Dear CLD Members,

As the academic year winds down, let me take the opportunity to thank each of you for your commitment to CLD. Many of us began our relationship with CLD as graduate students, presenting at the annual conference and getting to know others in our field. To me, the conference is central to the mission of CLD. It provides us with the space to congregate and develop relationships with one another, to discuss new ideas, and to share our work. It is a special part of CLD.

As our careers have grown we have been given the opportunity to serve the organization in other ways. For those individuals who have become committee members, committee chairs, and officers, CLD has helped us develop leadership skills and provided us with the opportunity to give back to the organization. As president for this past year, I want to recognize the outstanding mentorship of the organization. I have learned so much over the last few years. If you are interested in serving, know that CLD is dedicated to leadership development and mentoring its members who take on new roles and responsibilities.

I have been more than fortunate to have not only an immediate past president, Silvana Watson, to consult, but also a president-elect, Diane Bryant, who has previously served CLD as president. I cannot thank each of you enough for your guidance and support during this past year. I would also like to recognize Linda Nease, our executive director; Judy Voress and Brian Bryant, who along with Diane are my life-time mentors; and Dave

Majsterek, Rebecca Shankland, and Beth Calhoon, the other members of our Executive Committee who have contributed so much and been a joy to work with. Finally, a special thanks to the committee chairs for doing such outstanding work in the time I have served on the board.

This has been a time to consider the health of the organization and to articulate policy and practice in ways that best serve the organization and its members. I am confident that CLD is headed in the right direction and that it will continue to be a major contributor to the field of learning disabilities.

It has been my honor to serve the membership of CLD.

Sincerely,

Steve Chamberlain
2014–2015 CLD President
Using Interactive Whiteboard Technology to Implement the Concrete-Representational-Abstract Mathematical Sequence

Janet Van Heck, MEd, University of Nevada, Las Vegas

It’s the beginning of a new year, and Andy rambles into Mr. Grant’s resource class expecting more of the same old math problems he has completed in years past. Andy has a learning disability in math, which has made it difficult to learn basic concepts that others can do easily. When he attempts to complete a math task, his heart feels like it is going to jump out of his chest and his hands start sweating. As Andy enters Mr. Grant’s room, he notices something different. The lights are dimmed and a projector is lighting up an amazing new electronic whiteboard. With a glimmer of hope, Andy thinks, “Maybe this year will be different.”

Many school-age students experience difficulties in the curricular area of mathematics. Although math learning disabilities were once thought to be quite uncommon, researchers now agree that between 5% and 13.8% of the school population have learning disabilities in this area, ranging from mild to severe (Barbaresi, Katusic, Colligan, Weaver, & Jacobsen, 2005; Mazzocco, 2005).

One of the most persistent difficulties for students who experience learning disabilities in mathematics is the development of conceptual knowledge (Hecht, Vagi, & Torgesen, 2007). Students who demonstrate conceptual knowledge in mathematics have deep and concrete understanding of the meaning behind abstract mathematical processes. For example, they understand that a plus sign means to add and a minus sign means to subtract, but they also understand that addition means combining two groups to get a larger group and that subtraction either means beginning with a large group and taking items away or comparing two quantities to determine the amount of difference between them (Hudson & Miller, 2006). Unfortunately, many students with learning disabilities in mathematics learn to perform algorithmic operations (e.g., addition, subtraction, multiplication, division) without understanding the underlying concepts associated with each operation (Stevens, Harris, Aguierre-Munoz, & Cobbs, 2009). They simply memorize step-by-step processes to get correct answers, or they try to find patterns in examples provided in their texts or in the problems they need to solve without understanding why the steps are being performed or why a pattern exists. When students fail to acquire conceptual understanding related to the mathematics they are learning, they are less likely to maintain and generalize the new concepts and skills to higher level mathematical content or real-life activities (Panasuk, 2010; Simon, 2008).

