EdTech and Evidence: the whys and hows

What is the problem?

- It is not just EdTech: push for evidence-based education for more than a decade

- some educational researchers follow the efficacy movement focused on Randomised Controlled Trials as the golden standard

- Some educational researchers value equally RCTs and other types of evidence (descriptive studies)

- International consensus is that each method answers different questions and EdTech need a portfolio of evidence to demonstrate impact

- International drive is to ensure that no child is left behind: and data- based technologies and science can support this mission
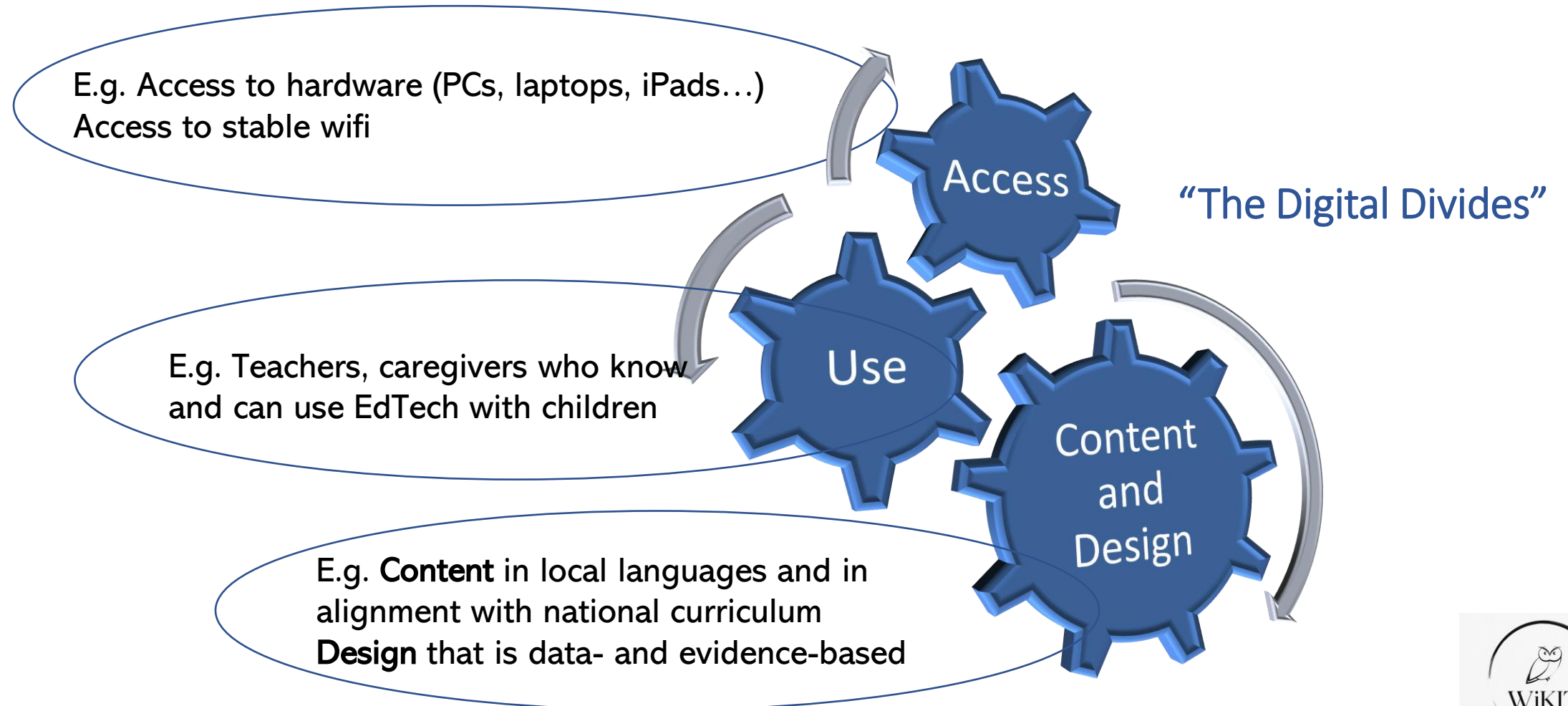
Read more on EdTech Evidence Movement

- https://edtechevidence.org/AboutUs/OurStory/

- https://www.edsurge.com/news/topics/efficacy

- https://www.nationalelfservice.net/about-education/

- https://www.campbellcollaboration.org/better-evidence.html

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Does EdTech bridge or deepen socio-economic inequalities in children's learning?

