Welcome!

Welcome to the 2018 ACTNext Education Technology and Computational Psychometrics Symposium! It is a true pleasure to once again convene this gathering of so many influential thinkers and leaders from the psychometric and edtech communities here, in Iowa City.

Over the course of the next two days you’ll have the opportunity to hear from experts blazing new trails and challenging traditional assumptions. Their work covers a broad range of unique topics, yet each converges on a shared vision of the future. Our tech-demo and poster reception will present cutting edge research, offer a chance to meet colleagues and potential collaborators, and feature engaging content from the researchers and technologists forging the future of assessment and learning.

It is also a particular honor to recognize and thank our sponsors for their generous contributions to this important event. This is the first year we’ve offered sponsorship opportunities and we’ve been overwhelmed and flattered by the response. Please make it a point to engage with their representatives in attendance and learn about the reasons they were eager to contribute to the success of our annual conference.

Lastly, I wish to thank you, the participants of ETCPS 2018, for devoting your time and attention to the important topics addressed in the coming days. Despite our widely varying interests and areas of expertise, those of us gathered here share a common trait; the inability to watch from the sidelines as the future takes shape. We are the dreamers, the innovators and the groundbreakers. We are the ones, when we have the chance to come together at an event like this, who are able to magnify our collective vision and not only see the future but begin to touch it. That is the spirit and purpose of this event, and why I am so pleased to welcome each of you to ETCPS 2018!

Sincerely,
Alina A. von Davier, PhD
Senior Vice President, ACTNext
Schedule

Meet the Speakers

October 3 Events

October 4 Events

Poster Presentation

Our Sponsors
8:00  Registration & Continental Breakfast

8:45  Welcome
     Alina von Davier

8:55  Multi-Modal Modeling of Socio-Affective-cognitive Processes During Collaborations
     Sidney D’Mello

9:55  Break

10:05 Universal Interactions for Children
      Juan Pablo Hourcade

11:05 Integrating with Learning Object Repositories Using the New LTI Resource Search Standard
      Adam Blum

11:45 Lunch Break

12:00 Diagnosing Mathematics Skill Deficits in Middle School
      Susan Embretson

2:00  Break

2:10  A Framework for Addressing State and Local Assessment Needs
      Ellen Forte

3:10  The Past, Present, and Future of Science and Technology-Focused Higher Education: Promise and Peril
      Christine Ortiz

4:30  Poster Session and Event Reception
      @ Merge Innovation Space
      Across the Pedestrian Mall from The Graduate
8:00
Registration & Continental Breakfast

8:45
Welcome
Martin Roorda

9:00
Urnings: NextGen Psychometric Tools for NextGen Assessment and Learning Systems
Maria Bolsinova & Benjamin Deonovic

9:40
Fostering Learning Solutions through Evidence Centered Design and Scalable Technologies
Yigal Rosen

10:20
Break

10:30
Envisioning Formative Assessment: Eye-Tracking the Emergence of Mathematics
Dor Abrahamson

11:30
Deep Learning for Educational Innovations
Yuchi Huang

12:10
Closing Remarks
Frank Catalano
MEET THE SPEAKERS
Associate Professor Dor Abrahamson (PhD, Learning Sciences, Northwestern University, 2004) is a design-based researcher of mathematical cognition and instruction at the Graduate School of Education, University of California, Berkeley, where he runs the Embodied Design Research Laboratory. Abrahamson draws on constructivist-enactivist, sociocultural, and dynamical-system theories to inform the design of interactive educational materials. In turn, he analyzes empirical data from evaluation studies of these designs to develop theoretical models of mathematics learning and to refine his pedagogical framework, embodied design. Abrahamson has focused on the mathematical topics of ratio and proportion, probability, and algebra. He has published widely in the leading journals of his field and has received grants from Spencer Foundation and the National Science Foundation.

Adam Blum has co-founded and led technology initiatives for several successful start-ups. Additionally, he has served as an adjunct professor of computer science at UC Berkeley and Carnegie Mellon. Adam wrote one of the first applied machine learning books, Neural Networks in C++ over 25 years ago. Currently, he is co-chairing the LTI Resource Search standard at IMS Global, and leads the development team for various instructional resource-related technologies at ACTNext’s Silicon Valley office.

