

Building an important line of research to make a positive difference

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RERC on AAC Doctoral Student Think Tank
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Thank you!

Thank you for choosing to dedicate your careers to improving outcomes for individuals with complex communication needs and their families

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Objectives for session

- To discuss what it means to build a line of research
 - Why it is important
- To provide some examples of lines of research
- To suggest some strategies for developing a research career
 - To share some lessons I learned during my research career



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What is a line of research?

- A series of interrelated research studies designed to solve an important problem
- Your research plan
 - Driven by sound theory
 - Supported by empirical data
 - Fueled by vision of what could be



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Why is it important to develop a line of research?

- Provides a road map to make a positive impact
 - Allows you to actually solve the problem & improve outcomes
- Provides a plan for your research career
 - Defines important steps and milestones along the way
- Brings recognition of your work
 - Allows you to be “known” for your work in a particular area

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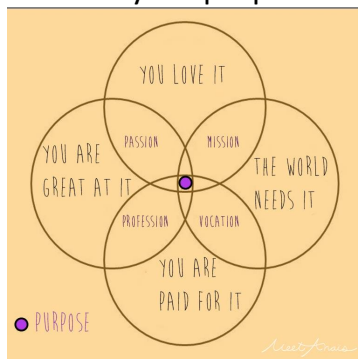
Getting started

- Start with a vision
- How do you want to make a difference?



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Lesson #1 Find your purpose



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Lesson #2 Focus on what is important

- A research program should have an important purpose
 - There are many questions but not all of them are worth answering
 - We have limited researchers and limited research funds
 - Don't waste time, money, & effort on trivial pursuits
 - Avoid research that is of limited consequence



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Lesson #2

Focus on what is important

- Engage in integrated knowledge translation
- Start by listening to stakeholders
 - Individuals who rely on AAC
 - Families
- What are the key challenges they face?
- Ask yourself:
 - “What difference will this research make?”





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Lesson #2

Focus on what is important

- Don't ever stop asking questions
 - To advance knowledge
 - To improve practice
- Ask **beautiful** questions
 - Significant
 - Insightful
 - Unique
 - Potentially game-changing




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Lesson #3

Tackle the problem step by step


- Important problems are not solved through a single study
 - Discovery is the result of the systematic accumulation of evidence across studies



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Tackle the problem step by step:

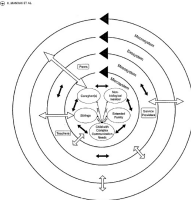
1. Describe the problem
2. Consider the solution
3. Figure out what needs to happen in between



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Tackle problems step by step

- AAC research is complex
- Numerous variables to consider
 - Intrinsic variables related to the individual who requires AAC
 - Extrinsic variables related to the environment / communication partner
 - Variables related to AAC systems
 - Intervention/ instructional variables
- Systematically tease out these variables



Mandak, O'Neill, Light & Fosco, 2017

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An example of building a line of research Identify an important problem

- Literacy skills are essential to all aspects of life
- More than 90% of individuals with complex communication needs enter adulthood without functional literacy skills
- As a result, they are severely restricted in
 - education, employment, healthcare & community living
 - access to generative language



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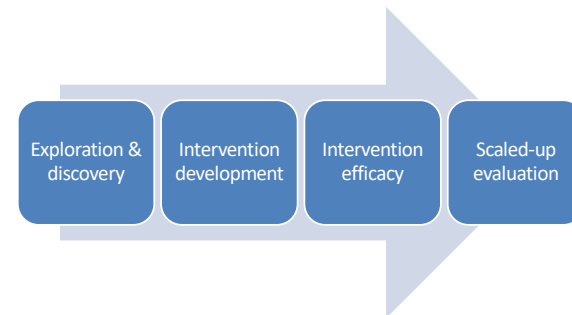
The solution

- Effective, adapted, evidence-based intervention implemented across the nation so that individuals with complex communication needs develop functional literacy skills



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Move from the problem to the solution NIDILRR's Stages of Research



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Exploration and discovery

- Explores the problem in more detail to increase understanding
 - Factors that may limit successful outcomes
 - Factors that may support successful outcomes
- Generates hypotheses or theories
- Informs the development of intervention to address the problem
- Is not always necessary
 - We may already know enough about the problem
- Research should **never** stop here

