



International Academy for  
Research in Learning Disabilities

**41st Annual  
International Academy for  
Research in Learning Disabilities (IARLD)  
Conference**

**Programme**

**5 July 2017 Preconference Activities  
6-7 July 2017 Conference**

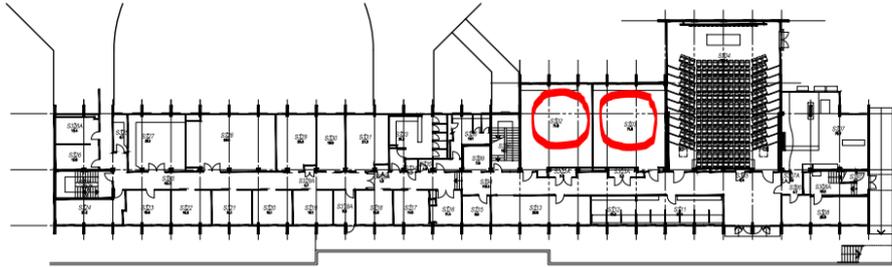
**University of Queensland, St Lucia Campus  
Brisbane  
Queensland  
Australia**





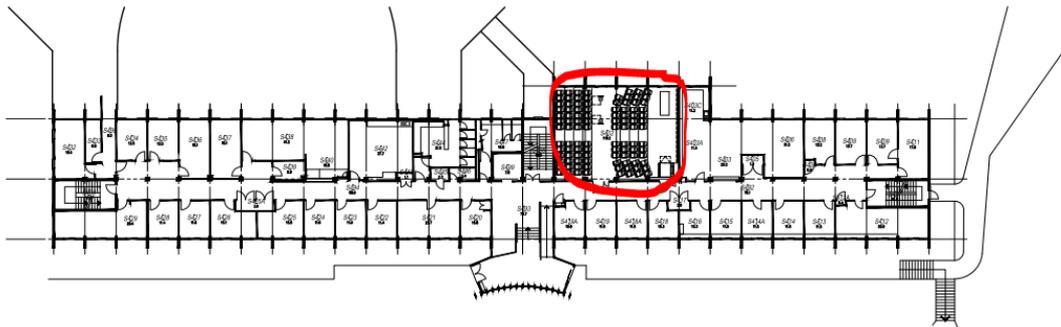
# Plan of Floor Levels and Rooms of the Social Sciences Building

## Level 3, Rooms 302 and 303



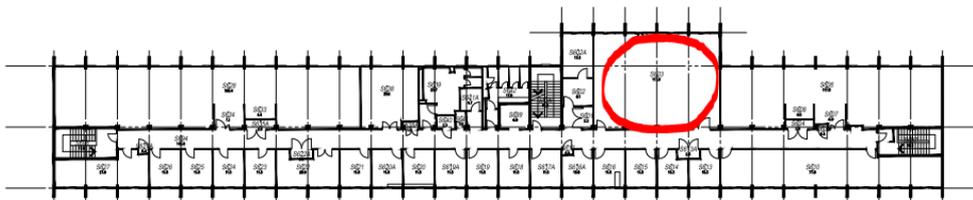
24  
 SOCIAL SCIENCES  
 LEVEL 3 R.L. 14.090 UFA(npwc) 882.2  
 GFA(npwc) 1246.4  
 Cleanable 0  
 0-2-4-6m REVISED 15/07/16

## Level 4, Room 402 (street level and entrance to Social Sciences Building)



24  
 SOCIAL SCIENCES  
 LEVEL 4 R.L. 17.443 UFA(npwc) 701.8  
 GFA(npwc) 1146.9  
 Cleanable 0  
 0-2-4-6m REVISED 01/12/15

## Level 6, Room 603



24  
 SOCIAL SCIENCES BLD.  
 LEVEL 6 R.L. 24.149 UFA(npwc) 789.4  
 GFA(npwc) 1106.6  
 Cleanable 0  
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## Welcome to the Conference

The Organising Committee of the 41st Annual International Academy for Research in Learning Disabilities Conference would like to warmly welcome you to the University of Queensland here in St Lucia, Brisbane, Queensland, Australia. Indeed, welcome “Down Under”. We are delighted to be able to host this conference at the University of Queensland.

The School of Education at the University of Queensland has had a long history of undertaking research in the field of learning difficulties. Sir Fred Schonell became the Foundation Professor of Education at the University of Queensland in 1950 and the Child Development and Remedial Education Centre was set up two years later in April 1952. One of the first and major activities of the Centre was the teaching of a course in Remedial Teaching and Diagnostic Testing that was offered from 1952 until 1973.

The staff of the Fred and Eleanor Special Education Research Centre and the School of Education at the University of Queensland has conducted research into learning difficulties for over 60 years. Landmark studies included *School effectiveness and procedures and outcomes for the education of students with mild learning and behaviour problems* (Elkins and Christensen), the *Identification of successful strategies and mapping of programmes to address the literacy and numeracy needs of students and youth with learning disabilities* (Elkins and van Kraayenoord, with colleagues from Edith Cowan University (Louden, Milton, Rivalland, Rohl), Hong Kong Institute of Education (Chan), Melbourne University (Greaves), and Flinders University (Nichols)), *Best practice clinical and nonclinical services and supports for children, young people and adults with Attention Deficit Disorder and Attention Deficit Hyperactivity Disorder* (van Kraayenoord & Carroll, (University of Queensland) and Rice (University of Southern Queensland), and *Building teachers’ practices in teaching writing to students with developmental disabilities and learning difficulties through professional learning communities* (van Kraayenoord, Moni, and Jobling). In addition, staff in the field of learning difficulties in the School of Education have published numerous articles, chapters, textbooks and books on the topic of learning difficulties and learning disabilities and have contributed to numerous legislative and policy initiatives at the state and federal levels.

Staff have also long been associated with the Academy. Emeritus Professor John Elkins is a Foundation Fellow of the International Academy for Research in Learning Disabilities (1978) and was the President of the IARLD from 1986 to 1989. Associate Professor Christa van Kraayenoord is a Fellow of the Academy and is the current President of the IARLD (2014-2017). Emeritus Professor Ian Hay is a former PhD student of the School of Education and is a current Fellow of the Academy, and three PhD graduates of the School of Education, Dr Holly Chen, Dr Mika Kataoka, and Dr Maureen Finnane are Members of the IARLD. Christa van Kraayenoord, Ian Hay and Holly Chen are also on the Organising Committee of this conference.

The IARLD Conference is held each year and participants at this 41<sup>st</sup> IARLD Conference have travelled many miles to be here. We have participants from: Taiwan, Singapore, Japan, USA, Belgium, Germany, New Zealand and Australia. We are

heartened that there are a number of PhD students – from Belgium, the USA and especially from Taiwan.