Maria Bolsinova is a research scientist at ACTNext. Prior to joining the team she was a postdoctoral researcher at the University of Amsterdam for 2 years. She received her PhD in Psychometrics cum laude at Utrecht University in The Netherlands. Her doctoral dissertation, Balancing Simple Models and Complex Reality: Contributions to Item Response Theory in Educational Measurement was awarded the Psychometric Society’s prestigious Dissertation Prize in 2017. Maria received her MSc and BSc degree in Psychology at Moscow University and her MSc in Methodology and Statistics at Leiden University. Her postdoctoral and doctoral research was devoted to
developing advanced psychometric models for the analysis of product and process data (primarily response times) from educational and psychological tests. With ACTNext’s focus on doing groundbreaking research in the field of modeling process data and developing statistical models for innovative dynamic assessment, the move to ACTNext was a natural one for Maria. At ACTNext, she contributes her expertise in psychometrics, educational measurement and Bayesian statistics towards achieving these research goals. With her research, she aims to develop statistical tools that will improve the quality of assessment in practice and help deliver innovative learning and assessment systems.

Benjamin Deonovic is a research scientist at ACTNext. He earned his PhD and MS in Biostatistics from the University of Iowa and his BS in bioinformatics, computational biology, and mathematics from Iowa State University.

His thesis research at the University of Iowa focused on exploring the use of binary variables as parameters in statistical models in the Bayesian framework. In his thesis, he profiled MCMC samplers for binary variables, contributed to the general-purpose Bayesian analysis package Mamba, and constructed a novel convergence diagnostic for categorical variables. During his graduate career, Benjamin applied his research in Kin Fai Au’s statistical bioinformatics lab to phase haplotypes and quantify allele specific expression using RNA-seqencing data from individuals, rather than family data.

Sidney D’Mello (PhD in Computer Science) is interested in the dynamic interplay between cognition and emotion while individuals and groups engage in complex real-world tasks. He applies insights gleaned from this basic research program to develop intelligent technologies that help people achieve to their fullest potential by coordinating what they think and feel with what they know and do. D’Mello has co-edited seven books and published over 250 journal papers, book chapters, and conference proceedings (13 of these have received awards). His work has been funded by numerous grants and he serves(d) as associate editor for four journals, on the editorial boards for six others, and has
Dr. Embretson’s interests span modern psychometric methods (e.g., item response theory), cognitive and intelligence, and quantitative methods. Her main research program has been to integrate cognitive theory into psychometric models and test design. To this goal, she has been developing new item response theory models and conducting empirical research on the cognitive basis of an individual’s responses. Recently, this effort has led to the exciting possibility of “tests without items”. That is, items are automatically generated by artificial intelligence to target levels and cognitive sources of difficulty to optimally measure each individual examinee during testing. The measurement areas have included fluid reasoning, spatial ability, mathematical reasoning and verbal comprehension.

Ellen Forte (Ph.D., University of Iowa) is the CEO & Chief Scientist of edCount, LLC, the consulting firm she founded in 2003. Dr. Forte’s work focuses on validity evaluation and on policies for how students, including those with disabilities and English learners, engage in instructional and assessment contexts.

Dr. Forte has served as a senior advisor to several large assessment projects funded by the US Department of Education and has been a federal peer reviewer for education standards and assessments, accountability systems, state longitudinal data systems, and graduation rates. Dr. Forte serves on the Technical Advisory Committees for five states, ACT, Curriculum Associates, and Project Lead the Way as well as on the editorial boards for Educational Measurement (5th edition), Educational Measurement: Issues and Practice, Applied Measurement in Education, and the National Council on Measurement in Education (NCME) Newsletter. She chairs the NCME award committee for Excellence in Public Communication and is Secretary (Chair in 2021) of the Education Division of the Association of Test Publishers. Dr. Forte wrote The Administrators’ Guide to Federal Programs for English Learners, first published in 2010 and revised in 2017, which addresses intersections among civil rights laws, education...
Yuchi Huang is a senior research scientist on Machine Learning and Artificial Intelligence at ACTNext. Prior to joining the team, Yuchi was a natural language processing (NLP) research scientist at Educational Testing Service. From 2010 to 2015, he worked for GE Global Research and NEC Labs as a computer vision scientist. He earned his PhD in computer science from Rutgers University, an MS in Pattern Recognition from the Chinese Academy of Sciences, and a BS in Automatic Control from the Beijing University of Aeronautics and Astronautics.