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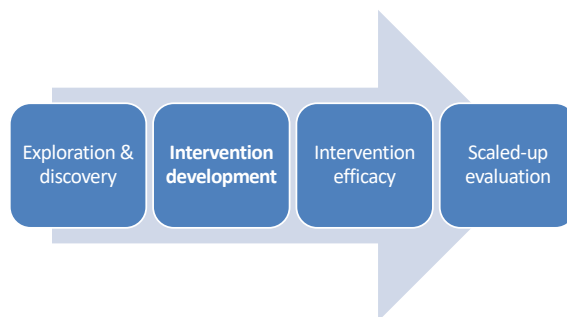
An example Exploration & Discovery

- Explore the early literacy experiences of children with complex communication needs
 - Survey methodology (Light & Kelford Smith)
 - Observational research (Light, Binger & Kelford Smith)
- Identify barriers
- Identify supports



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Stages of research (NIDILRR)



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Intervention development

- Focuses on development & initial testing of intervention to improve outcomes (solve the problem)
- Determines important components of intervention
- Defines important variables; develops measures
- Assesses the feasibility of the intervention

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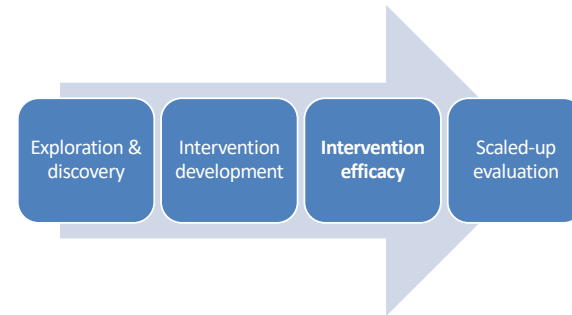
An example: Intervention development

- Development of training to teach partners to enhance storybook reading
 - Read
 - Model the use of AAC
 - Wait & allow child time to communicate
 - Ask appropriate questions
 - Respond to the child’s communication
- Preliminary evaluation of this intervention (Kent Walsh, Light & McNaughton)



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Stages of research (NIDILRR)



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Intervention efficacy

- Evaluates the efficacy of the intervention
- Assesses the strength of the relationship between the intervention and the outcomes
- May identify intrinsic or extrinsic factors that may impact outcomes
 - What intervention is effective with whom under what conditions
- Determines whether there is sufficient evidence to support “scaling up” intervention

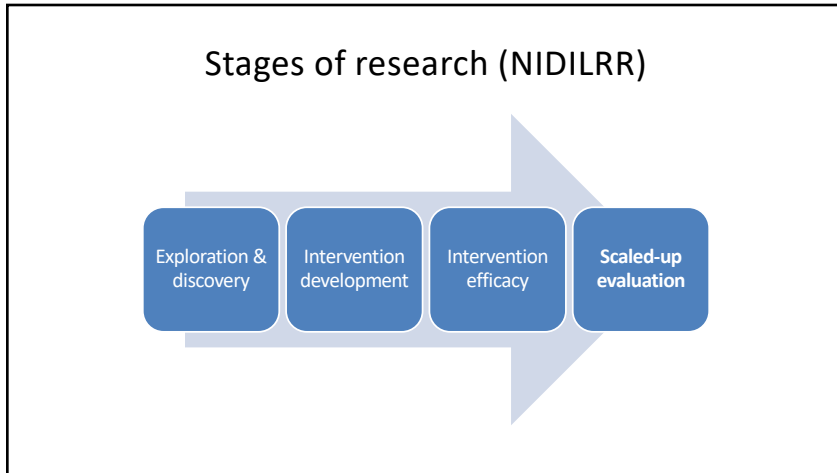
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An example: Intervention efficacy

- Series of studies to investigate the effects of partner training program on the participation of children who require AAC during storybook reading
 - parents, paraprofessionals, teachers
 - children of different ages with different disabilities
 - Kent Walsh, Binger & colleagues



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Scaled-up intervention

- Provides larger scale evaluation of the intervention in the real world
- Tests the outcomes of an evidence-based intervention in a range of real world settings
- Investigates the challenges of real world adoption