We are delighted that this year we are able to introduce you to two of the finest researchers in the learning sciences and learning difficulties in Australia. In particular we are honoured that Professor Lorraine Graham of the Melbourne Graduate School of Education, The University of Melbourne and Fellow of the IARLD will present the William M. Cruickshank Memorial Lecture, entitled “Learning about Learning Intervention”. In addition, Professor Robyn Gillies from the School of Education at The University of Queensland in Brisbane will present the Distinguished Scholar Lecture, entitled: “Pushing the boundaries: Using biometric technologies to provide insights into how students engage with others during different whole class and small group activities and the implications for the inclusive classroom”.

We trust that you will enjoy participating in the conference. We encourage you to actively join in the discussions that are such an important feature of our conferences. We hope that alongside your learning and development of new understandings that you will enjoy the company of your colleagues in the field of learning difficulties and learning disabilities, and renew friendships and make new ones.

Again we welcome you all.

With kind regards

The Organising Committee - Christa van Kraayenoord, Ian Hay, Holly Chen and Angela Silanesu

### **Thank You**

Thank you to the Committee of Reviewers who reviewed the Abstracts for the conference: David Evans, Ian Hay, Holly Chen and Christa van Kraayenoord.

The Organising Committee of the 41<sup>st</sup> IARLD Conference wish to thank the Editor of the *International Journal of Disability, Development and Education* for her support in providing funding for Angela Silanesu to work on the conference days.

### **Accessing Wi-Fi on Campus**

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# **41<sup>st</sup> Annual IARLD Conference Programme**

## **Wednesday 5<sup>th</sup> July 2017**

### **Pre-Conference Schedule**

- 10:00 – 3:00            **Sight Seeing Trip - Miramar Cruises to Lone Pine Koala Sanctuary**
- 3:30 – 6:00            **IARLD Executive Board Meeting** – Room 442, Social Sciences Building (Bldg 24)
- 6:30 – 9:00            **Executive Board Dinner** – St Lucy's, Blair Drive, University of Queensland, St Lucia campus

## **Thursday 6<sup>th</sup> July 2017**

### **Conference Day 1 Schedule**

#### **Social Sciences Building (Bldg 24)**

- 7.30 – 8:30            **Registration and Continental Breakfast** – Room 603
- 8:30 – 8:45            **Transition**
- 8:45– 9:00            **Welcome from Annual Conference Chair and IARLD President** – Room 402
- 9:00 – 9:15            **Conference Opening, Professor Martin Mills, Head of the School of Education, The University of Queensland** – Room 402

- 9.15: – 11:15      **Symposium 1 – Room 402**  
**Executive Function Strategies: The Keys to Academic Success in Students with Learning and Attention Difficulties**  
Lynn Meltzer, Linda Mason, Anya Evmenova, and Judith Wiener (Discussant)
- 11:15 – 11.45      **Break – Room 603**
- 11.45 – 1:00      **Round Table Discussions**  
**1. Foundational Skill Construction: Consequences for Students with Learning Disabilities**  
Mary Beth Calhoon, Sheri Berkeley, and Jennifer Krawec, – Room 302  
**2. Identification of Learning Disabilities and Dyslexia**  
Georgios Sideridis, Faye Antoniou, and Karen Waldie – Room 303
- 1:00 – 2:00      **Lunch – Room 603 and The Great Court and/or University Lakes**
- 2:00 – 3:15**      **Distinguished Scholar Lecture – Room 402**  
**Pushing the Boundaries: Using Biometric Technologies to Provide Insights into how Students Engage with Others during different Whole Class and Small Group Activities and the Implications for the Inclusive Classroom**  
Professor Robyn Gillies, School of Education, The University of Queensland, St Lucia, Queensland, Australia
- 3:15 – 3:45      **Break – Room 603**
- 3:45 – 4:30      **Business Meeting/Think Tank – Room 402**
- 7:15 – 9:30      **IARLD Conference Banquet Dinner and the Marjorie Montague Award for Outstanding Doctoral Level Research – 12<sup>th</sup> Floor, Roof Top Function Room, Rydges Hotel, 9 Glenelg Street, South Brisbane**

**Friday 7<sup>th</sup> July 2017**

**Conference Day 2 Schedule**

**Social Sciences Building (Bldg 24)**

- 7:30 – 8:45            **Registration and Continental Breakfast** – Room 603
- 8:45 – 9:00            **Transition**
- 9:00 – 9:10            **Conference Announcements** – Room 402
- 9:10 – 11:10           **Symposium 2** – Room 402
- Evidence-based Writing Intervention**  
Linda Mason, Nancy Mamlin, and Lynn Meltzer (Discussant)
- 11:10 – 11:30         **Break** – Room 603
- 11:30 – 12:45         **Round Table Discussions**  
**3. Inter-Disciplinary Approaches to Assessment, Intervention, and Research** – Room 302  
Judy Wiener, Sue Galletly, and Janine Schledjewski
- 4. Career Guidance and Learning Disabilities** – Room 303  
Li-Yu Hung, Mika Kataoka and Hsuan Hui Wang
- 12:45 – 1:30           **Lunch** – Room 603 and The Great Court and/or University Lakes
- 1:30 – 2:30            **William M. Cruickshank Memorial Lecture** – Room 402
- Learning about Learning Intervention**  
Professor Lorraine Graham, Melbourne Graduate School of Education, The University of Melbourne, Melbourne, Victoria, Australia
- 2:40– 4:30            **Poster Session - Wine & Cheese Reception and the Janette Klingner IARLD Conference Poster Award** – Room 603

**Conference concludes at 4:30pm**

## **Distinguished Scholar Lecture**

**Pushing the boundaries: Using biometric technologies to provide insights into how students engage with others during different whole class and small group activities and the implications for the inclusive classroom**

**Professor Robyn Gillies  
School of Education, The University of Queensland  
St Lucia, Queensland  
Australia**

Professor Gillies will discuss how education is learning to draw on a range of technologies to provide insights into how students engage and learn in class and how teachers can use this information when providing educational experiences for students with a range of educational needs. Specifically, Professor Gillies will focus on two recent studies that she undertook under the auspices of the Science of Learning Research Centre at the University of Queensland where biometric data as well as video data of students' behaviours and language were collected to investigate students' level of physiological arousal and cooperation as they worked together during whole-class and small group activities. The results demonstrated that not only was there a high-level of common engagement during the whole class and the cooperative group activities but these findings were also reflected in the physiological measures of synchrony between students. Being able to use these technologies to identify levels of student attention and engagement during different classroom activities is providing insights into how learning experiences can be structured to ensure student engagement and learning for all students.

