ASSISTIVE TECHNOLOGY TO SUPPORT INCLUSIVE EDUCATION

INTERNATIONAL PERSPECTIVES ON INCLUSIVE EDUCATION

Series Editor Chris Forlin

Recent volumes:

ASSISTIVE TECHNOLOGY TO SUPPORT INCLUSIVE EDUCATION

EDITED BY

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Khalid Abu-Alghayth, PhD, is an Assistant Professor in the Department of Special Education at King Khalid University. Dr Khalid's research interests include assistive technology, collaboration and professional development. He has a doctorate in special education from the University of South Florida, a master's degree in special education focussing on severe intellectual and developmental disabilities from Ball State University and a bachelor's degree in special education from King Saud University. Dr Khalid worked as a teacher of students with intellectual and developmental disabilities in Saudi inclusive schools. He joined an inclusive school as a visitor for a half-year in Muncie, Indiana, to learn about the use of assistive technology with students with disabilities in the United States. Also, Khalid was a visitor for one semester at a center school in central Florida to build up understandings of the nature of assistive technology use with students with significant learning needs.

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Dr Bennett is an Associate Professor of Education within the Department of Teaching and Educational Studies at Idaho State University and an international consultant specialising in curriculum and instruction, mathematics/STEM learning and instructional leadership. With a focus in creating equitable, dynamic and student-centred learning experiences that promote the professional skills needed to be an effective teacher, he works with individual teachers, teacher teams and schools to help them examine and conceptually understand the theory and research-based practices relevant to teaching in today's world. His previous educational experiences include teaching middle school mathematics, working as an instructional coach and a new teacher mentor in culturally, ethnically and linguistically diverse communities. He is dual certified to teach in the elementary grades as well as secondary mathematics, is a National Board Certified Teacher and is an AAIE International School Leadership Fellow.

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Dr Miriam C. Boesch is an Associate Professor of Special Education in the Department of Educational Psychology at the University of North Texas. She earned a PhD in Special Education from Purdue University in 2008 in Severe Disabilities with a specialisation in Augmentative and Alternative Communication (AAC). Her research focusses on AAC. Specifically, she engages in AAC research to assess teacher preparation needs, compare strategies suitable for individuals with autism and complex communication needs and reduce challenging behaviours. Dr Boesch teaches courses pertaining to autism, intervention

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Emily Bouck is a Professor and Program Director of Special Education at Michigan State University. Her research interests focus on mathematics for students with disabilities, or those at risk, including interventions and response-to-intervention, primarily at the secondary level.

Gayl Bowser
Gayl Bowser, MEd, is an independent consultant who focusses on the creation of effective, legal and high-quality service systems that encourage integration of technology into educational programs for students with disabilities. Formerly the Coordinator of the Oregon Technology Access Program (OTAP) and the US State of Oregon's Specialist in Assistive Technology, Gayl, provides consultation, training and technical assistance throughout the United States and internationally. She is a teacher by training, a founding member of the Quality Indicators for Assistive Technology (QIAT) Consortium and serves on the QIAT Leadership Team. Gayl is a co-author, with Penny Reed of Education Tech Points: A Framework for Assistive Technology, Leading the way to Excellence in AT Services and several other books about AT services.

Dianne Chambers
Dr Dianne Chambers is an Associate Professor and coordinates Research and Special Education at the University of Notre Dame Australia, Fremantle. She coordinates and teaches into courses on catering for students with disabilities, inclusion and behaviour management at undergraduate level. Postgraduate teaching areas include adaptive education, behaviour management and social skills, children with special needs, contemporary issues in special education and educating students who are gifted and talented. She supervises students within the School of Education Masters and PhD programs. She is published in the field of inclusive education, assistive technology, service learning, working with teaching assistants and children with ASD. Dianne has also consulted with UNESCO on guidelines for persons with disabilities and Open and Distance Learning using open solutions and teacher education for global citizenship. She has presented conference keynote addresses and public lectures in countries such as India, Macau, the Philippines, Thailand, Hong Kong and Malaysia.

Katie Clouse
Katie Clouse is currently working towards her master's degree in Education from the Department of Special Education at Vanderbilt University, where she is also gaining experiences as a research assistant. She obtained her bachelor's degree in Special Education from Clemson University in 2018. Her interest is in working with high school age students specifically, in the areas of independent living for

young adults with disabilities, post-secondary transition in special education and supporting students with complex communication needs. Ms. Clouse has served as the president of Clemson University's Council for Exceptional Children, as well as the Student Director for the Clemson Area Special Olympics. She also worked as a mentor and classroom assistant for students in the Clemson LIFE program (a post-secondary education program for individuals with disabilities).

