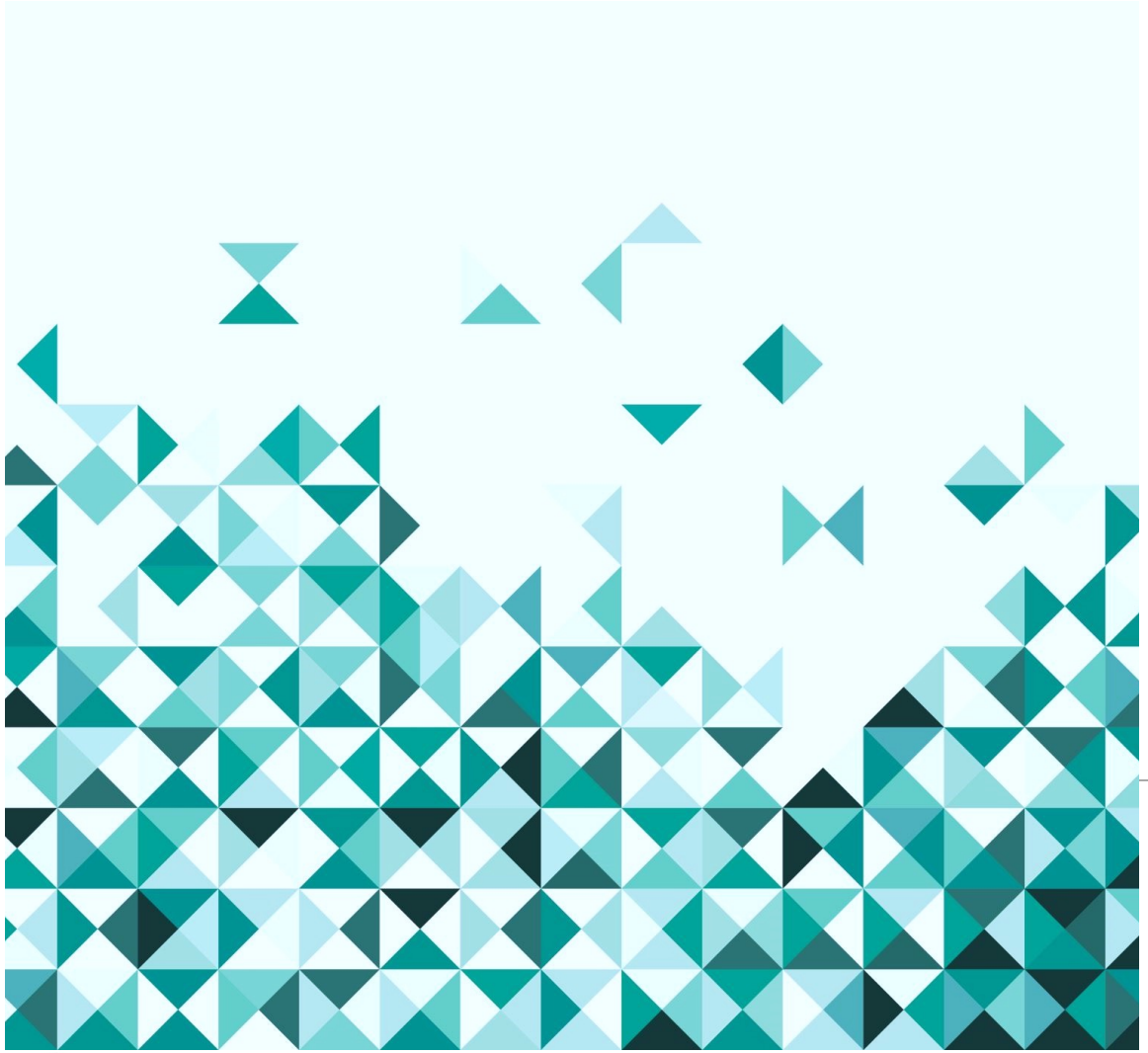

VRAILEXIA

Partnering Outside the Box

Digital and Artificial Intelligence Integrated Tools to Support Higher Education Students with Dyslexia

ToT: Training of Trainers

Pilar Aparicio-Martinez, PhD

Sara Pinzi, Professor

Emrique Yeguas, Professor

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Module II: Dyslexia and VR

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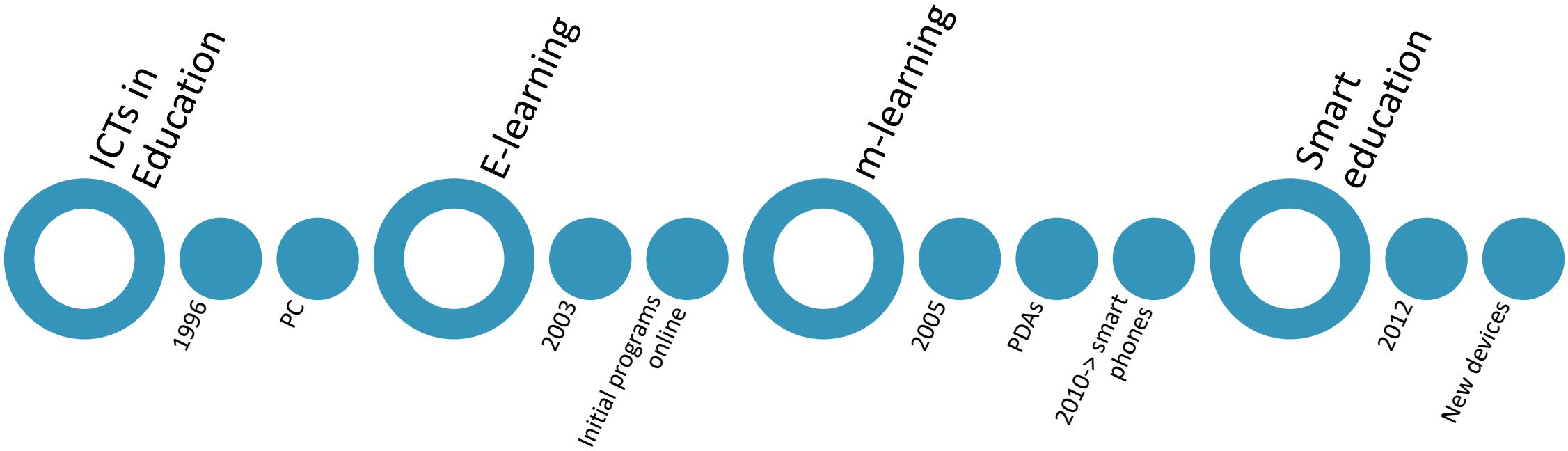
Technologies for education