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Scaled-up intervention

- Broad-based dissemination of the parent training program
 - imPAACT program (Kent Walsh, Binger & colleagues)
- Evaluation of real world uptake and application
 - Web-based training
- Evaluation of real world outcomes

ImPAACT Program: Purpose of Targeted Skills
(Kent-Walsh, Binger & colleagues, 2012)

Aided AAC Modeling	• To provide functional models of effective AAC use
Expectant Delay	• To provide communication opportunities, additional processing time, and an expectation for communication.
WH-Question Asking	• To prompt higher-level content expression
Verbal Prompts	• To provide client with direct indication of what s/he is supposed to do
Increased Responsivity	• To reinforce communicative attempts and expanded utterances.

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We were making progress by increasing partner knowledge & skills

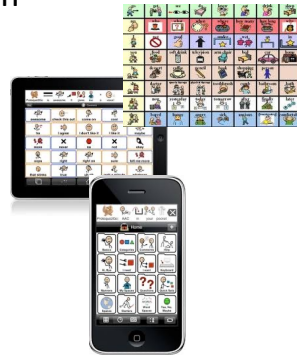
BUT....

There were significant technology barriers that also had to be addressed to improve emergent literacy outcomes

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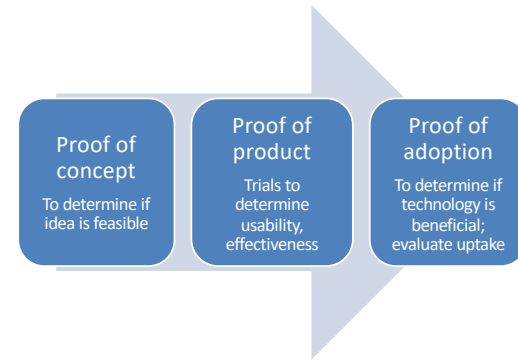
The problem

- AAC technologies were
 - Difficult to integrate with book reading activities
 - Difficult for young children to learn and use
 - Time consuming to program with new vocabulary
 - Not responsive to child interests in the moment
- The solution
 - Improved AAC technologies that are quick & easy to program & use and that appeal to children



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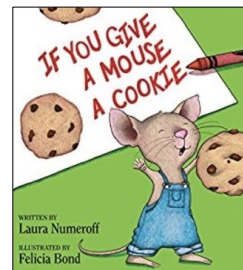
NIDILRR Stages of Development



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An example: Proof of concept

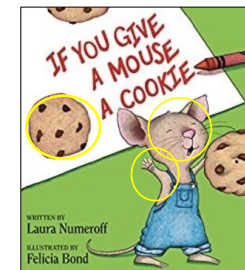
- Easy VSD app (Jakobs & Jakobs)
 - Allows quick & easy capture of meaningful activities as visual scene displays (VSDs)
 - Integrates books & AAC supports
 - Infuses language concepts into context
 - Supports quick & easy “just in time” (JIT) programming of new vocabulary
 - Allows parents to respond to child interests & needs on the fly
 - Supports language & emergent literacy development



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An example: Proof of concept

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An example: Proof of product

- Series of studies to investigate effects of AAC VSD app that supports JIT programming
 - **young children** who require AAC (Light, Drager, et al., 2012)
 - **older beginning communicators** (Holyfield et al., 2019; Drager et al., 2019)
 - young children who require AAC **with typical peers** (Therrien & Light, 2016; 2018)
 - **young children with ASD with their parents** (Laubscher et al. 2022)



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An example: Proof of adoption

- Successful tech transfer to AAC manufacturers
- Next step - Scaled up evaluation of adoption, uptake, & effects



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We had made progress

Young children who required AAC had the opportunity, supports, & tools to develop emergent literacy skills

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But we still had not solved the problem

They were not yet reading!

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So.....