E.g. Access to hardware (PCs, laptops, iPads…)
Access to stable wifi

Access

"The Digital Divides"

E.g. Teachers, caregivers who know and can use EdTech with children

Use

Content and Design

E.g. **Content** in local languages and in alignment with national curriculum
Design that is data- and evidence-based

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Read more on low-quality EdTech content and design

"How Dare They Peep into My Private Life?", Human Rights Watch, 2022

How educational are "educational" apps for young children? App store content analysis using the Four Pillars of Learning framework, Meyer et al., 2022

Prevalence and Characteristics of Manipulative Design in Mobile Applications Used by Children, Radesky et al., 2022

What are we downloading for our children? Best-selling children's apps in four European countries, Sari et al., 2017

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Why should EdTech invest in evidence?

<u>Primary reasons</u>

- Improve your chances of long-term success and scale-up

- Align your product with the national curriculum and with teachers' and schools' needs

- Position your product at the leading edge of the market

- Understand how to improve the product's design

<u>Secondary reasons</u>

- Improve your chances of getting funding

- Improve your visibility and transparency on the market

- Strengthen your market position globally

Read more: Hollow, D., & Jefferies, K. (2022). *How EdTech Can Be Used to Help Address the Global Learning Crisis: A Challenge to the Sector for an Evidence-Driven Future* [Preprint]. EdTech Hub. https://doi.org/10.53832/edtechhub.0115

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On the road to evidence, ask yourself:

Will my EdTech:

- *"Lead to a sustained impact on learning outcomes?*

- *Work for the most marginalized children and enhance equity?*

- *Be feasible to scale in a cost-effective manner that is affordable for the context?*

- *Be effective in the specific implementation context?*

- *Align with government priorities and lead to the strengthening of national education systems?"*

Hollow, D. & Jefferies, K. (2022) A Challenge to the Sector for an Evidence-Driven Future: How EdTech Can Be Used to Help Address the Global Learning Crisis, EdTech Hub Blog, Available from : https://edtechhub.org/2022/09/16/a-challenge-to-the-sector-for-an-evidence-driven-future-how-edtech-can-be-used-to-help-address-the-global-learning-crisis/