In addition to displaying difficulties related to conceptual understanding, many students with learning disabilities in mathematics experience challenges related to motivation in mathematics or experience math anxiety. There appears to be a relationship among motivation, anxiety, and academic performance, with specific factors (e.g., self-efficacy, intrinsic value, worry) significantly predicting both mathematics test scores and mathematics grades (Shores & Shannon, 2007). Motivation plays an important role in reducing anxiety levels and facilitates self-regulation while developing mathematical expertise.

Because of the challenges that students with disabilities display related to conceptualizing the meaning of mathematics (Das & Janzen, 2004), diverse classroom experiences, adaptations, and differentiated methods are needed (Hough, 2004). The use of evidence-based practices in combination with new technologies has the potential to help teachers design effective, efficient, and motivating mathematics lessons. The purpose of this article is to share information about how teachers can combine the use of the concrete-representational-abstract (CRA) teaching sequence, explicit instruction, and the use of interactive white boards (IWBs) to increase conceptual understanding related to mathematics while simultaneously maintaining student motivation.

The CRA Sequence

The CRA teaching sequence is an evidence-based instructional practice that is used to support the development of conceptual understanding in mathematics (Hudson & Miller, 2006). When teachers use the CRA sequence, instruction on a new math skill begins at the concrete level (i.e., manipulative devices are used to represent and solve the type of math problems being taught). When students reach mastery (typically 80% accuracy) at the concrete level, instruction progresses to the representational level (i.e., pictures of objects or tallies are used to represent and solve the type of problems being taught). When students reach mastery (also typically 80% accuracy) at the representational level, instruction progresses to the abstract level (i.e., problems are represented and solved using numbers without manipulative devices or drawings; Hudson & Miller, 2006).

Explicit instructional procedures are used at all three levels of instruction (concrete, representational, abstract), with a minimum of three lessons at each level and continuing until mastery is reached. Explicit instruction involves structured and systematic lessons in which students are guided through (continued on page 3)
the learning process with clear statements about the purpose and rationale for learning a new skill, clear explanations and demonstrations of the learning target, and supported practice with feedback until independent mastery has been achieved (Archer & Hughes, 2011; Hudson, Miller, & Butler, 2006; Taymans et al., 2009). A substantial amount of research supports the use of the CRA teaching sequence being implemented via explicit instructional approaches. This approach has been effective for both elementary and secondary students with learning disabilities across a variety of math skills (e.g., math facts, place value, regrouping skills, fractions, algebra).

**Interactive Whiteboards**

An IWB is a large (50”–95”) electronic display that is connected to a computer and a projector. The IWB shows the image of a computer screen. It operates via software installed on the computer that allows the teacher and students to use it for various purposes. By projecting a computer screen onto the board, the user can control all computer applications with the simple movement of his or her finger on the board (Hockly, 2013; Northcote, Mildenhall, Marshall, & Swan, 2010; Xin & Sutman, 2011).

Numerous IWB features can be used during instructional lessons to enhance the content and, subsequently, improve student motivation and learning. For example, the user can write on the large touch-sensitive display with electronic pens, drag and drop images or text, press icons to hear pre-recorded sounds, and engage with educational multimedia activities. Students and teachers can also watch simulations, view graphics, capture text or areas of the screen, annotate with the pen, and save notes, drawings, or annotations for future reviews and discussion (Northcote et al., 2010; Preston & Mowbray, 2008).

Another important feature of the IWB is the capability to overwrite any projected document. If the teacher wants to emphasize any particular part of a document or website, he or she can underline it with different colors. The many overwriting possibilities available on IWB (e.g., colored underline, highlighting, circling) help teachers identify key concepts and help students to organize the newly presented information (Gerard & Widener, 1999; Northcote et al., 2010).

Although this technology is relatively new as an available resource in public schools, there is an emerging body of research related to the use of IWBs to enhance student learning and motivation. For example, research has indicated that the use of IWBs improves student desire to attain mastery of the data (Hall & Higgins, 2005; Hennessy, Deaney, Ruthven, & Winterbottom, 2007). This has been supported in qualitative research studies and also in surveys about student use of IWBs (Hall & Higgins, 2005). The technology has enormous potential to improve learning and teaching in school. Researchers claim that it is a powerful motivational factor for students in the classroom (Torff & Tirotta, 2010).