### **Biography**

Robyn M. Gillies PhD is a Professor of Education at The University of Queensland. Her research focuses on the social and cognitive aspects of learning through social interaction. She has been a chief investigator on 12 Australian Research Council grants that have focused on inquiry learning in science and mathematics, teacher and peer-mediated learning, student-centered learning, and classroom discourses and processes related to learning outcomes. These projects have been implemented in primary and secondary schools in science, mathematics, English, and social studies content areas. Professor Gillies is currently a chief investigator on the Science of Learning Research Centre (SLRC) where she has been instrumental in implementing two recent science-based research projects in primary and secondary schools to help teachers embed inquiry-science pedagogy into their science curricula. Her recommendations on how teachers can translate research into practice have been widely profiled in the international literature and on the website of the Smithsonian Science Education Center in Washington, DC. Professor Gillies is the current editor of the *International Journal of Disability, Development and Education*.

# **William M. Cruickshank Memorial Lecture**

## **Learning about Learning Intervention**

**Professor Lorraine  
Melbourne Graduate School of Education, The University of Melbourne  
Melbourne, Victoria  
Australia**

Professor Graham's presentation will focus on intervention research for students with learning difficulties and examine what we are *still* learning about developing, implementing and evaluating effective learning intervention. In doing so, Professor Graham will refer to the work of past and present scholars in the fields of intervention and learning difficulties. Professor Graham will also draw extensively on examples from her collaborative work with students in the Australian context, including the internationally recognized *QuickSmart*, and consider implications for practice more broadly.

### **Biography**

Lorraine Graham is foundation Professor of Learning Intervention at The University of Melbourne. Along with Professor John Pegg, she is co-developer of the *QuickSmart* Numeracy and Literacy Programs. After teaching primary students in the early 1980s, Lorraine continued her studies at Simon Fraser University in British Columbia, Canada. During this time she focused on developing cognitive and metacognitive interventions for students with literacy learning disabilities. In 1994, she joined the inclusive education team at the University of New England, New South Wales. Since 2001, Lorraine has been involved in the implementation and scaling up of the *QuickSmart* programs across Australia. During her career, Lorraine has contributed over 90 published academic works, including five books, and extensive educational resource materials.

# Symposia Information

## Room 402, Social Sciences Building

### Symposium 1

#### *Executive Function Strategies: The Keys to Academic Success in Students with Learning and Attention Difficulties*

##### Participants

**Lynn Meltzer, Institutes for Learning and Development [ResearchILD and ILD]; Harvard Graduate School of Education**

**Linda H. Mason, Division of Special Education and Disability Research, George Mason University; Institute for Human disAbility**

**Anya S. Evmenova, Division of Special Education and Disability Research, George Mason University**

##### Discussant

**Judith Wiener, School & Clinical Child Psychology, Department of Applied Psychology and Human Development, OISE/University of Toronto**

##### Abstract

The fast pace of our 21<sup>st</sup> century schools and the growing presence of technology in classrooms have resulted in increased pressure on schools to teach executive function strategies explicitly in the context of the academic curriculum. This symposium will address different intervention approaches that emphasize the important roles of metacognitive awareness and executive function processes in academic performance. There will also be an emphasis on the importance of moving towards an educational paradigm that addresses the interactions among executive function, effort, self-concept, and academic performance. Discussion will address different approaches to teaching students to use executive function strategies that promote flexible thinking and self-regulation in the context of their academic work.

##### **Paper 1**

*Executive Function, Cognitive Flexibility, and Effort: Impact on School Performance*

Lynn Meltzer\*, Ranjini Reddy, Julie Sayer, and Virginia Diez  
Research Institute for Learning and Development (ResearchILD) and Harvard Graduate School of Education\*

## **Paper 2**

*Self-Regulating Informational Text Reading Comprehension: Perceptions of Students with Learning Disabilities*

Linda Mason  
Division of Special Education and Disability Research  
Institute for Human disAbility, George Mason University

## **Paper 3**

*Using Technology to Support Executive Functioning Skills in Writing*

Anya S. Evnemova  
George Mason University, College of Education and Human Development

## Symposium 2

### *Evidence-based Writing Intervention*

Participants

**Nancy Mamlin, Department of Curriculum & Instruction, North Carolina Central University**

**Linda H. Mason, Division of Special Education and Disability Research, George Mason University; Institute for Human disAbility**

Discussant

**Lynn Meltzer, Institutes for Learning and Development [ResearchILD and ILD]; Harvard Graduate School of Education**

### Abstract

Writing is an important foundational skill that facilitates learning and is critical for school success. Lack of writing skills, consequently, negatively impacts a student's ability to maximize learning opportunities and may adversely affect academic outcomes. Fewer than 20% of students with disabilities are proficient in writing (NAEP, 2011; 2012). Furthermore, writing often presents additional difficulties for students with disabilities. Therefore, implementing effective research-based interventions to develop and remediate these skills is important. Despite the poor writing outcomes of students with learning disabilities, models for improving writing instruction in the United States have received little attention in the research literature. In this presentation, evidence-based practices for writing instruction are reviewed. Research that examines whole class, small group, individualized instruction for students with and at risk for learning disabilities is highlighted.

### **Paper 1**

#### *Levels of Instruction and Recommendations for Whole Class Instruction*

Nancy Mamlin  
Department of Curriculum & Instruction, North Carolina Central University

### **Paper 2**

#### *Writing Intervention for Students with Learning Disabilities*

Linda H. Mason  
Division of Special Education and Disability Research, George Mason University;  
Institute for Human disAbility

## Round Tables Information

### **Round Table 1: *Foundational Skill Construction: Consequences for Students with Learning Disabilities* – Room 302**

Mary Beth Calhoon, Department of Teaching and Learning, University of Miami; Sheri Berkeley, College of Education and Human Development, George Mason University; & Jennifer Krawec, Department of Teaching and Learning, University of Miami

#### Abstract

Students with learning disabilities (SWLD) often demonstrate critical deficits in foundational skills for reading, mathematics and science, placing them in a precarious situation for mastering grade-level content. Now more than ever, SWLD are being taught in general education classrooms, but the curriculum in these inclusive settings focuses mainly on grade-level expectations. Special education, by definition, is supposed to provide “specific, direct, individualized, intense, remedial instruction” (Zigmond & Baker, 1995, p. 178). Yet, this definition of ‘special education’ does not reflect the instruction provided to many SWLD in inclusive settings (Klingner, et al., 1998), ultimately decreasing their ability to close the achievement gap. Although the argument in favor of providing SWLD instruction on grade-level content is a warranted one, the need for foundational skill remediation cannot be ignored. While it is clear instruction combining remediation and grade-level content is ideal, time constraints, limited resources, and significant underachievement may sometimes require an either-or approach. Given the significant academic needs of SWLD, this Round Table Discussion will explore the following questions:

- 1) For SWLD, is addressing foundational skills sufficient to improve grade-level academic performance?
- 2) How should insufficiencies in foundational skills be addressed in relation to curricular expectations?