We cycled back to tackle the problem of learning conventional literacy skills

- Need for adapted literacy instruction
- Need for AAC technologies to support the transition to literacy

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Build lines of research & development

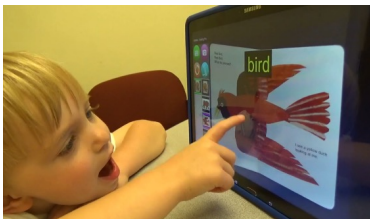
New line of research

- Develop and evaluate the effects of adapted literacy instruction (ALL curriculum) (Light & McNaughton, 2009)
 - Intervention development
 - Intervention efficacy
- Scaled-up intervention (implementation science) to investigate uptake & adoption (Caron, 2022)



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Build lines of research & development



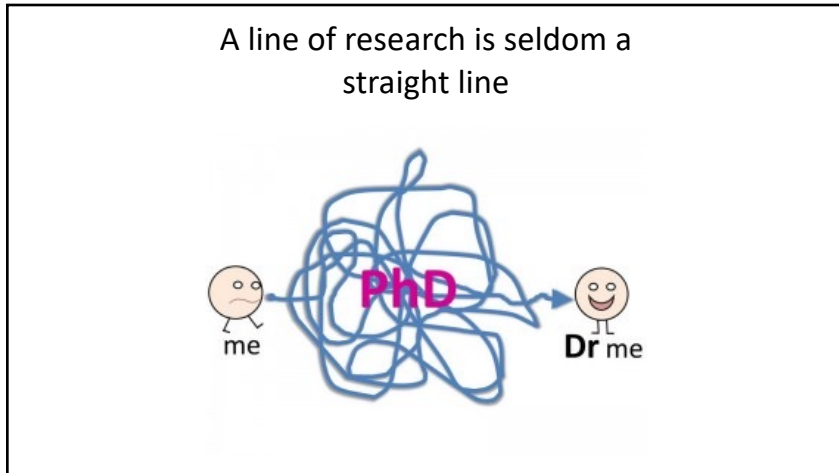
New line of technology development

- Develop & evaluate AAC technologies to support the transition from picture symbols to literacy
 - Transition to literacy (T2L) sight word technology
 - T2L decoding technology

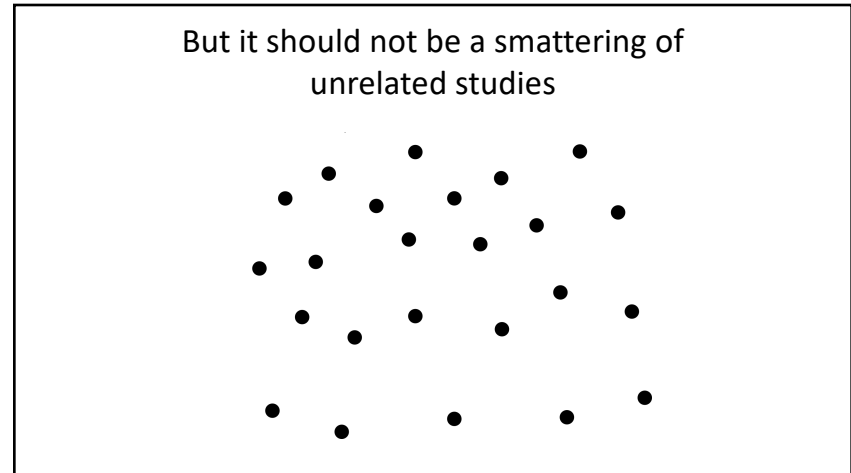
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Start to plan your line of research now!

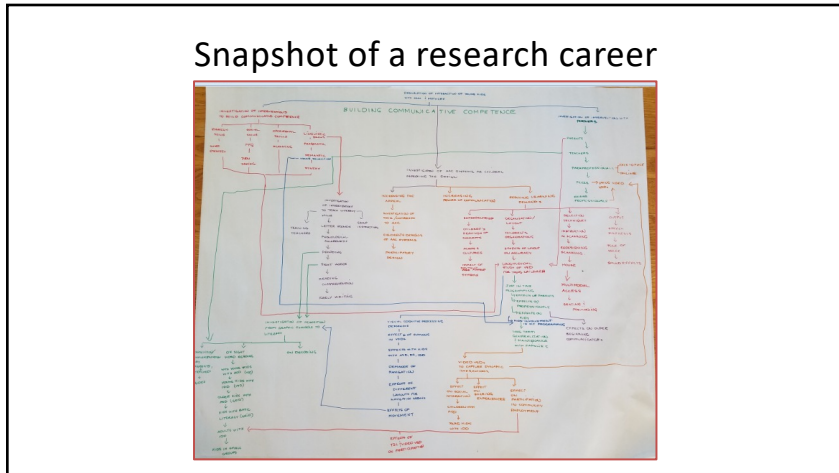
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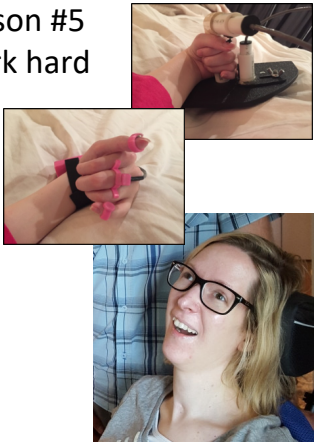
Lesson #4
Build your arsenal of research tools