Specifically for mathematics, researchers have conducted studies that examined advancement in student desire to learn (Huang, Liu, Yan, & Chen, 2009; Torff & Tirotta, 2010). They found that student motivation improved, especially when the teacher showed positive support for the use of the IWB. Teachers who strongly supported using the board, and likely used the technology well, produced larger motivational effects in their students (Torff & Tirotta, 2010). Interest in mathematics was increased by the use of the IWB. Students were more engaged in the math lesson in working with the board than students who did not work with the board (Huang et al., 2009; Torff & Tirotta, 2010).

**Integrating the Use of CRA, Explicit Instruction, and IWBs**

Based on the impact IWBs have on student motivation, and the evidentiary base that supports the use of CRA and explicit instruction in the teaching of mathematics to students with learning disabilities, teachers must find ways to integrate IWB into math instruction. The following is an example of how Mr. Grant, the teacher from the scenario at the beginning of this article, could use an IWB throughout the components of explicit teaching focused on developing conceptual understanding of mathematical principles. Specific examples of teaching integration are provided. These examples could be used in course discussions or professional development conversations with math teachers to demonstrate the impact of the IWB.

**Explicit Concrete Lessons Using the IWB**

**Advanced organizer.** Mr. Grant displayed the lesson goal on the IWB and then led a brief discussion with the students about why the skill was an important one to learn. He retrieved and displayed content that had been saved from the previous lesson and conducted a brief review. He ended the advanced organizer by displaying the virtual manipulative devices that would be used in the upcoming lesson (see Table 1 for websites with virtual manipulative devices). He also disseminated manipulative devices that the students would use at their desks.

**Teacher demonstration.** During the teacher demonstration component of each concrete-level lesson, Mr. Grant used virtual manipulative devices on the IWB that looked like the manipulative devices he had disseminated to the students. He used these virtual manipulative devices to illustrate how to represent and solve the types of problems he was teaching. The primary benefit of using the IWB and virtual manipulative devices for the teacher demonstration was the ease

(continued on page 4)
of visibility for all students in the classroom. Demonstrations for an entire class that involve use of the actual three-dimensional manipulative devices are challenging because the devices are small and difficult to move in ways that all students can see. Use of the IWB eliminated this limitation. After demonstrating how to solve one problem, Mr. Grant engaged students in two subsequent problem demonstrations. He called on different students to come to the IWB and demonstrate the individual steps needed to solve the problems.

Guided practice. During the guided practice component of the concrete lessons, the students used the traditional manipulative devices at their desks. Initially, Mr. Grant prompted them as they completed each step of the problem (e.g., “Look at the first number and represent it with your base ten blocks . . . Look at the second number and represent it with your blocks . . . . Now count all the blocks together and write your answer in the answer space”). On subsequent guided practice problems, Mr. Grant asked questions instead of providing direct prompts to guide students through the process of representing and solving the problem. Upon completion of the guided practice problem, students were called upon to demonstrate the guided practice problems using the IWB. This allowed everyone to check their work and to see the problem steps performed accurately.

Independent practice. During the independent practice stage of the lesson, students used manipulative devices at their desks to represent and solve problems on their own. After students completed their independent practice problems, the IWB was used for feedback to go over problems that students had trouble with. Either the students or Mr. Grant provided corrective feedback on these problems.

Explicit Representational Lessons Using the IWB

Advanced organizer. Similar to the advanced organizers in the concrete lessons, Mr. Grant displayed the lesson goal on the IWB and then led a brief discussion with the students about why the skill was an important one to learn and why it might be better to use pictures or tallies instead of manipulative devices (e.g., manipulative devices aren’t always available). After a brief review of what was learned during the previous session, Mr. Grant used the IWB to draw the pictures or tallies that would be used in the upcoming lesson.