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High-quality EdTech Design

iRPD: high-quality EdTech is developed through a partnership between practitioners (teachers), designers (developers) and researchers (scientistsI
Influencing factors: different government pressures, financing options,
Shared epistemology: While different stakeholders have different motivations, they all want to positively advances children's learning
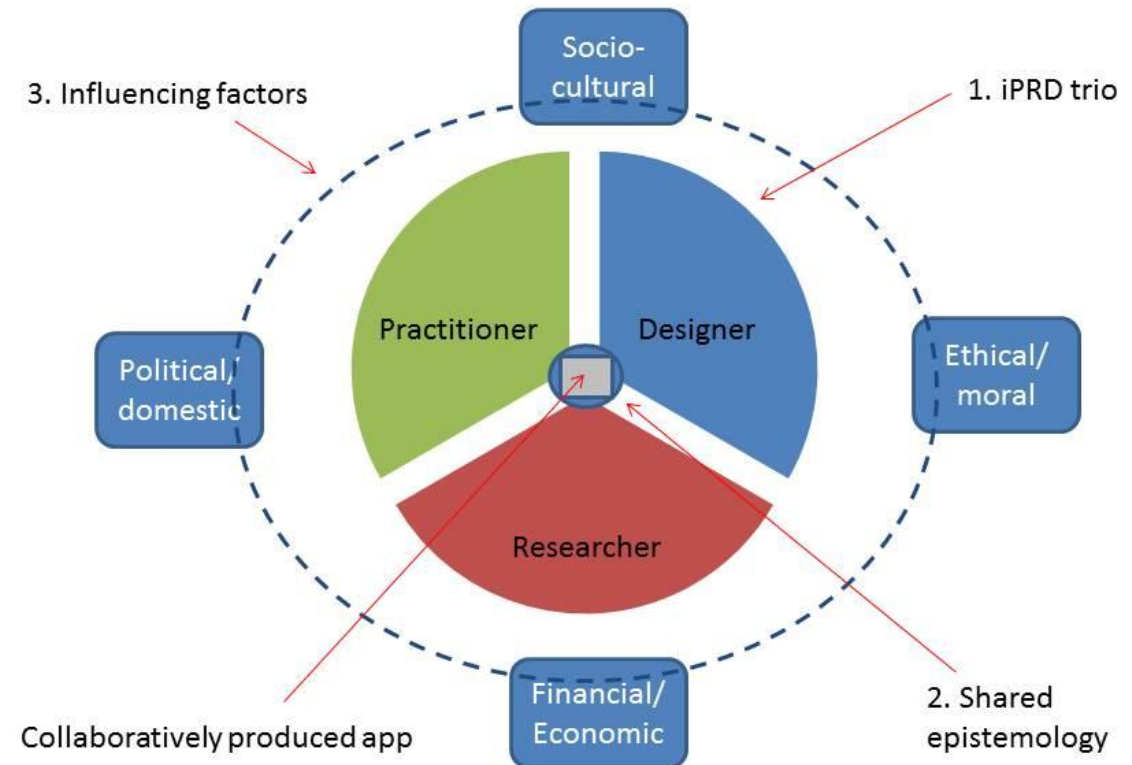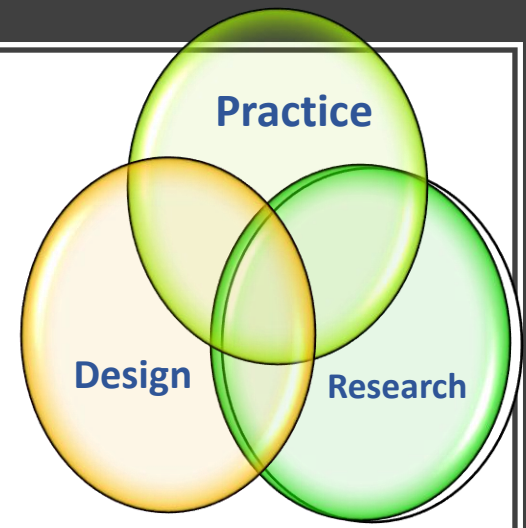

Kucirkova, N. (2017). iRPD—A framework for guiding design-based research for iPad apps. British Journal of Educational Technology, 48(2), 598-610.

Role of **teachers** in the iRPD model

Practice

Design · Research

- With the right tools and techniques, all teachers can provide good education

- Teachers' decisions around which EdTech to use AND how to use it needs to be driven by data and evidence

- Teachers are partners, not testers, of EdTech.

- Teachers can act as co-researchers and co-designers

- Teachers' and children's experiences feed into an EdTech's usability

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Role of **designers** in the iRPD model
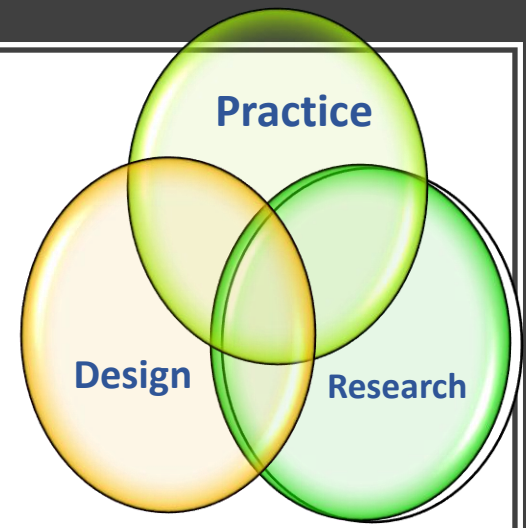
- Aim for design that supports the learning of *all* children
- Aim for design that supports collaborative learning
- Aim for design that engages both dominant and "hidden" senses
- Use data to enable teaching and learning at the appropriate level

Which learning outcomes are you aiming for?