- Learn everything that you can about research methods & data analysis
 - Qualitative & quantitative methods
 - Observational & experimental
 - Tools to answer any question
 - From basic research to
 - Applied clinical research to
 - Implementation science
- Hone your science
 - It doesn't take any more time to do good research than it does to do bad research

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Lesson #5 Work hard


- Work hard
 - One of the greatest predictors of achievement is time on task
- Never stop learning
 - Read & learn as much as possible
 - in AAC
 - in other domains
 - Synthesize & integrate across domains
- Persevere



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Lesson #6 Build an AAC community

- “One is never enough”
 - Discovering solutions requires the input of many
 - Reach out to others /collaborate
- Build an AAC community
 - Individuals who use AAC, families, undergraduate & graduate students, faculty, clinicians, engineers, technology developers, AT manufacturers
 - Other researchers
 - Those in AAC
 - Those in other disciplines



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Many thanks to my AAC community

<ul style="list-style-type: none"> • Jane Cale • Barbara Collier • Penny Parnes • Nora Rothschild • Lynnette Norris • Arlene Kraat • Sarah Blackstone • Margret Beesley • David McNaughton • Peter Lindsay • Rosemary Tannock 	<ul style="list-style-type: none"> • David Beukelman • Pat Mirenda • Alison Kelford Smith • Susan Thurston • Steve Calculator • Luigi Girolametto • Karen Yanak • Barbara Roberts • John Dattilo • Jane English • Lisa Gutierrez
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Many thanks to my AAC community

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- Laura Estrella
- Megan Seabury
- Rebecca Page
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- Tracy Rackensperger
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- Erik Jakobs
- Howard Shane
- Alix Galskoy
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- Melanie Fried-Oken
- Susan Fager
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- Aileen Costigan
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- Nimisha Muttiah
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- Michelle Therrien
- April Yorke
- Beth Davidoff
- Caitlin Brown
- Megan Dooris
- Gina Pecile
- Carly Staffin
- Julia Karnezos
- Merissa Ekman
- Shelley Chapin
- Suz Boyle
- Lauramarie Pope
- Clark Knudtson
- Hannah Young
- Megan Hoorn
- Ethan Richtsmeier
- Maggie Lamb
- Crystal Bluto
- Mari Therrien

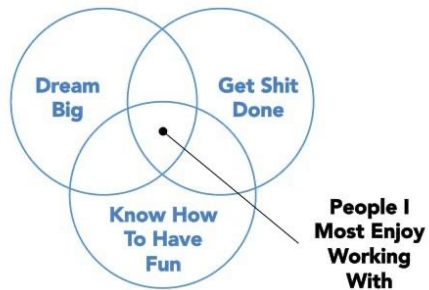
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Many thanks to my AAC community

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- Kelsey Mandak
- Tara O’Neill Zimmerman
- Jessica Gormley
- Salena Babb
- Naima Bhana
- Sojung Jung
- Emily Laubscher
- Kaitlyn Clarke
- Amanda Slowey
- Tara Tedesco
- Savanna Brittlebank-Douglas
- Dana Nieder
- Chris Klein
- Godfrey Nazareth
- Dave Chapple
- Tracy Rackensperger
- Heidi Koester
- Dawn Sowers
- Tara McCarty
- Kasie Galley
- Sharon Sternfeld
- Jessica Fantasia
- Olivia Pfaff
- Courtney Dobrzynski
- Hailey Atiyeh
- And many many more

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Choose your collaborators wisely



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Lesson #7 Be generous

- Support others
 - Share your ideas with others
 - Provide feedback to others
 - Offer encouragement to others
 - Become a mentor
- Foster the next generation
 - Encourage and inspire others



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A mentor provides
a brain to pick
a shoulder to cry on and
a kick in the pants



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Role of mentors

When you teach someone
what you know, there are now
two of you blazing the trail
rather than you by yourself.