#### **Calhoon’s Viewpoint**

Middle school SWLD need high-quality intensive reading instruction, yet few remedial reading programs provide specific, intensive, and explicit reading instruction (Moody, Vaughn, Hughs, & Fisher, 2000). In fact, most middle school SWLD receive ineffective generic reading programs that pay little to no attention to the underlying etiology of their individual reading deficits (Lyon, 1998). Moreover, a recent observational study of 21 sixth grade intensive reading teachers across four years, two states, five schools districts, and 15 schools shows that regardless of the reading program implemented, 95% of class time was spent on comprehension strategy instruction, with the other 5% split between grammar, spelling, vocabulary and fluency (Calhoon & Chapman, 2017). No discernable phonics instruction was observed in any of these reading classes.

Research has shown that reading is hierarchical in nature (Reynolds, 2000) and that knowledge of the lower level foundational reading skills is required for mastery of higher order reading skills (Wolf, Bowers, & Biddle, 2000). Yet, middle school reading programs persist in spending the majority of instructional time on comprehension strategies. I will argue based on research (Calhoon, 2005; Calhoon, Sandow, & Hunter, 2010; Calhoon & Petscher, 2013, Calhoon, Branum-Martin, & Sun, 2017) that instruction in phonics is essential to improving the comprehension skills of middle

school SWLD. Furthermore, it appears that the more instructional time spent on the foundational skill of phonics, the larger the gains in comprehension skills. Thus, the teaching of foundational reading skills can improve grade-level academic performance.

### **Berkeley's Viewpoint**

SWLD are chronically under-represented in STEM fields, but the problem goes much deeper than that; SWLD often fail to take and pass required science courses, preventing them from even obtaining a high school diploma (Nord et al., 2011). This is not surprising given that SWLD underperform in middle school science. Recent research (Morgan, Farkas, Hillemeier, & Maczuga, 2016) has indicated that alarming science achievement gaps begin as early as kindergarten and are exacerbated by modifiable factors, including a lack of self-regulatory skills. These learning challenges greatly hinder student acquisition of science vocabulary and content knowledge from informational scientific text, such as textbooks (Brigham, Scruggs, & Mastropieri, 2011; Flanigan, Templeton, & Hayes, 2012; Mason & Hedin, 2011; Scruggs, Mastropieri, Berkeley, & Graetz, 2010). Clearly, students need to be taught to self-regulate cognitive learning strategies to access these critical sources of information if they are to succeed in their science coursework. While reading and writing skills are rarely addressed in secondary content area classrooms, strategies to self-regulate learning are practically non-existent. Referencing preliminary data from a federally funded project, I will argue that self-regulation strategies are essential for SWLD in middle school and, as such, should be explicitly included in science instruction.

### **Krawec's Viewpoint**

Students frequently identify math problem solving as the most difficult skill in the math curriculum (Hudson & Miller, 2006); for students with learning disabilities in math, this is particularly true (Baroody, 2011). Even straightforward word problems with simple semantics and no irrelevant information can cause difficulty for these students, as they often lack the cognitive strategies to comprehend the problem, identify the correct operation, and monitor their progress as they carry out their plan (Montague & Applegate, 1993; Krawec, 2012).

It follows to reason that students who have substantial deficits in basic, underlying skills should be provided targeted remedial instruction in order to prepare them to adequately master the more complex skills which will build upon these basic skills. However, evidence from a three year federally-funded study examining the efficacy of a problem-solving intervention for middle school SWLD (Montague, Krawec, Enders, & Dietz, 2013) indicates that remedial instruction in math problem solving does not in itself prepare these students for related grade-level content. In our study, the 7<sup>th</sup> and 8<sup>th</sup> grade students in the intervention group showed significantly more growth in solving single- and multi-step problems than the comparison group when those problems included only whole numbers and decimals in the context of money. For problems that were sampled from the state math assessment (and thus more complex, both in language and mathematical content), we found no significant differences between the two conditions. Thus, for these students and with this intervention, a focus on foundational skills alone was not enough to improve students' performance on related grade-level content. In this roundtable discussion, I will argue that explicit instruction *that bridges the foundational skills to grade-level content* is the critical step to improving student performance.

## **Round Table 2: *Identification of Learning Disabilities and Dyslexia* – Room 303**

Georgios Sideridis, Boston Children's Hospital, Harvard Medical School; Faye Antoniou, Department of Psychology, Kapodistrian University of Athens; & Karen Waldie, School of Psychology, University of Auckland

### Abstract

During this Round Table three researchers will discuss the following questions:

- 1) How can students with learning disabilities and dyslexia be identified?
- 2) What are the implications of the methods discussed?

### **Georgios D. Sideridis**

#### **The role of non-verbal IQ in the identification of Learning Disabilities**

The purpose of the present study was to evaluate the role of non-verbal IQ in the form of Raven's Colored Progressive Matrices (CPM) as a means of identifying and understanding the unique characteristics of children with learning disabilities (LD). Participants were 1,127 children aged 4-12 years who were administered the CPM. Two groups of students with LD (n=44) and MR (n=30) were also included to evaluate the discriminant validity of the measure. In a simple model in which the CPM's total score comprised the independent variable in the prediction of group membership (Typical vs. LD and LD vs. MR) indices of sensitivity were 64.8% and 79.7%, respectively. Results were further analyzed through employing a series of 15 skill-level variables required to complete the using variants of the scheme of Green and Kluever (1991). Example of skills included mental rotation, understanding of analogies, understanding of directions, picture completion skills, etc.) Results indicated that sensitivity increased by 10.2% to 79.7% for the prediction of typical from LD cases and by 9.5%, to 89.2% for the prediction of LD from MR cases. Further psychometric information verified that the measure was more precise using the new scoring scheme compared to traditional measurement (omega reliability increased from .760 to .992 and maximal reliability H from .775 to .995). It is concluded that the CPM contains additional useful information in the form of skills that can be used to understand and differentiate learning disabilities from other disorders or the typical population.

### **Faye Antoniou, Angeliki Mouzaki, Asimina Ralli, Sophia Papaioannou, & Vasiliki Diamanti**

#### **Identification of Early Learning Difficulties Using a Computerized Screening Application (Logometro)**

The present study attempted to identify early learning difficulties using a computerized screening instrument. Participants were 371 first graders, 270 typical, 49 with learning disabilities using state identification criteria, 30 with ADHD, and 22 with specific language impairments. The measure involved the assessment of Vocabulary Knowledge, Story narration, Phonological Awareness, Story Narration, Morphological Awareness, Pragmatics, Letter Sound Knowledge were evaluated in a computerized environment. A latent class analysis suggested the existence of 5 distinct subgroups with 57.1% of the students with LD being classified onto Class 3, 72.7% of students with SLI in class 4 and 56.7% of the students with ADHD in class 1. Indices of sensitivity and specificity using the logistic model suggested excellent differentiation between groups.