Teacher demonstration. During the teacher demonstration component of each representational level lesson, Mr. Grant drew pictures or tallies to represent and solve several problems on the IWB. Again, the primary benefit of using the IWB for the teacher demonstration was the ease of visibility for all students in the classroom. They could see and hear how to use drawings to figure out the problems they were learning to solve. After demonstrating how to solve one problem, Mr. Grant engaged students in two subsequent problem demonstrations. He called on different students to come to the IWB and demonstrate the individual steps needed to solve the problems.

Guided practice. During the guided practice component of the representation lessons, Mr. Grant used a variety of practice methods in which a graduated level of support was provided (i.e., less support provided as students became more proficient with using drawings to represent and solve problems). At first students worked together in small groups or pairs at the IWB to solve problems; then they worked in small groups or pairs at their desks to ensure that problems were solved correctly. Another guided practice format that Mr. Grant used was having some students articulate the steps to solve various problems while other students performed the steps at the IWB. Finally, Mr. Grant provided time for students to play instructional games and motivating activities using the IWB to reinforce the use of drawings to solve problems.

Independent practice. During the independent practice stage of the representational lessons, students completed in-

Table 1. Websites for Virtual Manipulative Devices and Motivating Activities

<table>
<thead>
<tr>
<th>Website Name</th>
<th>URL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Virtual Manipulatives (Glencoe)</td>
<td><a href="http://www.glencoe.com/sites/common_assets/mathematics/ebook_assets/vmf/VMF-Interface.html">www.glencoe.com/sites/common_assets/mathematics/ebook_assets/vmf/VMF-Interface.html</a></td>
</tr>
<tr>
<td>Math Manipulatives</td>
<td><a href="http://www.mathplayground.com/math_manipulatives.html">www.mathplayground.com/math_manipulatives.html</a></td>
</tr>
<tr>
<td>ABCya Fraction Virtual Manipulatives</td>
<td><a href="http://www.abcya.com/fraction_tiles.htm">www.abcya.com/fraction_tiles.htm</a></td>
</tr>
</tbody>
</table>
dependent practice problems provided on either the IWB or in worksheet format. The IWB was used to display solutions (correct drawings and correct answers) to the independent practice problems.

**Explicit Abstract Lessons Using the IWB**

Mr. Grant used the same lesson components (advanced organizer, teacher demonstration, guided practice, independent practice) during each abstract lesson. These lessons used both manipulative devices and drawings. The IWB was still used during each component of the lesson. Motivating games and activities were employed for guided practice to enhance fluency with the newly learned skill. When corrective feedback was necessary, Mr. Grant simply used the overwrite features of the IWB.

**Conclusion**

Evidence-based instruction that combines the CRA teaching sequence with the use of an IWB has the potential to improve students’ conceptual understanding of mathematics skills while simultaneously increasing their motivation to practice these skills. The increased success and enjoyment related to mathematics instruction also has the potential to help students who struggle due to math anxiety. To support the learning of students with learning disabilities, teachers must find ways to incorporate engaging activities into math instruction that are evidence-based and develop conceptual understanding. Active integration of IWBs can serve to address both needs of students with learning disabilities in math.

**References**


Call for Nominations

**CLD Vice President and Treasurer**

The Executive Committee of the Board of Trustees is seeking nominations for two CLD officers: the Vice President and the Treasurer.

**Vice President**

The Vice President serves a one-year term in this position and automatically succeeds to the position of President-Elect, President, and Past President. The Vice President serves as the program chair for the annual Conference on Learning Disabilities and serves in the President’s place and with his or her authority in case of absence or disability of the President and President-Elect. The Vice President assists in the plan of operation for the organization, charges to committees, and the annual CLD budget. The Vice President also serves as the chair of the Bylaws and Rules Committee.