With your EdTech…

- Do children create or consume content?

- Do children improve their thinking or behaviour?

- Do children improve their cognitive learning (such as memory or language) or affective learning (such as empathy and social skills)?

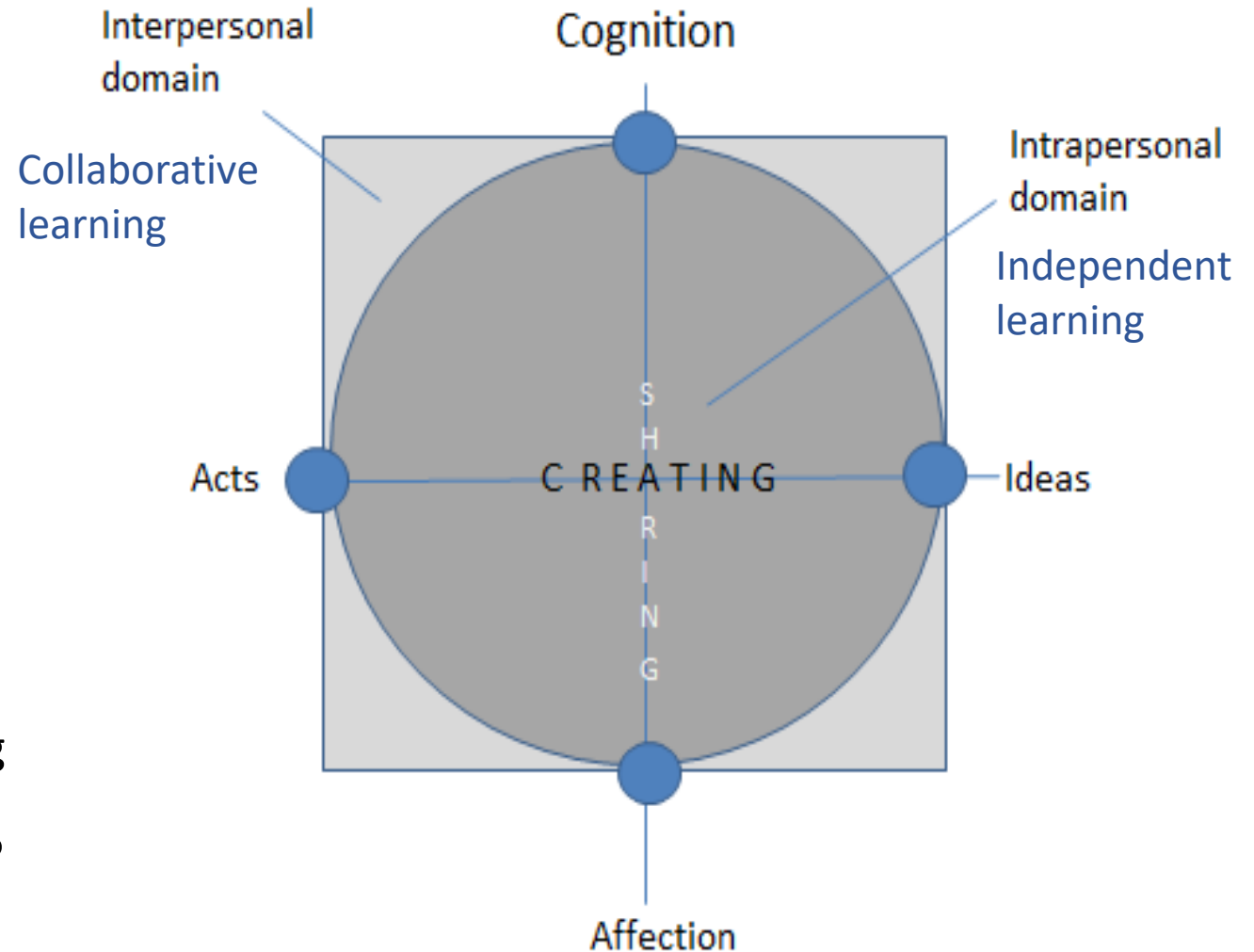Aim for "both" in all categories!