At ACTNext, Yuchi spearheads research on the use of machine learning/deep learning models in education research. His current areas of interest include automatic policy, and measurement and evaluation issues for English learners.

Prior to founding edCount, Dr. Forte was the Title I evaluator in the Connecticut Department of Education, the Director of Student Assessment for the Baltimore City Public Schools, and a project director with vendors in the teacher certification and student assessment sectors.

Juan Pablo Hourcade is an Associate Professor at the University of Iowa’s Department of Computer Science, UI3 Associate Director for Informatics Education, and a member of the Delta Center. His main area of research is Human-Computer Interaction, with a focus on the design, implementation and evaluation of technologies that support creativity, collaboration, well-being, healthy development, and information access for a variety of users, including children and older adults.

Dr. Hourcade is the author of Child-Computer Interaction the first comprehensive book on the topic, and has held various leadership roles in his research community (e.g., Papers Co-Chair for CHI 2016 and CHI 2017). He is in the Editorial Board of Interacting with Computers, Foundations and Trends in Human-Computer Interaction, and the International Journal of Child-Computer Interaction. He is editor of the Universal Interactions forum, and a blogger for interactions magazine.
Christine Ortiz is the (tenured and chaired) Morris Cohen Professor of Materials Science and Engineering at the Massachusetts Institute of Technology. Ortiz is the founder of the nonprofit educational institution, Station1, that is building a foundation for the university of the future — a model of higher education based on inclusion and equity, learning through frontier project-based inquiry and research, and the integration of science and technology with societal perspective and impact. Ortiz served as the Dean for Graduate Education at MIT between 2010 and 2016, supporting approximately 8,000 graduate students from 100+ countries. With over 25 years of experience in higher education, Dr. Ortiz has led cross-institutional initiatives in global education, technology-enabled learning, new methods of learning assessment, fostering diversity and inclusion and postsecondary financial models. Ortiz has served on over 50 MIT departmental and Institute committees and working groups. As a Professor of Materials Science and Engineering at MIT, Ortiz is a distinguished scientist and engineer with over 175 scholarly publications, has supervised the research projects of more than 80 students from 10 different academic disciplines, and received 30 national and international honors, including the Presidential Early Career Award in Science and Engineering which was awarded to her at the White House by President George W. Bush. She is the founder and faculty director of the MIT International Science and Technologies Initiatives – Israel program which has given approximately 700 students global internship opportunities. Ortiz serves on numerous boards, including as a regional accreditation commissioner for the Commission on Institutions of Higher Education, New England Association of Schools and Colleges.
Yigal Rosen is the Senior Director of Learning Solutions at ACTNext. With expertise in learning sciences, adaptive learning, and innovative assessment design, Yigal and his group lead research and development in support of ACT’s transition to a learning company. In addition to his role at ACTNext, Yigal is teaching design of technology-enhanced assessments at Harvard Graduate School of Education. Prior to joining ACTNext, Yigal led the Vice Provost for Advances in Learning Research Group at Harvard University and was a Senior Research Scientist at Pearson. Yigal taught learning technology and innovative assessment design at the University of Haifa in Israel, and gained his school teaching experience in computer science and physics in grades 5 through 12.

Yigal obtained his Ph.D. degree in Education from the University of Haifa, being the youngest recipient of a doctoral degree in the University. He was a post-doctoral fellow at Harvard University Graduate School of Education and at Tel Aviv University School of Education.