**Treasurer**

The CLD Treasurer serves a three-year term. The Treasurer serves as the custodian of all organizational funds and is to maintain a detailed account of all receipts and expenditures, which are presented at the annual business meeting held at the annual conference and at all Board of Trustee (BOT) and EC meetings. The Treasurer assists the President-Elect in the preparation of the annual budget and recommends fiscal policies to the BOT for approval.

**Nomination Procedure**

Nominees must consent to the nomination to stand for election and must submit at least five signatures from current CLD members. Nominations must also be accompanied by a biographical sketch that includes evidence of the candidate’s qualifications. **Hand-delivered nomination forms** will be accepted until the annual business meeting, to be held at 4:00 p.m. on Thursday, October 1, 2015, in Las Vegas, Nevada, at the CLD conference. Nomination petitions sent by email must be submitted to Dr. Steve Chamberlain (steve.chamberlain@utb.edu) and should be received no later than Monday, September 28, 2015.

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**CLD Treasurer Calls “Help”**

Hope the “headline” caught your attention. Fiduciary responsibility for a not-for-profit organization is a challenge requiring a focus on an organization’s mission, history, and vision of the future. As my CLD treasurer’s term expires July 1, 2016, all members (you) are invited to throw your hat into the ring for this important Executive Committee position. (See the CLD website [http://www.council-for-learning-disabilities.org](http://www.council-for-learning-disabilities.org) for related documents.)

For me, running for the position was a way that I could return my service to an organization that:

- extended my doctoral commitment to the field of LD,
- enabled professional sharing of my work at conferences,
- taught me the intricacies of a professional organization, and
- facilitated warm “after-hours” camaraderie with great colleagues.

After losing earlier elections beginning in 1987, I felt that the idea of running again required careful thought (and support from my life partner). Well, the rest is history, and the result has been a “hoot.” What an organization we share. As I formally enlist your participation in the election process, here were my initial thoughts:

- How much time will be needed to do a good job? What I found was as much as is fair to you and CLD.
- Who will help? As for mentoring support, I found Linda Nease, our executive director; CLD presidents; and the previous treasurer at my service. Count on this history of support as you consider the position of treasurer. Run.

In closing, I hope this request got you thinking. Any questions? I’m retired with time on my hands, so contact me (ibdmajsterek@hotmail.com).

David Majsterek, *CLD Treasurer*
2014–2015 CLD Award Recipients Announced

On behalf of the CLD Board of Directors, the Leadership Development Committee is pleased to present the names of the award recipients to be honored during the 37th CLD annual conference.

Floyd G. Hudson Service Award

Dr. Margarita Bianco, a member of the Colorado CLD chapter, has been named the recipient of this award, which is presented for outstanding performance and commitment by a professional who works in the field of learning disabilities in a role outside of the classroom. Dr. Bianco is an associate professor at and coordinator of the Special Education Program in the School of Education and Human Development, University of Colorado Denver. She has received multiple awards and recognitions, and is published widely. Dr. Bianco created Pathways2Teaching, a pre-collegiate program designed to encourage students of color to enter the teacher workforce.

Texas Chapter

Dr. Araminta Sorrell is the Texas CLD chapter Teacher of the Year. Dr. Sorrell’s love of learning and working with at-risk students has propelled her to work in the field of education for these students for the past 25 years. She is a special education teacher assigned to the History Department at Sam Houston High School in San Antonio, Texas. Her work is devoted to helping students with learning disabilities graduate on time with their peers. Relying on cooperative learning with a healthy dose of “can do” spirit is how she helps her students deal with their disabilities in positive and productive ways.