**Karen Waldie**

**Can we use genetic and/or neurological biomarkers to more reliably identify dyslexia and ADHD?**

Dyslexia and ADHD affect brain function relating to learning, language, self-control and memory. They affect one in seven children, impairing the classroom experience and hindering most aspects of their lives. Researchers, clinicians and educators urgently need access to a reliable early identification index to help recognize youngsters likely to develop ADHD and/or dyslexia. Without early detection and subsequent intervention, these children are susceptible to school failure, conduct problems and juvenile delinquency. I will argue that there are reliable and early neurological and gene-environment markers of dyslexia and ADHD that educators, clinicians and researchers will be able to use in the near future to identify those most at risk.

**Brain activation markers.** Two major brain areas linked to reading and phonological analysis include the parietotemporal region and the inferior frontal gyrus. Numerous fMRI studies have shown that individuals with dyslexia show reduced activity in the posterior reading system during phonological reading tasks. This temporo-parietal hypoactive effect characterises both dyslexia and comorbid dyslexia/dyscalculia. High insula activity and atypical laterality is another consistent marker of dyslexia. A consistently found biomarker of ADHD is hypoactivation of the prefrontal cortex during executive functioning tasks.

**Gene-environment markers.** Maternal perceived stress during pregnancy interacts with two genes, the: (1) KIAA0319 gene, lowering reading ability; and the (2) *COMT* gene, increasing ADHD symptoms and lowering IQ. Maternal smoking in pregnancy interacts with the BDNF gene and lowers IQ.

**Round Table 3: *Inter-Disciplinary Approaches to Assessment, Intervention, and Research – Room 302***

**Judy Wiener, School & Clinical Child Psychology, Department of Applied Psychology and Human Development, OISE/University of Toronto; Susan Galletly, School of Education and the Arts, Central Queensland University; Janine Schledjewski, Institute of Educational Science, School of Education, University of Wuppertal**

Abstract

William Cruickshank, the founder of the IARLD, espoused an inter-disciplinary approach to assessment, intervention, and research with children and adults with learning disabilities (LD) and strove to make this approach a cornerstone of the Academy. He claimed that a *multi-disciplinary* approach involved researchers and practitioners (e.g., educators; school, clinical, and neuro psychologists; speech-language pathologists; occupational therapists; physicians including paediatricians, neurologists, and psychiatrists; social workers; and counsellors) each working within the scope of their own discipline even when they work together on a project. An *inter-disciplinary* approach, on the other hand, involves researchers and practitioners from different disciplines collaborating and learning from each other. Thus, in this symposium, we address the following questions:

- 1) How might researchers and practitioners from different disciplines collaborate to enhance research and evidence-based practice in relation to children and adults with learning disabilities?
- 2) What are the research questions that would benefit from an inter-disciplinary approach?

### **Summary – Judith Wiener**

Diagnosis and assessment of children and adults with learning disabilities continues to be a difficult question, largely because even after more than 50 years since Kirk used the term, the definition is still contentious (see Fletcher, Stuebing, Morris & Ryan, 2013 for review). In spite of research discrediting definitions requiring a discrepancy between intelligence and achievement, or processing strengths and weaknesses, some psychologists continue to espouse rigid adherence to such an approach (Association of Chief Psychologists of Ontario, November 2016); they almost exclusively use standardized norm-referenced IQ, achievement, and cognitive processing instruments for their assessments. On the other hand, the response to intervention approach typically examines the extent to which students respond to tier 1 (evidence-based for all students) and tier 2 (targeted to students at risk) interventions typically done by general education and special education teachers. A learning disabilities identification may occur when students do not make adequate progress as assessed through curriculum-based measurement. These educators, however, do not typically have the skills and training to rule out other reasons for the students' inadequate progress including psychosocial adversity and other physical and mental health disabilities and disorders. Physicians usually rely on taking a thorough developmental and health history and using specific performance-based tasks to rule out hearing and vision problems, as well as other types of brain injury. Speech-Language therapists analyze oral language samples and give specific tests that assess aspects of receptive and expressive language. Social workers generally assess family functioning, occupational therapists assess task demands, and counsellors often do a career assessment. From the point of view of costs, however, it would be impractical to have all of these members of a multi-disciplinary team engage in assessment and diagnosis of a single individual with learning disabilities. The question that I will raise with regard to practice is whether an inter-disciplinary approach where (in addition to the skills they have acquired for their own profession) practitioners learn some of the most relevant skills and methods of analysis from those trained in other professions would allow for a comprehensive assessment by one or two practitioners that leads to a valid diagnosis and appropriate intervention. If that is the case, how might it be put into practice?

### **Summary - Susan Galletly**

The Learning Disabilities ecosystem is expanding exponentially, making it difficult to be fully cognizant of its diverse areas of research and practice. Different disciplines may focus on somewhat isolated concepts, and greater research impact can potentially be achieved when disciplines share findings, perspectives, and theorising. Through such sharing, we multiply our effectiveness, through questioning, critiquing, and probing perspectives previously not deeply explored.

The question that I will raise is what research directions, not previously prioritised, can be developed through cross-disciplinary discussion of areas that seem insufficiently explored?

I propose the following as such areas:

1. Moving Beyond Word-Reading

Is crosslinguistic research insufficiently focused on issues beyond word-reading

development? What other dimensions should be focused on? Are teacher workload and generational disadvantage areas of significant crosslinguistic difference? How much harder is it to teach and learn in Anglophone K-12 classrooms, given impacts of much slower word-reading, language and spelling development, weaker impacts of remediation, and many parents having weak literacy and difficulty enabling their children's preschool and school development?

2. Automisation Weakness and Learning Having High Cognitive Load  
Are automisation weakness in word-reading and maintenance weakness (long-term retention) development an Anglophone rather than universal issue? Is this due to learning having much higher cognitive load? Are 'summer-slump' reading losses due to these weaknesses? Are two key indicators of Anglophone automisation weakness for number skills (a) difficulty counting down automatically by 2s and 10s, and (b) '-teen/-ty' number confusion (e.g., confusing 18/80 when counting)? Are Anglophone children with other disabilities differentially further disadvantaged due to the high cognitive load of Anglophone literacy learning?
3. Expediting Anglophone Early Literacy Development  
Are 'nonresponders' ('treatment resisters') in research studies an indicator that, even with best-practice instruction, it's possibly too hard for a proportion of Anglophone children to achieve effective literacy development, using current school funding? Should Anglophone schools explore use of fully-regular English orthographies for beginning readers and writers, prior to moving to standard English, given extensive 1960s Initial Teaching Alphabet (i.t.a.) research aligns so strongly with crosslinguistic findings? What ethical issues emerge when many Anglophone children have severe word-reading weakness because of their nation's choice of orthography, given children in regular-orthography nations do not have word-reading accuracy difficulties?
4. Revised Learned Helplessness Theory  
What are the implications of Maier & Seligman's (2016) revised Learned Helplessness theory, wherein Learned Helplessness seems actually an automatic default option awaiting many failing children? To what extent does Learned Helplessness accompany word-reading difficulties? How does this occur over time?
5. New Literacy Component Model  
Does the Literacy Component Model, with writing, phonological, orthographic, visual, and automising skills included with Simple View components, have pragmatic advantages as a universal model of literacy for educators and researchers?