Therese M. Cumming

Therese M. Cumming is a Professor of Special Education at the UNSW School of Education and Academic Lead Education at the UNSW Disability Innovation Institute. Therese is a Scientia Education Academy Fellow and her teaching and research focus on promoting the use of evidence-based practices to support the learning and behaviour of students with disabilities and the use of technology to create inclusive, accessible and engaging learning environments. Her publications include three co-authored books and a co-edited book, as well as many book chapters, journal articles and national and international conference papers. Prior to her university and research work, she has many years of experience as a special educator and behaviour mentor in the United States.

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Dr. M. Alexandra Da Fonte is an Associate Professor of the Practice in the Department of Special Education at Vanderbilt University and a member of the Vanderbilt Kennedy Center. She earned a PhD in Special Education from Purdue University in 2008 in Severe Disabilities with a specialisation in Augmentative and Alternative Communication (AAC). Her primary interests are in the areas of AAC, teacher training, bridging research-to-practice and on training pre- and in-service special education teachers to work with students with complex communication needs. She is the co-author of *Effective Augmentative and Alternative Communication Practices: A handbook for School-based Practitioners*. Dr Da Fonte brings experiences as a special education teacher and as a special education and AAC consultant. She has over 25 years of experience working with students with intellectual and multiple disabilities and their families in public, private and in-home settings.

Anya Evmenova

Dr Anya S. Evmenova is an Associate Professor in the Division of Special Education and Disability Research. Dr Evmenova teaches master and doctoral courses in special education, assistive technology and in research methods. She is an active contributor to the field of special education technology research, regularly publishing and presenting at national and international conferences. Her research interests include the use of assistive/instructional technology for cognitive development and access to academic instruction for learners with various abilities and needs; Universal Design for Learning (UDL) and effective online teaching and learning. She has served as the President for the Council for Exceptional Children's Innovations in Special Education Technology Division and is currently a research strand advisor for the Assistive Technology Industry Association as well as the Vice President for Members at the International

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Jenn Gallup
Dr Gallup is an Associate Professor of Special Education at Idaho State University, Pocatello. She publishes and disseminates research in the area of autism and effective integration of technologies such as video games, simulations, virtual environments and robotics that support and develop interpersonal relationships and soft skills required for STEM careers. She specifically focusses her research on adolescents and young adults with autism. In addition, she also researches effective teaching and coaching models for teachers working within an inclusive environment using innovative technology in STEM content areas. Finally, Dr Gallup utilises innovative technology such as Bug-in-Ear to coach and support rural and remote teachers across Idaho. Dr Gallup is passionate about helping individuals with disabilities through the many transitions in life by helping educators harness the power of technology.

Melyssa Gardy
Melyssa Gardy is a Senior Practicing Paediatric Occupational Therapist and Team Leader at a leading private practice in the west of Melbourne and guest lecturer in paediatrics at Swinburne University. She is trained in the Cognitive Orientation to Occupational Performance (CO-OP) Approach and has experience working across mainstream and special school settings, Early Childhood Intervention Services and disability organisations with a wide range of conditions and ages. Melyssa is particularly passionate about working with school-aged children with motor disorders and in using technology to help the child's independence and participation within the home, community or educational settings.

Vaibhav Jadhav
Dr Vaibhav Jadhav is an Assistant Professor in the Department of Education and Extension, Coordinator in School of Open Learning and Coordinator of School of Education at Savitribai Phule Pune University, Pune. In 2016, he was awarded the prestigious C.V. Raman Post Doc Fellowship by UGC, New Delhi, in 2016 and completed post doc research in University of Massachusetts, Amherst, USA, in 2017. He has completed research projects funded by NUEPA on Governance and Leadership in Higher Education of India, UNESCO-Bangkok project on Telecollaboration in Techer Education and UPE-Phase II project on e-Governance in Universities of Maharashtra and has an ongoing International project on Teacher Education with South Eastern Norway University, Norway, and Tuning India Project with University of Deusto, Spain. He has also been involved in e-Governance and Management in Indian Universities project funded by IUCTE-MSU Baroda and Cloud-based Micro-Learning project funded by ASPIRE-SPPU. He has authored and co-authored around 20 research publications at national and international level. He has initiated the use of new educational technology (Edmodo) in the teaching learning procedure and has been

actively involved in research in teacher education and pre- and in-service training programmes for teachers.