Virginia Chapter

Ms. LuAnn Morrow is the Virginia CLD chapter Teacher of the Year. Ms. Morrow is a dedicated special education teacher at Pearson’s Corner Elementary School in Hanover County Public School Division in Virginia. She works in collaborative and resource settings, serves on the school’s Child Study Team, and provides recommendations for interventions for students who are struggling learners. Ms. Morrow has worked at both the elementary and middle school levels during her 24-year career, and she has taught in metropolitan settings that include many at-risk and transient families.
Leadership Development Committee: 8th Annual Leadership Academy Members

The Leadership Development Committee received a record number of applications for the 2015–2016 Leadership Academy Cohort. As a result, this year we had a 26% acceptance rate. We are pleased to announce the members of Leadership Academy 5:

Lara-Jeane Costa, assistant professor, UNC Chapel Hill
Laura Isbell, assistant professor, Texas A&M–Commerce
Benikia Kressler, assistant professor, University of Miami
Katie Martin Miller, assistant professor, Florida Atlantic University
Belinda Mitchell, assistant professor, Shepherd University
Stephanie Morano, doctoral candidate, Pennsylvania State University

We would like to thank the following members for serving on the review panel: Randy Boone, Min Kim, Peggy King-Sears, Monica Lambert, Maria Peterson, Kat Pfannenstiel, and Tricia Strickland.

Research Committee: New Mentoring Opportunity for Graduate Students or Recent Doctoral Graduates

Members of the Research Committee are offering a new mentoring opportunity at CLD’s 2015 annual conference, which will be held October 1 and 2 in Las Vegas. They invite current graduate students or recent doctoral graduates to sign up for the Guided Gallery Walk. Based on your area of interest, you will be matched with a Research Committee member who will accompany you to a poster session and answer your questions about how the findings presented and/or methods employed might be applied to your own work. If you are interested in taking advantage of this opportunity, please contact Deborah Reed (dkreed@fcr.org). Your email should contain the following information:

- Full name
- Current title (or stage of graduate work)
- Current affiliation
- Confirmation that you will be attending the full conference
- Research interests

Texas Student CLD Chapter News

The Texas Student Council for Learning Disabilities Chapter at Texas A&M San Antonio has been very busy this spring and shares the following updates and congratulations:

- The chapter honored graduate student Cassie Aelvoet with its Researcher of the Year Award. Aelvoet, currently working toward her master’s degree at Texas A&M San Antonio, won the award for her exceptional research, RTI: Perceptions of an Effective RTI Model from an Educator’s Point of View.
- Congratulations go to the chapter’s founding president, Kristen Dorwald-Gill, for graduating in May with her master’s degree in special education. We look forward to hearing about your contributions to the field!
- Congratulations also go to Patty Hernandez, the chapter’s founding vice president, for earning her bachelor’s degree in special education and elementary education in May. Welcome to the profession!

Opportunities to Sponsor events at the 2015 CLD Conference

Interested in sponsoring the 2015 CLD Conference in Las Vegas? It’s not too late! There are many options available, including the J. Lee Wiederholt Distinguished Lecturer, the Interactive Paper Sessions, the President’s Award Reception, and several of our CLD awards! Please contact Maria Peterson (mbpeters@tamusa.tamus.edu) if you are interested in receiving more information.
Registration is now open for the 37th International Conference on Learning Disabilities, to be held at the Tropicana Hotel in Las Vegas, Nevada, on October 1 and 2, 2015. At the conference, Dr. Lynn Meltzer, the president of research for Research ILD and director of assessment at the Institute for Learning and Development, will be our J. Lee Wiederholt Distinguished Lecturer. There will also be great panel, roundtable, and interactive paper sessions. More information and the link for registration can be found at this website (http://goo.gl/eSu1Ln).

After the conference, the Local Arrangements Committee invites you to participate in all of the fun and exciting activities Las Vegas has to offer, including attending one of the top 10 shows in Las Vegas:

| 1. | Any of the Cirque du Soleil Shows |
| 2. | Jersey Boys |
| 3. | Le Reve |
| 4. | Absinthe at Caesar’s Palace |
| 5. | Blue Man Group |
| 6. | Rock of Ages |
| 7. | Criss Angel Believe |
| 8. | Penn & Teller |
| 9. | Brad Garrett’s Comedy Club at MGM |
| 10. | Terry Fator: The Voice of Entertainment |

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