### **Summary - Janine Schledjewski**

In my experience, multi-disciplinary teams are quite common in educational science. For example, I studied media communication and now work within a team of linguists and researchers on special educational needs. But just being involved with one team does not imply collaborative work; the challenge seems to be to move from working side by side to working together.

According to Hibbert, Siedlok, and Beech (2016), collaborative work is often driven by an 'instrumental collaborative exchange'. For example, when members of one discipline encounter a gap in knowledge, they seek 'to import a fix for [that] problem'. However, to find novel ways of approaching the issues, 'developing shared interpretive horizons' is needed; collaborators must move from 'knowing' the approach of the other discipline to 'understanding' it. There are several methods to promote 'knowing' other disciplines including listening to members of other disciplines at colloquia, workshops,

round-table discussions or team meetings. Just ‘knowing’ the other disciplines, however, does not always mean ‘understanding’ them. For example, researchers who use quantitative research methods might ‘know’ that semi-structured interviews are typically used in qualitative research, and they might even ‘know’ how to ask the interview questions, but they might not ‘understand’ the concepts underlying these research methods. So, in order to achieve ‘real’ collaboration between people from different disciplines, all participants need to communicate effectively with each other.

As the communicative process consumes a lot of time, team members should be motivated to engage in collaborative work. Collaboration might be especially helpful when researchers and practitioners strive to create a common product or to question definitions or models. For example, when creating a digital educational game, a teacher of children with learning disabilities could describe the feedback mechanism within the game to the IT-expert who would then think of ways to programme adaptive feedback. During this process, the teacher might suggest one method of classifying the feedback given to the children and the IT-expert might suggest another. They resolve their different perspectives through discussion and problem-solving. Thus, the teacher and the IT-expert have a common goal (creation of the game) and a common focus (development of adaptive feedback) which helps them to get started and keeps them motivated to pursue the task to completion.

#### **Round Table 4: *Career Guidance and Learning Disabilities* – Room 303**

**Li-Yu Hung, Department of Special Education, National Taiwan Normal University; Mika Kataoka, Faculty of Education (Special Needs Education), Kagoshima University; & Hsuan Hui Wang, Department of Special Education, National Taiwan Normal University**

##### Abstract

Students with learning disabilities have a higher drop-out rate than other typical developing peers in the US (Lerner, 2012). However, students with LD are under high pressure to stay in schools in East Asian countries where academic achievement is highly valued. How to help LD students to study in high schools becomes a challenge to special educators. Academic remediation for students with LD has been emphasized (Hutchinson, 1995). Therefore, the needs of career education or career guidance for students’ with LD should be reviewed. The Round Table Discussion is expected to explore the following questions about the issue of career guidance:

- 1) Is the career guidance for students with LD similar to that of typically developing peers?
- 2) How should career guidance for students with LD be addressed? Such as goals, content, stage, etc.
- 3) Do the career education or guidance programs for students with LD differ across countries?
- 4) How is the career guidance for students with LD implemented in your county? What can we learn from other countries?

### **Hung's viewpoint**

In Taiwan more 9<sup>th</sup> Grade students with LD choose to attend vocational high schools than academic high schools and they have more entrance opportunities to attend senior high schools for students with disabilities than their typically developing peers. Making a suitable choice for advanced study for 9<sup>th</sup> Grade students with LD is a challenge.

“Career maturity” may contribute to individuals being better able to make a career plan. Greater participation in career exploration and greater acceptance of one’s own disabilities were found to be significantly correlated with career maturity in a sample of students with LD in Taiwan (Hung & Liu, 2017). Based on the results of this research it is recommended that individualized career guidance for students with LD should be the part of special education courses in secondary schools and be part of individual transitional planning.

### **Wang's viewpoint**

According to Taiwan’s policy of 12-years of Basic Education, which was implemented in 2013, career guidance is required for all junior-middle-school students. Based on Taiwan’s new curriculum guidelines, career education has become part of the special needs’ curriculum for students with disabilities. Therefore, all the students with LD who are mainstreamed in regular classes in Taiwan receive career guidance from the regular education section of a mainstream school and vocational education courses from the special education section of a mainstream school. How do students with LD explore their career experiences in inclusive schools? How can students with poor academic achievement succeed in the competition for entry to high school? Does vocational guidance from the regular education section in a school or a vocational education course from the special education section in a school help to meet this challenge?

### **Kataoka's viewpoint**

The term “career education” emerged in Japanese education in 1999, but in practice career education only started seriously in 2004. Currently, career education in Japan includes the development of attitudes, motivation, creativity, and application, as well as knowledge and skills related to careers. These are taught in the standardized curricula from kindergarten to university. In special education, career education is provided for more years than in regular education. In the past career education focused on “job matching” but now it refers to “life career” (Super, 1980). Students with LD receive career education in the regular school setting. This includes job experiences in junior high school, but this is not always viewed positively by regular education teachers. Also, students with LD still do not always receive learning support. Educational background is related to career attainment and therefore students with LD have fewer career options. Career education includes “what you want to be”, which is related to self-understanding. It is not easy to know yourself. In my view, students with LD need an additional program which includes learning to know what types of support you need and how to ask for a help.

## **Interactive Poster Session Information**

### ***1. The Factors Related to the Maturity of Secondary Students with Learning Disabilities in Taipei***

**Li-Yu Hung, National Taiwan Normal University; Lui Hong-Jhe, Taipei Municipal Minghu Junior High School; Hsuan-Hui Wang, National Taiwan Normal University; & Wen-Hong Lian, National Taiwan Normal University**

#### **Abstract**

The study aimed to investigate the factors of career maturity of students with learning disabilities in junior high school: demographic factors (gender, disabilities status, grade, and SES), cognitive factors (IQ, reading comprehension, and academic achievement) and other personal information. There were 87 LD students measured with Adolescent Career Development Inventory. All the data were analyzed by multiple regressions, which revealed grade (or year of school) and acceptance of disabilities as significant predictors of students with LD in middle school. The implication and recommendation were made on the basis of findings.