Yigal is the author of over 100 publications and a leading editor of the recently published book, "Handbook of Research on Technology Tools for Real-World Skill Development."
Sidney is interested in socio-affective-cognitive (SAC) processes (e.g., joint attention; turn taking; negotiation; active participation) that arise during collaborations. These processes are multimodal, interact over multiple spatial and temporal scales, and are situated in a dynamic environment. He will discuss projects aimed at: (1) understanding how SAC processes arise and influence collaborative processes and outcomes; (2) developing multimodal computational models of SAC processes; and (3) embedding the computational models in intelligent technologies to trigger interventions aimed at improving subjective and objective collaborative outcomes.
Computer literacy and access are increasingly critical to satisfy basic needs and rights (e.g., education, voting, transportation, purchases). This means computer software and hardware designers must ensure accessibility for increasingly diverse populations and computing devices. This talk outlines challenges and opportunities in design to achieve that goal, focusing on the principles of deeply engaging with stakeholders, working in interdisciplinary teams, personalizing technology, and making it practical for people’s reality. I will illustrate these principles by discussing research projects on technologies to support children’s creativity, collaboration, and information access.
In this modern era of adaptive and personalized learning, most educational apps need resources (such as videos or games) for each student’s learning gaps. This has been difficult to achieve as each LOR exposed their own unique APIs for search (and some LORs don’t even have an API). There is no consistency on how to query for various types of resources and their alignments to learning objectives. There is also no consistency in the metadata returned for each educational resource. This has been a significant stumbling block in allowing resource usage within learning tools. The new IMS Global LTI Resource Search standard builds on successful standards like LRMI/schema.org to both standardize how to search for resources and how to describe those that match. It makes it easy to weave instructional resources into the fabric of every learning tool and platform. It is supported by leading LORs who are IMS members such as ACT OpenEd, Knovation, SAFARI Montage, Pearson and SchoolCity. On final acceptance by IMS Global the spec will be published for all learning tools and LORs to use.
In this presentation, methods for diagnosing specific mathematical skill deficits will be presented. The methods will be illustrated with an example from middle school mathematics achievement.
State and local education agencies use a variety of products and services to generate the data they need for accountability, evaluation, and instructional decision-making purposes. This session will offer a framework, developed as part of project funded by a current enhanced assessment grant from the US Department of Education, for reviewing assessment options in relation to information needs. This framework can guide educators as well as the vendors who serve them in addressing an array of validity-related issues.
We stand at a pivotal moment in time that presents us with both enormous challenges and potential opportunities. Educational inequality exists globally and includes both access to postsecondary education and to high impact educational experiences (e.g. experiential learning, inquiry and research-based learning, internships, global education, creativity-based activities, interdisciplinary collaboration, etc.) – the latter of which is the currency of future, lifelong, adaptable, meaningful, satisfying, and productive careers.

There is also an escalating concern that our traditional ways of carrying out scientific research, technological innovation and development, education are building upon and increasingly exacerbating inequality, thus creating damage to our society and planet. Hence, it is an imperative to pursue intentional strategies in higher education which, as a 2015 UNESCO report eloquently states, “foster respect for life and human dignity, equal rights and social justice, cultural and social diversity, sustainability, and a sense of human solidarity and shared responsibility for our common future.” In this presentation, I will discuss the development and ongoing work to build a new model of higher education based on inclusion and equity, learning through frontier project-based inquiry and research, and the integration of science and technology with societal perspective and impact. The role, need, and potential promise and peril of education technology and technological development approaches will be highlighted.

3:10

The Past, Present, and Future of Science and Technology-Focused Higher Education: Promise and Peril

Christine Ortiz
MASSACHUSETTS INSTITUTE OF TECHNOLOGY & STATION1
THURSDAY
OCTOBER 4
The Urnings rating system is an algorithm for tracking changes in ability and item difficulty in real time. When in equilibrium, the estimates are unbiased and their measurement error is known, which makes the system suitable for high-stakes testing. Furthermore, it is computationally very efficient, which makes it suitable for large-scale applications. The Urnings system has been successfully used on historic chess data, star ratings of movies by users, and data from ACT academy. However, until recently the applications of the system have been limited by the restrictiveness of the Rasch model that it is based on.

In this presentation we describe the Urnings rating system and its properties, and extend it to a wide range of multidimensional models, including IRT models and CDMs.
Several key developments challenge the field of learning technologies: An improved understanding of how people develop domain-specific and cross-cutting capabilities, evidence-centered design, and advances in artificial intelligence. According to the evolving framework, learning and assessment are intertwined into engaging and powerful learning experiences aimed to foster knowledge, skills and capabilities of all learners. In this talk, our new ACTNext Learning Solutions group will present leading principles for design and development of innovative learning and assessment technologies and share exemplar demos and prototypes.