Natasha Layton
Dr. Natasha Layton is an occupational therapist practicing, researching and teaching in the areas of assistive technology (AT), disability and outcomes. She is interested in consumer-defined outcomes and the intersections between evidence, policy and practice. Natasha works locally in collaboratives with consumers, at state and national level in Australia with disabled persons' associations and peak AT bodies, internationally with the ISO product standards for AT and globally with the World Health Organisation (WHO) Global Co-Operation on AT Initiative. She is clinical advisor to Motivation Australia, Polio Australia, and is a member of the International Society of Wheelchair Professional. Natasha is currently Senior Lecturer in Occupational Therapy, Department of Health Professions, Swinburne University of Technology.

Rachael McDonald
Associate Professor Rachael McDonald is a clinical, research and teaching health professional with an interest in enabling people with lifelong disabilities to participate in life situations. She has worked extensively in this field, in both children's services and adult settings. Rachael has qualifications in occupational therapy, biomechanics and higher education in addition to her doctorate, which was an exploration of the acceptability and effectiveness of adaptive seating systems in wheelchairs for children with cerebral palsy. She is currently involved in health professional education and in research activities including the use of technology as an enabler and also as a tool for collecting objective evidence. Rachael is the Chair, Department of Health and Medical Science at Swinburne University of Technology.

Beverly Ray
Beverly Ray, PhD (Professor of Education and Instructional Technology), has an extensive background in K-12 professional development, working recently with teachers on the Fort Hall Reservation and in other local school districts in Idaho. Dr Ray has also provided professional development over the past 25 years to teachers across the United States and around the world, including Europe, Central America, Asia and the Middle East. Dr Ray publishes extensively in the areas of current and emerging technologies, coding and integrative social studies instruction. Her work has appeared in a number of technology-related education journals, including Journal of Technology and Teacher Education, Journal of Computing in Teacher Education, Contemporary Issues in Technology and Teacher Education and the Journal of Digital Learning in Teacher Education.

Rajiv Satsangi
Rajiv Satsangi is an Assistant Professor in the College of Education and Human Development at George Mason University. His research focusses on studying technology-based interventions in mathematics for promoting conceptual and procedural fluency for students with learning disabilities. His recent projects have

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Iva Strnadová

Iva Strnadová is a Professor in Special Education and Disability Studies at the University of New South Wales in Sydney, Australia. Her research aims to contribute to better understanding and the improvement of the life experiences of people with disabilities, especially those most marginalised, such as people with intellectual disabilities. Combining research with advocacy is essential in her research program, which builds on supporting the self-determination (including self-advocacy) of people with intellectual disabilities and is grounded in an innovative inclusive research approach. Prior to her academic career, Iva Strnadová worked for 7 years with adults with intellectual disability and with autism. She has a particular research interest in the well-being of people with intellectual disabilities and autism and their families over the life span; diverse transitions in lives of people with disabilities (particularly intellectual disabilities and autism); girls and women with intellectual disabilities; parents with intellectual disabilities and inclusive research.

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Deborah Tamakloe is an Assistant Professor of Special Education – Early Intervention at Millersville University in Pennsylvania. Her research focusses on the areas of assistive technology, multiculturalism in special education and pre/in-service teacher preparation. Tamakloe has more than 20 years of teaching experience, including graduate and undergraduate special education courses and K-12 inclusive education in Ghana. She also serves as a Court Appointed Special Advocate (CASA) for abused and neglected children in Lancaster County.

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Dr Joy Smiley Zabala is a leading expert on the use of assistive technology (AT) to improve education for people with disabilities. As a technologist, special

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SERIES EDITOR PREFACE

Series Introduction Volume 14 edited by Dianne Chambers

The adoption internationally of inclusive practice as the most equitable and all-encompassing approach to education and its relation to compliance with various international declarations and conventions underpins the importance of this series for people working at all levels of education and schooling in both developed and less developed countries. There is little doubt that inclusive education is complex and diverse and that there are enormous disparities in understanding and application at both inter- and intracountry levels. A broad perspective on inclusive education throughout this series is taken, encompassing a wide range of contemporary viewpoints, ideas and research for enabling the development of more inclusive schools, education systems and communities.

