teachers to try out aspects of UDL. That administrator can express to members of the team the idea that experimentation is a necessary part of finding what works for all students, and he or she can support authentic data collection and productive conversations around data. Teachers on the team can work together to plan lessons, to find solutions to challenging problems, and to discuss data objectively, often using protocols to guide discussion.

A Leader or Facilitator

A key component of implementation work on a team is spending time and focus being teacher-focused (Little, 1997). Little found that the value of professional learning communities comes from the staff being as deeply focused on issues of teaching as

they are on issues surrounding students. In order to improve teaching, learning must occur among communities of teachers. We find that teams flourish when they have a leader who can guide and direct conversations around teaching including conversations around data and around discovering techniques supported by the UDL framework.

Time to Meet and a Meeting Structure

Teachers and administrators feel squeezed for time in schools. Finding time for a team to work together is challenging. Including teachers on the team who have common planning time already built into their schedule can be effective. We find that in order to effectively and sustainably implement the data inquiry-UDL cycle, meeting at least twice a month for collaborative planning is necessary. The facilitator's role is to ensure that the meeting time is used productively and is focused on data and UDL.

Risk taking and a Willingness to Try out UDL and Analyze the Effect

If the team is to develop a plan, collect data, and try out UDL, the team needs to be empowered to try out instructional practices that may not work perfectly the first time. In other words, the team needs to be free to ask the question, "Did that work for teachers and students?" and be able to try out new strategies using the UDL guidelines if the answer is, "No. That practice did not change student performance or experience as much as we had hoped." When teachers feel that they are being judged, if data collected on their practice is used as a tool to evaluate them, or if they fear that student performance or student experience data will be used against them, teachers will not be

willing to discuss openly or to experiment with new techniques and strategies. We have found that the most powerful component of the data inquiry-UDL cycle is strong relationships among staff who feel a renewed sense of excitement about their practice. That excitement comes from being able to ask hard questions about practice, and with the support of colleagues, finding ways to answer those questions and improve teaching and learning.

Conclusion

UDL Implementation and data inquiry are processes that work together to improve teaching and learning. In these processes teams have the opportunity to build capacity as they explore data, try out instructional practices, and analyze the impact of change. Understanding how teacher practice impacts students has the potential to empower teams within schools and create sustainable change.

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