Figure from Kucirkova, N. (2017) Digital Personalization in Early Childhood: Impact on Childhood, London: Bloomsbury Academic.
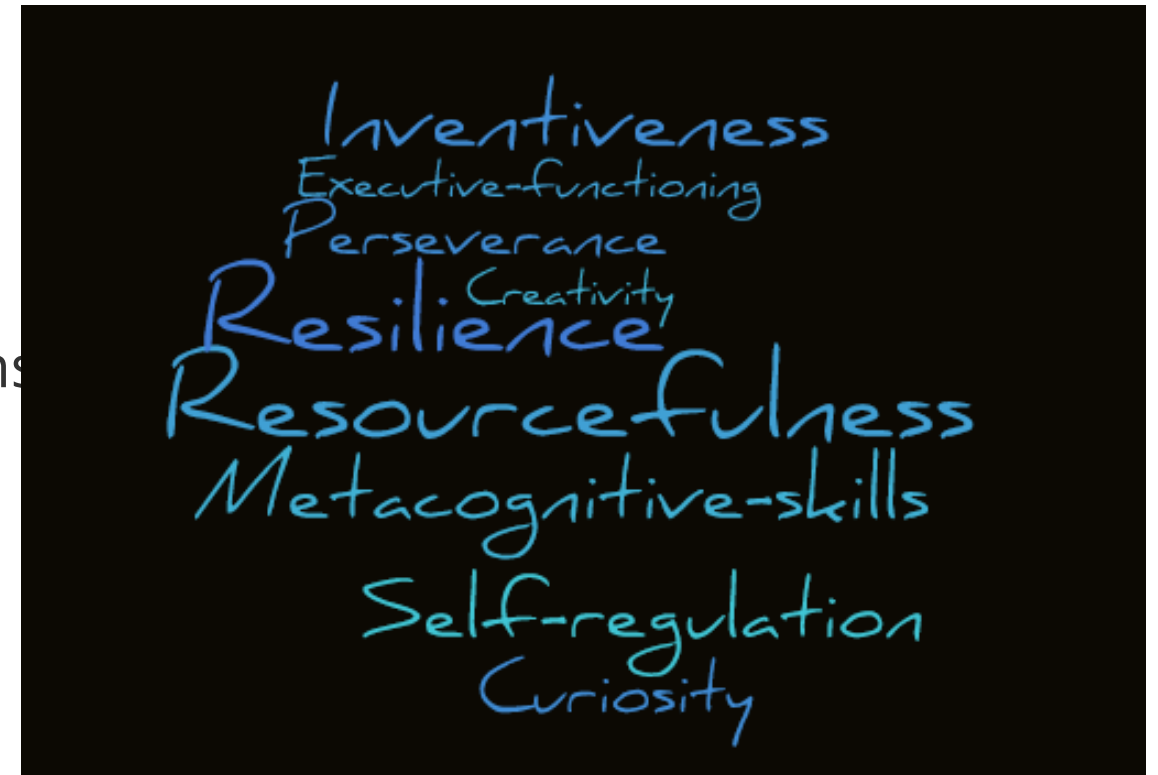