Yigal Rosen
ACTNEXT

Fostering Learning Solutions through Evidence Centered Design and Scalable Technologies
What if teachers could see an idea evolving in a child’s mind even before the child knew it? New theories of learning along with new research methods are transforming the way we design and evaluate educational activities. In particular, eye-tracking instruments enable analysts to monitor the evolution of sensorimotor action schemes students develop in solving movement problems engineered to ground mathematical concepts. I will explain the design rationale of the Mathematics Imagery Trainer project, based in embodiment theory, and then present clinical and eye-tracking data evidencing ‘attentional anchors,’ dynamical perceptual forms children create spontaneously out of selected environmental features to facilitate the enactment of challenging bimanual movements; the children then become conscious of the attentional anchors as things that, through cultural mediation, take on mathematical meanings. As such, we offer empirical support for historical claims from Piaget, Vygotsky, and Varela pertaining to cognitive growth processes. In turn, we have proof-of-concept data to argue for the utility of formative multimodal assessment in mathematics teachers’ instructional practice.
In recent years deep learning based artificial intelligence have had a profound impact on various areas. However, many researchers in Education are not familiar with this method. The purpose of this presentation is to make the inner workings of these techniques transparent and to explore technical challenges and needs in education that can be addressed with deep learning approaches. This presentation starts by introducing the motivation of adopting deep learning in a lot of machine learning driven educational applications. The second section briefly covers the basics of deep learning and its applications so that the audience could gain a rough understanding of various deep learning systems, libraries and computational resources. At last, we explore several use cases of deep learning in Education, such as automatic content generation, text summarization and generation of facial expressions in human-agent interactions.
POSTER AND DEMO SESSION
THE ACCORDION APPROACH: A METHOD FOR ACCOMMODATING A LARGE NUMBER OF ATTRIBUTES IN COGNITIVE DIAGNOSIS MODELING

Cognitive diagnosis models (CDMs) aim to provide diagnostic and actionable feedback on a set of attributes. The study proposes the accordion procedure (AP) as a solution to the problem in situations where it is reasonable to assume that the attributes can be partitioned into non-overlapping subsets. AP focuses on diagnosing one set of attributes at a time while collapsing attributes from other domains as coarser attributes.

Jimmy de la Torre  
THE UNIVERSITY OF HONG KONG

Yan Sun  
RUTGERS UNIVERSITY

COMPARING ACT MODE STUDY RESULTS ACROSS TESTING PLATFORMS

In September 2018, computer-based administrations were expanded to ACT International. To maintain score comparability (due to new testing platform), a new mode study was conducted using the same form used in the ACT State and District mode study, but using the ACT International testing platform. The results are compared from the 2015 ACT State and District study to the results of the 2018 ACT International study to evaluate how similar mode effects are across testing platforms.

Sonya Powers  
ACT

Xin Li  
ACT

DIGITAL OPPORTUNITY FOR THE RIO GRANDE VALLEY

Education, banking, and employment opportunities, among others, often require computer and broadband access. Yet
broadband adoption continues to lag behind for population segments, including those who are low-income, older, disabled, Black, Hispanic, Native American, or in rural communities.

The goal of the DO4RGV Demonstration Project is to design and implement an effective model to close the digital divide for underserved families in the Rio Grande Valley.

Maria Vasquez
ACT

Juan Garcia
ACT

Jordana Barton
FEDERAL RESERVE BANK OF DALLAS

FILTERED TIME SERIES ANALYSIS OF SCIENTIFIC INQUIRY IN AN IMMERSIVE VIRTUAL WORLD

EcoXPT is an inquiry-based middle school science curriculum where students learn ecosystems science, scientific inquiry, and complex causality through observation, exploration, and experimentation at a virtual pond. The study researched whether analysis of time-stamped log files of actions in the virtual world may elucidate how students approach open-ended activities, enabling formative support.