Volumes in this series on *International Perspectives on Inclusive Education* contribute to the academic and professional discourse by providing a collection of philosophies and practices that can be reviewed considering local contextual and cultural situations in order to assist governments, educators, peripatetic staffs and other professionals to provide the best education for all children. Each volume in the series focusses on a key aspect of inclusive education and provides critical chapters by contributing leaders in the field who discuss theoretical positions, quality research and impacts on school and classroom practice. Different volumes address issues relating to the diversity of student need within heterogeneous classrooms and the preparation of teachers and other staffs to work in inclusive schools. Systemic changes and practice in schools encompass a wide perspective of learners to provide ideas on reframing education to ensure that it is inclusive of all. Evidence-based research practices underpin a plethora of suggestions for decision-makers and practitioners, incorporating current ways of thinking about and implementing inclusive education.

While many barriers have been identified that may potentially constrain the implementation of effective inclusive practices, this series aims to identify such key concerns and offer practical and best practice approaches to overcoming them. Adopting a thematic approach for each volume, readers will be able to quickly locate a collection of research and practice related to a topic of interest. By transforming schools into inclusive communities of practice, all children can have the opportunity to access and participate in quality and equitable education to enable them to obtain the skills to become contributory global citizens. This series, therefore, is highly recommended to support education decision-makers, practitioners, researchers and academics, who have a professional interest in the inclusion of children and youth who are marginalising in inclusive schools and classrooms.

Volume 14 in the *International Perspectives on Inclusive Education* series provides a wealth of ideas, research and practice about the use of assistive technologies to support inclusive education. Technology is no longer considered a novel option but is seen as fundamental to supporting inclusive education. The use of technologies encompasses all stakeholders including school staff, parents and the students themselves. Without guidance, though, participants may be faced with decisions about appropriate selection and application of technologies for which they are not prepared. The strong emphasis in this volume specifically on how existing and emerging technologies can be used to support inclusive education provides much needed guidance and direction for all involved with inclusive practices.

Technologies have the capacity to inspire teachers, parents and students to become inventive, imaginative and creative. At the same time, they can also instil fears or anxiety if the user is unfamiliar with the technology or feels threatened by it, due to a lack of knowledge or understanding about how it can be best used to support a child. This volume carefully addresses this issue empathetically by having a very strong focus throughout on presenting the use of technologies in a clear and concise way so that regardless of prior experience the reader will be able to gain a better understanding of what works best in which situation. Each chapter incorporates best practice approaches that are practical and authentic in the use of assistive technologies for supporting learning for all children and youth. The highly acclaimed internationally representative authors go beyond the initial identification of options to exploring the reality of how these may be best applied in the inclusive classroom to enable improved and effective access to the curriculum regardless of student need.

The myth that more expensive technologies are always best is defuncted. Low-, mid- and high-technology alternatives are all considered as to their effectiveness depending upon the need of the child and the availability and sustainability of introducing more complex equipment in schools. This volume specifically considers how technologies may be identified, selected and used effectively across a range of diverse contexts within developed and less developed countries.

Not only do the authors in this volume identify and evaluate the usefulness of a range of assistive technologies for supporting learners to access the curriculum, but also they consider the sustainability of use. Providing appropriate services to schools to support the use of technologies is a critical aspect of selection and application. The authors address this through discussing a variety of approaches that can be employed to provide support across both city and more remote districts. Information on establishing support networks and monitoring and evaluating their effectiveness are all included and provide extremely useful models for ensuring that assistive technologies can sustain the purpose for which they are being introduced.

While the emphasis in this volume is on the use of assistive technologies for supporting academic learning for children and youth with special educational needs, the importance of technology for social inclusion is also paramount. The authors throughout this book offer a valuable balance between how assistive technologies can assist in supporting learners to access the curriculum while also

encouraging and supporting the development of distinctive and unique personalities. In many instances, technologies are key elements for enabling effective communication and social interactions within families and with teachers and other support staff. Of equal importance is that choosing the correct communication device will encourage independence and peer interaction, thus allowing the social-emotional development of individuality and preparation for living in society.

I unequivocally endorse Volume 14 for all school staff, district coordinators, peripatetic personnel and parents who are engaged with finding the best assistive technologies to support their learners with special educational needs. This volume will also appeal to university academics, students and researchers who are tasked with understanding best practice technologies for preparing them to work within inclusive schools. Within the book, selected chapters enable the reader to choose a specific area of interest and to locate best practice ideas grounded in research, as explored by leading international and local experts in the field of assistive technologies. This volume will be an excellent resource across many disciplines and international regions.

Chris Forlin
Series Editor