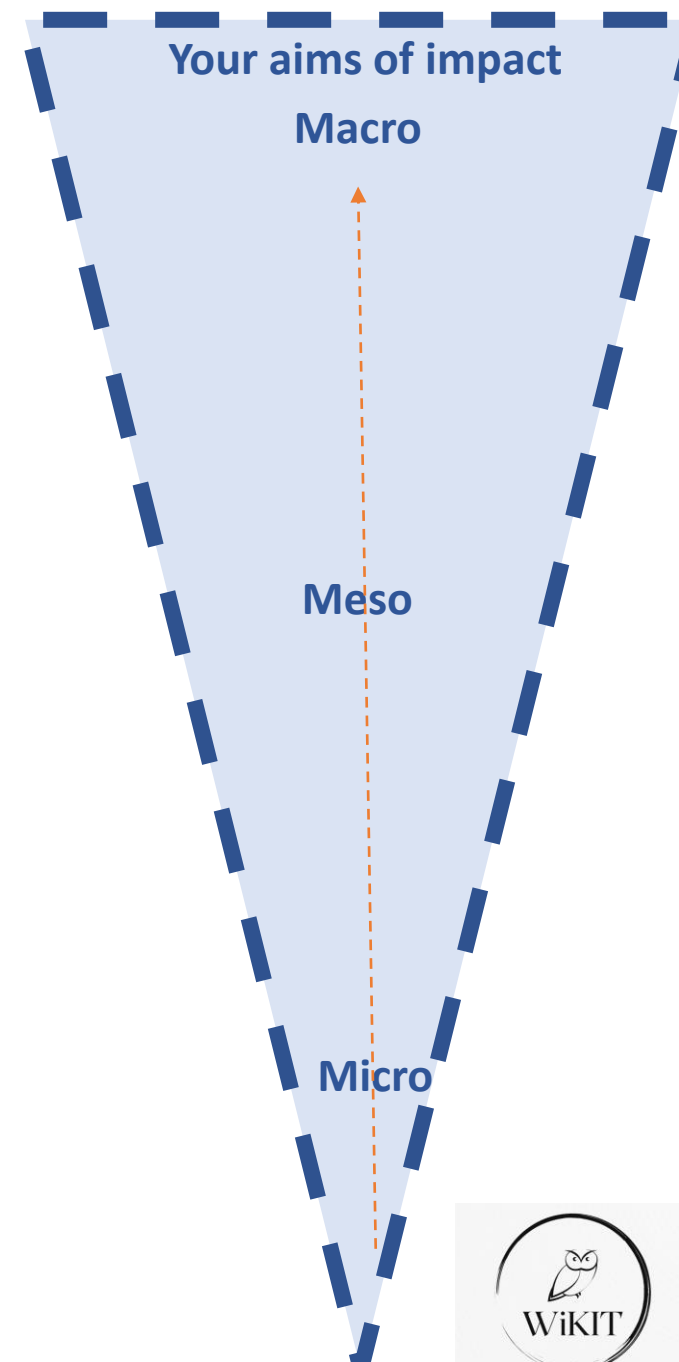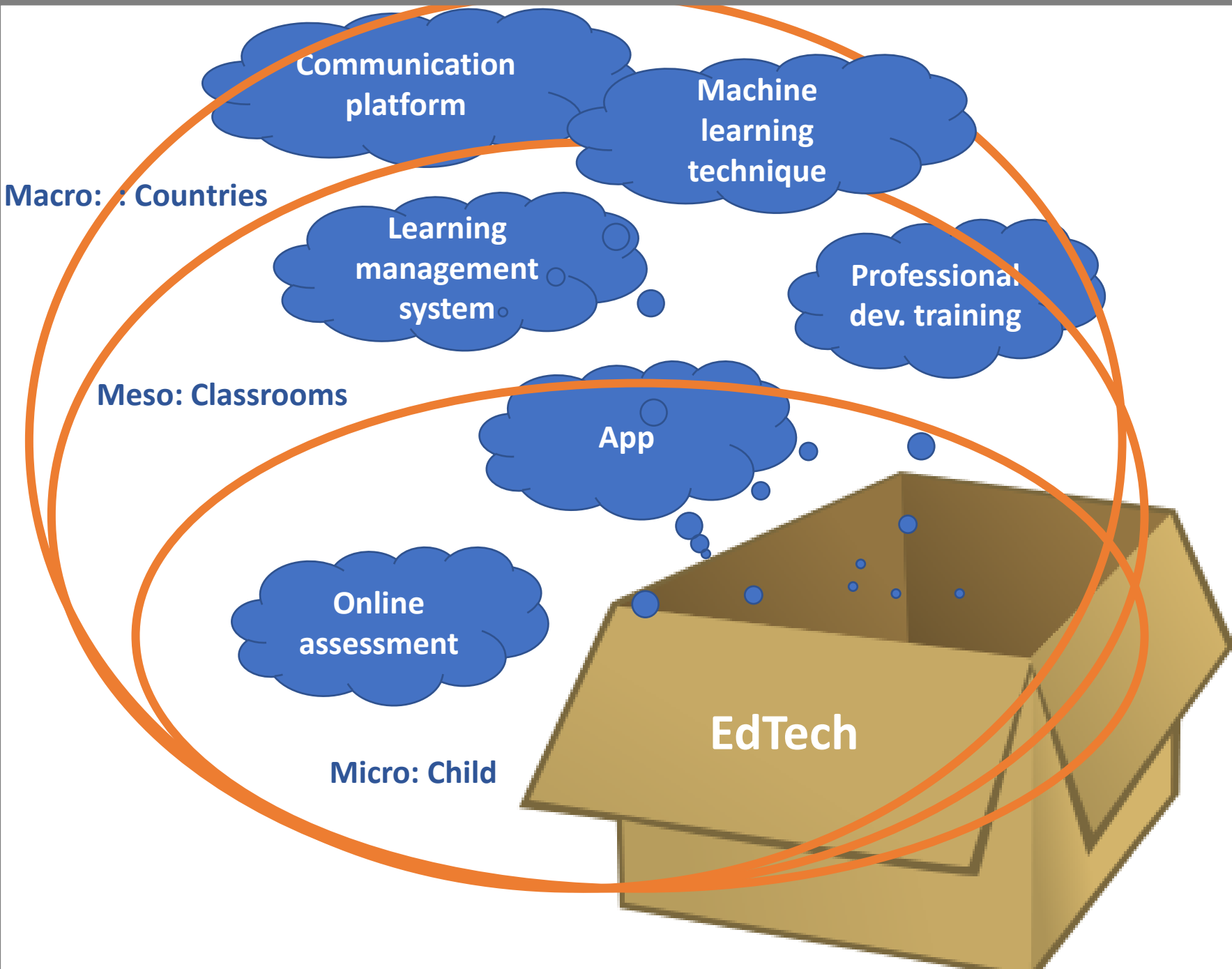# EdTech learning design integrated with science