Chris Dede
HARVARD UNIVERSITY

Joseph Reilly
HARVARD UNIVERSITY

OBSERVING COGNITIVE PROCESSES AND IDENTIFYING READING DIFFICULTIES THROUGH EYE TRACKING ANALYSIS

Eye tracking data provides a unique method for analyzing examinees’ cognitive strategies. The study analyzed data collected from seven adults taking a 35-item reading assessment. Eye tracking software provided an examinee heat map for each item. Visual analyses led to inferences
regarding how high-performers differ in their reading cognitive strategies compared to low-performers.

**SECOND LANGUAGE ACQUISITION MODELING**

Given a history of errors made by learners of a second language, the task is to predict errors that they are likely to make at arbitrary points in the future. We describe more than 7 million words produced by more than 6,000 learners of English, Spanish, and French using Duolingo. The results of a shared task, which attracted 15 teams and synthesized work from various fields including cognitive science, linguistics, and machine learning, are reported.

**STUDENT CENTERED CONTENT**

The role of next-generation learning in assessing efficacy and performance measures in comparison to historic learning environments. Discussions will showcase a shift in observing every learning event as an assessment, in contrast to viewing every assessment as an event. While we focus on data and its interpretation, we will also demonstrate how new technology is significantly transforming learning experiences and enabling real-time, progressive assessment feedback.
THE THEORY BEHIND A COMPUTERIZED ADAPTIVE ENGLISH PROFICIENCY TEST

This work describes the statistical theory implemented in the software TAI-PI, used to apply computerized adaptive English proficiency tests for graduate students at Institute of Mathematical Sciences and Computing of University of São Paulo, Brazil. The statistical methodology was defined considering the history and the aims of the evaluation and adopt the Samejima’s graded response model, the Kullback-Leibler information criterion for item selection, the expected a posteriori Bayesian estimation for latent trait, and shadow test approach for test constraints.

Vanessa Rufino
UNIVERSITY OF SÃO PAULO

Mariana Curi
UNIVERSITY OF SÃO PAULO

Zhongmin Cui
ACT

USING MACHINE LEARNING TO CLEAN DATA FOR EQUATING

Irregularity screening provides important information on the integrity of test scores, and is typically done by a panel of experts who review and make a decision on whether an irregularity may affect equating results or not. With the rapid development of machine learning and artificial intelligence, we believe it is possible to use a computer to help screen irregularities.
Join LearningMate for a technology demo session showcasing the latest advancements in education technology, including integrating quiz engines with OpenEd and assessments with Amazon Alexa®. LearningMate will also demonstrate how GoClass, a mobile teaching and learning platform built around student performance, is redefining the classroom by improving student engagement and delivering insightful dashboards to stakeholders.

**Yigal Rosen**  
ACTNEXT

**Kristin Stoeffler**  
ACT

**ADVANCING TEACHING & LEARNING THROUGH TECHNOLOGY & IMMERSIVE ENVIRONMENTS**

Dive into a cell, take a field trip to the Galapagos, and more. Smart Sparrow Vice President of Learning Architecture and Head of the US Learning Design Studio Amanda Newlin will share the design process that went into creating this award-winning courseware, as well as lessons learned from over two years of user data and third-party efficacy testing.

**Kedar Limaye**  
LEARNINGMATE

**BIOBEYOND**

This demo focuses on current research regarding the development of tools to measure CPS skills through human-agent interactions using a scalable conversational assessment prototype in the context of science education. The prototype leverages an authoring chatbot platform to provide students with a CPS assessment that targets both collaboration and scientific inquiry skills.

**Yigal Rosen**  
ACTNEXT

**Kristin Stoeffler**  
ACT
BONGO - ASSESSING LEARNERS’ SOFT SKILLS AT SCALE

Video assessment platforms have emerged as a viable solution because they require learners to show what they can do and enable multiple assessors to view submissions. These solutions typically ask students to complete structured video workflows where they demonstrate a skill, solve a problem, collaborate with others, or apply their knowledge within a real-world context. Because these platforms often use asynchronous video technology, learners complete exercises and evaluators assess them on their own time. Assessing learners’ soft skills in this way eliminates many of the resource constraints evaluators encounter in traditional, face-to-face environments.