### ***2. Phonics Use, Teachers' Knowledge of Language Constructs, and Teachers' Literacy Teaching Practices in New Zealand: Prospects for Struggling Readers in a Predominantly Whole Language Instructional System***

**James W. Chapman, Keith T. Greaney, Alison W. Arrow & William E. Tunmer, Massey University, Palmerston North**

#### **Abstract**

Results from three studies are reported on how effective New Zealand schools are in meeting the needs of struggling readers during the first year of reading instruction. These studies address the extent to which phonics instruction is included in predominantly whole language literacy teaching (survey); teachers' knowledge of the language foundations associated with reading acquisition (survey); and, teachers' instructional practices during classroom reading lessons (observations). The results indicate that 85%-90% of primary (elementary) schools include phonics in reading instruction; teachers have mixed understandings of the language foundations important for reading development; teaching practices reflect a strong whole language orientation with confusion about how to effectively use phonics and provide systematic instruction in word-level decoding skills. The implications for effectively supporting struggling readers and preventing the development of reading difficulties/disabilities are discussed.

### ***3. A Case Study on a Self-Advocacy Program Implemented by a Junior High School Student with Developmental Disabilities***

**Mika Kataoka, Kagoshima University**

Abstract

This study approaches a “Self-advocacy Program” implemented with a 14-year-old boy with autism spectrum disorders (ASD) and mild intellectual disabilities. The program focused on self-understanding and asking for help. According to the results of 22 sessions, there were three periods. Period 1 was forming a relationship of trust with staff. Period 2 was deepening self-understanding, and Period 3 was thinking about a career. In Period 1 he showed model answers, but he began to express honest feelings. In Period 2, he had difficulties in planning his career. When he became able to understand himself, he had a conflict between his feelings and the real situations (Period 3). The program helped his self-understanding deepen, but his advocacy skills have not been seen yet.

### ***4. Raising the Writing Abilities of Grade 5 Poor Readers With Disadvantaged Background Using A Reading And Writing Bifocal Intervention Program***

**Shih-Jay Tzeng, Shu-li Chen, & Hui-Min Lin, National Taitung University**

Abstract

The study examines the effects of a bifocal program, emphasizing both reading and writing, on the outcome measures of grade 5 students’ writing. The experimental group and control group were both composed of 28 grade 5 students who have disadvantaged background in remote areas in Taiwan. All students received the intervention 5 sessions per week for 2 semesters. The experimental group received the bi-focal literacy program while the control group received existed reading programs from their schools. Results show that students in experimental group outperformed their counterparts in control group on syntactic quality and meaning expression at the end of the second semester. No significant between-group differences were found on total number of characters and mean length of sentence.

### ***5. How Consistency of Inter-County Prevalence of Learning Disabilities in Taiwan? A Longitudinal Comparison***

**Hsuan-Hui Wang, Li-Yu Hung, Yin-Juan Yuan, & Hsiu-Fen Chen, National Taiwan Normal University**

Abstract

This study analyzed the prevalence of LD in Taiwan, and compared inter-county variability of prevalence rates for special education categories from 1998 to 1999 through 2015 to 2016, using the coefficient of variation (CV). In early years, the category of LD was variable (CV=.55~.74) and was consistently more variable than the category of intellectual disabilities, but less variable than other high-incidence disabilities, such as emotional behavior disabilities. After the official identification model was proposed and systematic assessment tools were developed, the variation of LD stably declined and was already very approaching to ID in 2016. Policy implications for LD identification will be discussed.

## ***6. Academic and Psychosocial Performance In Students With Perceptual-Motor Difficulty***

**Hui-Shan Lo & Li-Yu Hung, National Taiwan Normal University**

### **Abstract**

Many students with learning disabilities(LD) were concerned with perceptual-motor difficulties. This study would investigate the academic and psychosocial performance in students with perceptual-motor difficulties. We recruited 58 junior high school students with LD and perceptual-motor difficulties from Taipei. The students comprised three groups: 27 students with difficulties in perceptual-motor, 14 students with difficulties in perceptual-motor and language, and 17 students with difficulties in perceptual-motor and attention. The results showed that all students were worse in Processing Speed Index and better in Verbal Comprehension Index. 43.1% of students showed poor writing accuracy. 32.8% of students showed poor in calculation. 37% students in perceptual-motor group had internalizing behaviors. The students in perceptual-motor and attention group showed equal percentage in internalizing behaviors and externalizing behaviors.

## ***7. Take 2: Effective Re-teaching in Tier 1 Instruction***

**Anne Bellert, Southern Cross University**

### **Abstract**

Re-teaching has an important role within a formative cycle of instruction and assessment – a second chance at learning the concept, knowledge or skill the student was unable to learn from initial instruction. However, it is only scantily described in literature and neglected in empirical research. While students experiencing learning difficulties in literacy potentially benefit from effective re-teaching, they also can be further disadvantaged by poorly implemented re-teaching. The focus of this research is to develop an evidence base for effective re-teaching. It presents key points from a literature review about re-teaching, evidence from practice about how teachers implement re-teaching, and questions for future empirical research to determine most effective approaches for re-teaching.

## ***8. Exploring Fraction Knowledge with Telling Time: A Case Study of Students who have Learning Difficulties***

**Heidi Clausen, Queensland University of Technology**

### **Abstract**

This research employed an intrinsic case study method to explore the mathematic knowledge, procedures, and strategies used by nine Year Four children who have learning difficulties (LD) to tell twelve-hour time on analogue and digital clocks. A specific focus was to examine the fraction knowledge as a factor contributing to the mastery of telling twelve-hour time on analogue and digital clocks. The research highlighted the children's

predominant use of mathematic knowledge linked to number and arithmetic only and argued that fraction knowledge is vital to telling twelve-hour time.

### ***9. An Opportunity-Propensity Analysis in School-Aged Children with and without Mathematical Learning Disabilities in Flanders***

**Elke Baten & Annemie Desoete, Ghent University**

#### Abstract

The acquisition of good mathematical skills is important for academic success throughout the life span. Moreover difficulties with math learning were found to affect people's ability to gain full-time employment and often lead to restricted employment options such as manual and low-paying jobs. Trying to understand the nature of mathematical cognition has therefore been subject of research for many years. A great number of 'cognitive' factors have been recognized as important for the development of mathematical performance. Intelligence and the quality of the working memory were found to predict variance in mathematics. Although these cognitive variables explain a big part of the variance in numerical ability, the nature of numerical cognition and the concordance (i.e., covariation) between the different predictive factors and the key non-cognitive predictors remain poorly understood. Therefore, we are currently conducting a longitudinal study in school-aged children to operationalize the Opportunity-Propensity Framework and to investigate the concordance between opportunities and propensities. The following propensity factors are taken into account: Intelligence, Working Memory, Autonomous vs. Controlled Math Motivation, Personality, Transactional Pattern, Temperament, Personality and Well-being. To investigate the domain specificity of these propensity factors also reading fluency and accuracy is tested. Opportunity and distal factors (for instance socio-economic status) are recorded with parent and teacher reports. The results obtained from children with severe and persistent mathematical learning disabilities from 3<sup>rd</sup> to 6<sup>th</sup> grade are compared with the results obtained from age-matched peers without learning difficulties.