- Michael Williams

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Lesson #8 Take time to think

- Reflect on problems
 - Slow down /step back
 - Think
 - Record your ideas
 - Write to develop your thinking
- Being paid to wonder is a heavy responsibility



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Lesson #9 Be courageous

- Challenge yourself
 - Keep raising the bar
- Ask questions
 - Challenge others' ideas
- Put your ideas out there
 - Spend time with others who will challenge you
 - Don't be afraid to make mistakes
- Fear complacency



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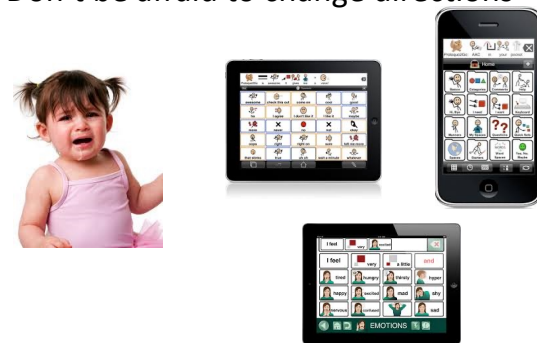
Lesson #10 Don't be afraid to change directions

- As you investigate new areas & unearth new discoveries, be ready to shift directions to accommodate new findings
 - Be flexible
- Be open to serendipitous discoveries
 - Observe, analyze, reflect
 - Embrace the "aha moment"



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Embrace the "aha moments" Don't be afraid to change directions



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Birth of a new line of research

- How do we re-design AAC systems so that they are
 - Developmentally appropriate?
 - Support language development?
 - Dynamic?
 - Easy to learn & use?
 - Appealing?



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Lesson #11

It's not over until it is successfully adopted

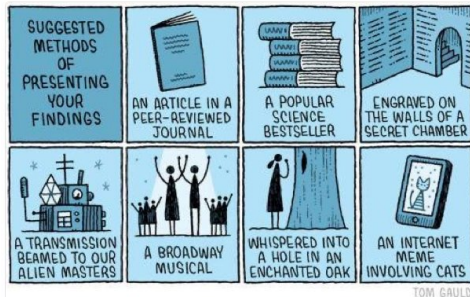
- Disseminate results to all stakeholders to ensure uptake and use
 - Individuals with complex communication needs, families, clinicians, researchers, administrators, policy makers, etc.
- Think about what content should be disseminated to whom
- Think about how it should be delivered to each stakeholder group
 - Peer-reviewed publications, conference presentations
 - Websites, visual abstracts, webcasts /podcasts
 - Social media, Facebook, Twitter, blogs
 - Success stories, etc.



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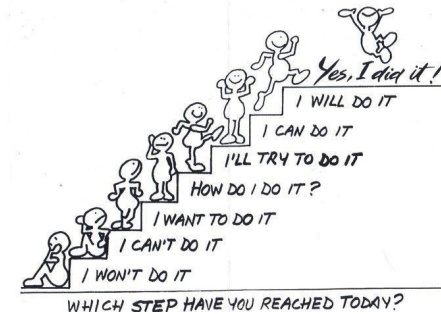
Choose the best approach for each stakeholder group



TOM GAULD

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Building a line of research is a process Which step have you reached?

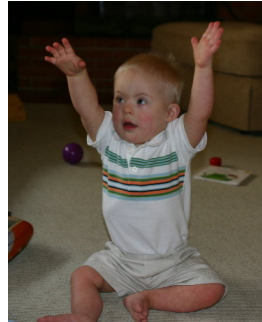


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Lesson #12

Celebrate your
contributions!
Discover joy in your
work!



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rerc-aac.org

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