DEXTER: FREE SOFTWARE FOR SERIOUS PSYCHOMETRICS

Dexter is an R (R Development Core Team 2005) package intended as a robust and fairly comprehensive system for managing and analyzing test data organized in booklets. It includes facilities for importing and managing test data, assessing and improving the quality of data through basic test-and-item analysis, fitting an IRT model, and computing various estimates of ability. Many psychometric methods not found elsewhere are provided, new methods for exploratory and confirmatory DIF analysis, support for the 3DC method of standard setting, and many more.
HERA - A BLENDED LEARNING AND ASSESSMENT SYSTEM FOR SCIENTIFIC THINKING

Dexter is an R (R Development Core Team 2005) package intended as a robust and fairly comprehensive system for managing and analyzing test data organized in booklets. It includes facilities for importing and managing test data, assessing and improving the quality of data through basic test-and-item analysis, fitting an IRT model, and computing various estimates of ability. Many psychometric methods not found elsewhere are provided, new methods for exploratory and confirmatory DIF analysis, support for the 3DC method of standard setting, and many more.

IMMERSIVE DEVELOPMENT REALITY

Shaking Earth Digital will demonstrate cutting-edge educational virtual reality (VR) software. VR is a way to reach and engage students. Immersive Development Reality allows students to be active creators in VR. It is an engaging way for students to learn the concepts of coding. They grab, move, and place objects in the virtual environment. Not only are they learning how to code, they also learn math and science concepts.
OUR SPONSORS
The Duolingo English Test is a modern language proficiency tool for today's international students and institutions. It integrates a video interview and writing sample alongside a proficiency score that are available within 48 hours. It costs only $49 for students and is free for institutions.

Ascend Learning is a leading provider of educational content and software tools for students, educational institutions and employers. With products that span the learning continuum, Ascend Learning focuses on high-growth careers in a range of industries, with a special focus on healthcare and other licensure-driven occupations.

The Action Lab, a dedicated digital teaching and learning laboratory within EdPlus, engages in deep learning analytics, leveraging expertise in learning, cognitive, social, and data sciences to provide continuous program improvement that drives student success. Our mission is to make technology-enabled education research useful for systemic, scalable and radical advancement in digital teaching and learning.

YouSeeU, creator of Bongo, is a global leader in video assessment & soft skill development. With its proprietary video and feedback technology, Bongo enables the mastery of communication, critical thinking, and leadership. YouSeeU was founded in 2009 and is headquartered in Loveland, Colorado. For more information, visit www.youseeu.com.

The Duolingo English Test is a modern language proficiency tool for today’s international students and institutions. It integrates a video interview and writing sample alongside a proficiency score that are available within 48 hours. It costs only $49 for students and is free for institutions.
Smart Sparrow is a complete platform for courseware development and deployment. The authoring tool empowers educators to create interactive, adaptive, visually-rich learning experiences, coupled with real-time analytics that provide key insights into student performance. Work with our award-winning Learning Design Studio to create amazing, innovative learning solutions for any course.

At Pearson Assessment, we develop, deliver, and score assessments for learners in all stages of their lives. Our purpose is to prepare them for success in their education and in the workplace, and help them achieve the qualifications and certifications they need to sustain their lifelong learning.

LearningMate is an education technology and data science company dedicated to high performing teaching and learning experiences in our schools, universities, and workplaces. LearningMate offers digital product development, maintenance, and support services over an integrated suite of content authoring, content delivery, standards management, assessment, data warehousing, reporting and analytics platforms.

The University of Iowa College of Education is highly regarded nationally and internationally for its teaching, research, and innovative educational training. U.S. News and World Report has consistently ranked the College of Education among the top graduate schools in the nation in its annual report on America’s best graduate schools.
Special Thanks!

- It takes a fair amount of heavy lifting to produce the Educational Technology and Computational Psychometrics Symposium. ACTNext would like to extend a thank you to all the team members involved in producing the ETCPS 2018
  - The Graduate
  - MERGE
  - Bread Garden Catering
  - ACT Legal
  - ACT Events Team
  - ACT Facilities and Security
  - ACT Marketing Automation
  - Short’s Travel

- We would like to extend a special thank you to ACT CEO Marten Roorda, our distinguished speakers, demonstrators, poster authors, and attendees for participating in the ACTNext Educational Technology and Computational Psychometrics Symposium!