Design that integrates learning and developmental science supports children's:

- inquiry and investigation
- application of knowledge to new situations
- production of ideas and solutions
- collaborative problem-solving

... Beyond rote learning ...

Breaking away from the "learning crisis"
The "whole child" approach

Darling-Hammond, L., Flook, L., Cook-Harvey, C., Barron, B., & Osher, D. (2020). Implications for educational practice of the science of learning and development. *Applied developmental science*, *24*(2), 97-140.

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Competitor analysis

- Where do you sit in relation to similar products?

Compare your value proposition

against closest competitors by searching EdTech

Databases and their rating criteria, e.g.

EdTech Hub:

https://edtechhub.org/edtech-tools/

Common Sense Media

https://www.commonsense.org/education/

What is your value proposition?

The problem you are solving

The road to get there

The beneficiaries

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Exploring Key Issues in Early Childhood and Technology

Evolving Perspectives and Innovative Approaches

Edited by

The Routledge Handbook of Digital Literacies in Early Childhood

Edited by Ola Erstad, Rosie Flewitt, Bettina Kümmerling-Meibauer and Íris Susana Pires Pereira

The Routledge International Handbook of Learning with Technology in Early Childhood
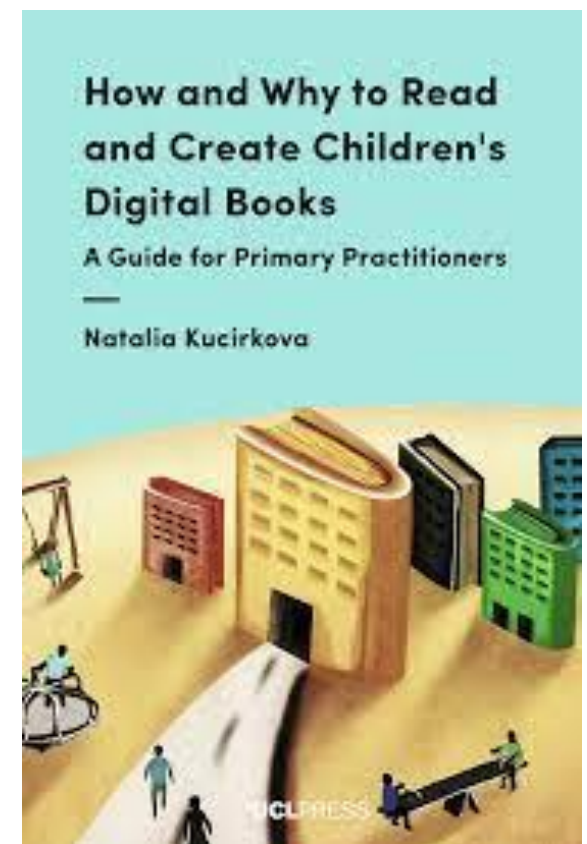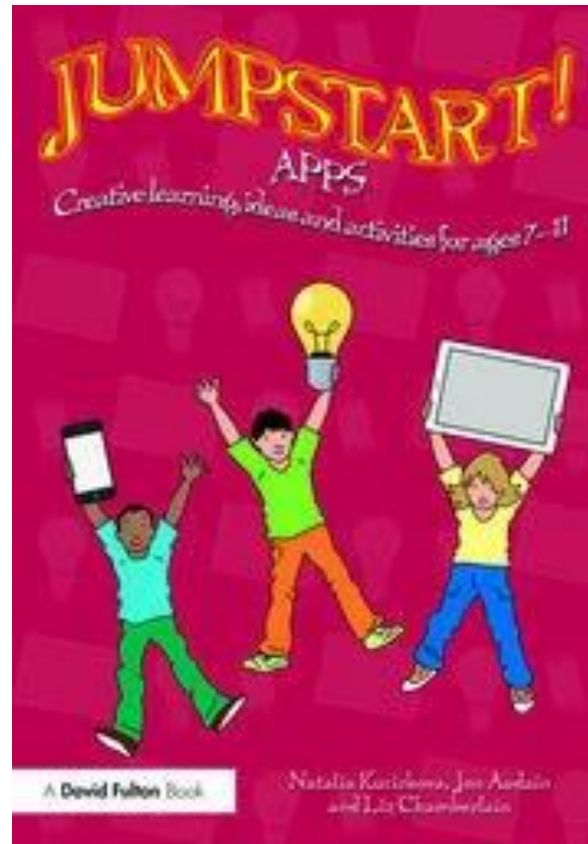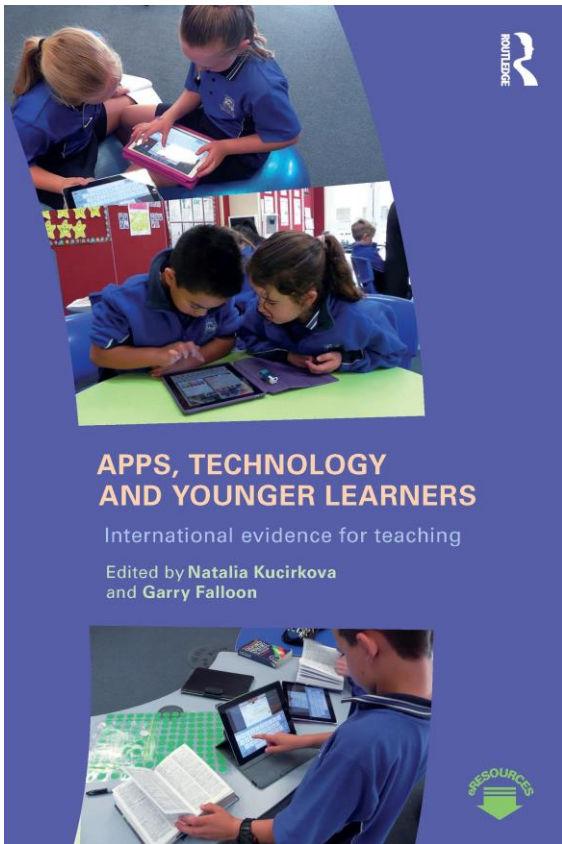
by Natalia Kucirkova, Jennifer Rowsell

Technology and Digital Media in the Early Years

Tools for Teaching and Learning

Further reading

For ideas, critical theories, examples of practice, design new innovations

How to use EdTech in classrooms? Ideas for teachers

About this document

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Suggested citation:

Kucirkova, N. (2022) EdTech and Evidence: the whys and hows. Working paper. Available at: www.wikit.no/method

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