### ***10. Can the Relationship between Rapid Automatized Naming (RAN) and Word Reading be explained by a Catastrophe? Empirical Evidence from Students with and without Learning Disabilities***

**Georgios D. Sideridis, Boston Children's Hospital, Harvard Medical School; Faye Antoniou, University of Athens; & Aggeliki Mouzaki, University of Crete**

#### Abstract

The present study tested the moderating role of RAN in word reading using a cusp catastrophe theory model. We hypothesized that increases in RAN performance speed beyond a critical point would be associated with the disruption in word reading consistent with a "Generic Shutdown" hypothesis. Participants were 587 elementary school children (from grades 2 through 4) from whom n=87 had learning disabilities (LD) using the IQ-achievement discrepancy model. Results indicated that for children with LD in reading, as naming speed falls below a critical level the association between core reading processes (word recognition and decoding) becomes chaotic and

unpredictable. However, after partialing out the variance attributed to motivation, emotional, and internalizing symptoms from RAN, bifurcation was no longer evident.

### ***11. Students with Learning Disabilities Using Technology-based Graphic Organizers: Planning and Writing***

**Soo J. Ahn, Anya Evmenova, & Kelley Regan, George Mason University**

#### Abstract

Writing is an important skill for all students, including those with learning disabilities (LD). Various technologies exist to support learners struggling with such aspects of writing as planning. Graphic organizers, including those on the computer or an iPad, can be used to support student planning and writing. A series of studies investigated students' planning and writing patterns when responding to a prompt with and without technology-based graphic organizers with embedded self-regulated learning strategies. Following instruction, students with LD across grade levels improved their overall writing performance. In addition, the complexity of their planning and the time spent planning increased. The planning versus writing patterns that students with LD exhibit when writing with and without a TBGO will be discussed.

### ***12. The Scientific Study of Learning Disabilities, Gestational Iodine Levels and Epidemiological Research Procedures***

**Ian Hay, University of Tasmania; Kristen L. Hynes, University of Tasmania; John R. Burgess, University of Tasmania, Royal Hobart Hospital; & Petr Otahal, University of Tasmania**

#### Abstract

Iodine deficiency is described by the World Health organisation (WHO, 2007) as a major public health issue affecting both industrialised and developing nations alike. Whilst severe iodine deficiency when the mother is pregnant (gestational iodine deficiency) is a leading cause of preventable intellectual impairment in offspring, it is only recently that an association between mild gestational iodine deficiency and persistent learning deficits of offspring has been recognised (Bath et al., 2013; Eastman & Li, 2017; Hynes, Otahal, Hay, & Burges, 2013). This poster reports on additional Australian longitudinal research that has further identified an association between mild gestational iodine deficiency and impaired childhood academic performance that persists into adolescence. The hypothesis is that mild gestational iodine deficiency has an impact on working memory formation and is a possible explanation for some forms of learning disabilities. The implications for the scientific research into learning disabilities are outlined.

### ***13. Including Students with Learning Disabilities in Secondary Schools: A Longitudinal Study on Organizational, Personnel, and Instructional Influences on Participation and Achievement***

Abstract

Ideal conditions for successful inclusion of adolescents with learning difficulties in secondary schools are still unclear. Nevertheless, teachers and school principals try to find solutions, leading to idiographic concepts of inclusion that differ from school to school. The influencing factors on successful inclusion can be found at different levels, e.g. on the organizational level and the level of instructional strategies (e.g. Lindsay, 2007 or Loreman et al., 2014). The poster reports possible factors for successful inclusive education in secondary schools used in a longitudinal study starting in December 2016. The study aims at identifying organizational and instructional strategies of inclusion of students with learning disabilities, and their influences on participation and achievement.

**14. *“She Doesn’t Fit In”*: Addressing the Mathematical Learning Needs of a Student with NLD**

**Maureen Finnane, Bardon Counselling Centre, Bardon, Queensland**

Abstract

A Nonverbal Learning Difficulty (NLD) is a controversial condition – frequently diagnosed clinically and quite extensively researched, but difficult to categorize to the extent that it is not recognised in the diagnostic manual DSM-5. The poster presents a Mathematics intervention with a 9 year old student, who fits the most distinguishing criteria for NLD – a striking discrepancy between her verbal and nonverbal reasoning, very marked difficulties in visual-spatial processing, extremely low performance in Maths, psychomotor problems and social difficulties (Cornoldi, Mammarella & Fine, 2016). Using an Australian developmental framework (Wright, Martland & Stafford, 2006), and an open-ended task developed by the author (Finnane, 2011), the poster maps and illustrates the positive growth in the student’s conceptual understanding and Maths skills.

**15. *Examining the Role of Attributions in the Self-regulation of Science Learning for Students with Learning Disabilities***

**Sheri Berkeley, Anna Menditto, Aubrey Whitehead, & Jenny Mischel, George Mason University**

Abstract

Project-based learning activities commonly occur as part of science classroom instruction. However, while there is a large body of research about self-regulation of discrete tasks, there is limited research about how students sustain self-regulated learning during complex, long-term learning tasks. A multiple case study design with quantitative and qualitative data sources was used to investigate how middle school students with learning disabilities (LD) self-regulated their learning during a complex, science-based project—creation of computerized serious educational games (SEG) about renewable energy sources. Findings revealed that strategic effort attributions related to positive self-efficacy, and non-effort attributions (or no attributions) related to inconsistent self-efficacy. In addition, profiles of self-regulation for students with LD

varied from general education peers. Theoretical implications are presented. This material is based upon work supported by the National Science Foundation under Grant Number: DRL-1420448. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.

**16. *Factors that Impact Growth: Organizational Structuring of Reading Components to Maximize Struggling Adolescent Readers Outcomes***

**Mary Beth Calhoun, University of Miami); Lee Branum-Martin, Georgia State University); Congying Sun, Georgia State University; & Jennifer Krawec, University of Miami**

Abstract

There is a crucial need to understand the factors that impact the success of middle school (6<sup>th</sup>-8<sup>th</sup> grade) adolescent struggling readers (ASRs), including duration, intensity, delivery models, organization of reading components. We evaluated five different versions of the same reading program, *Reading Achievement Multi-Component Program* (RAMP-UP) across five studies and 509 randomly assigned ASRs, compared to a control condition. Multilevel individual growth models and multivariate confirmatory factor models were fit and evaluated for longitudinal measurement stability, study differences, classroom clustering, and intervention effects. Individual growth models showed significantly greater growth across most literacy outcomes. Multivariate models suggest the organization of instruction matters considerably for ASRs. Trade-offs in evaluating multiple outcomes for longitudinal designs will be discussed.

## **Participant Information**