QUALITY IN EDUCATION

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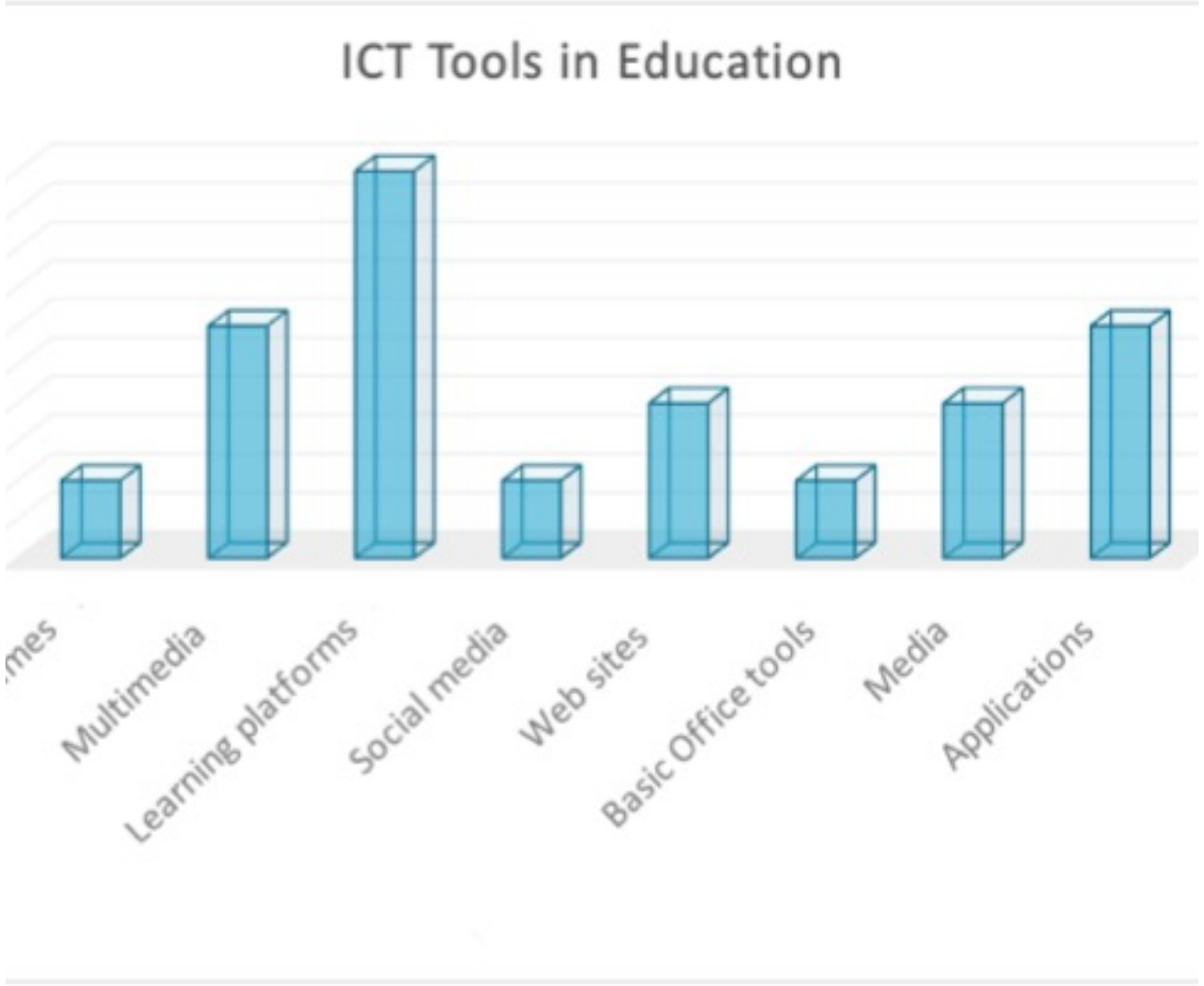

Zapata-Cifuentes, E., Sarmiento-González, C., and Nieto-León, **W. Dyslexia, ICT and Foreign Language: Integration Through Management**. 19th LACCEI International Multi-Conference for Engineering, Education, and Technology: "Prospective and trends in technology and skills for sustainable social development" "Leveraging emerging technologies to construct the future" 2020

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Dyslexia and tecnhology

"Brain-based type of learning disability that specifically impairs a person's ability to read."

Diverse interventions and strategies: developed and grow the compensatory mechanisms

Dyslexia

Information and communication technologies have been implemented for decoding (Mobile apps) and writing (software)

There are not enough technologies that help dyslexic students in the learning process

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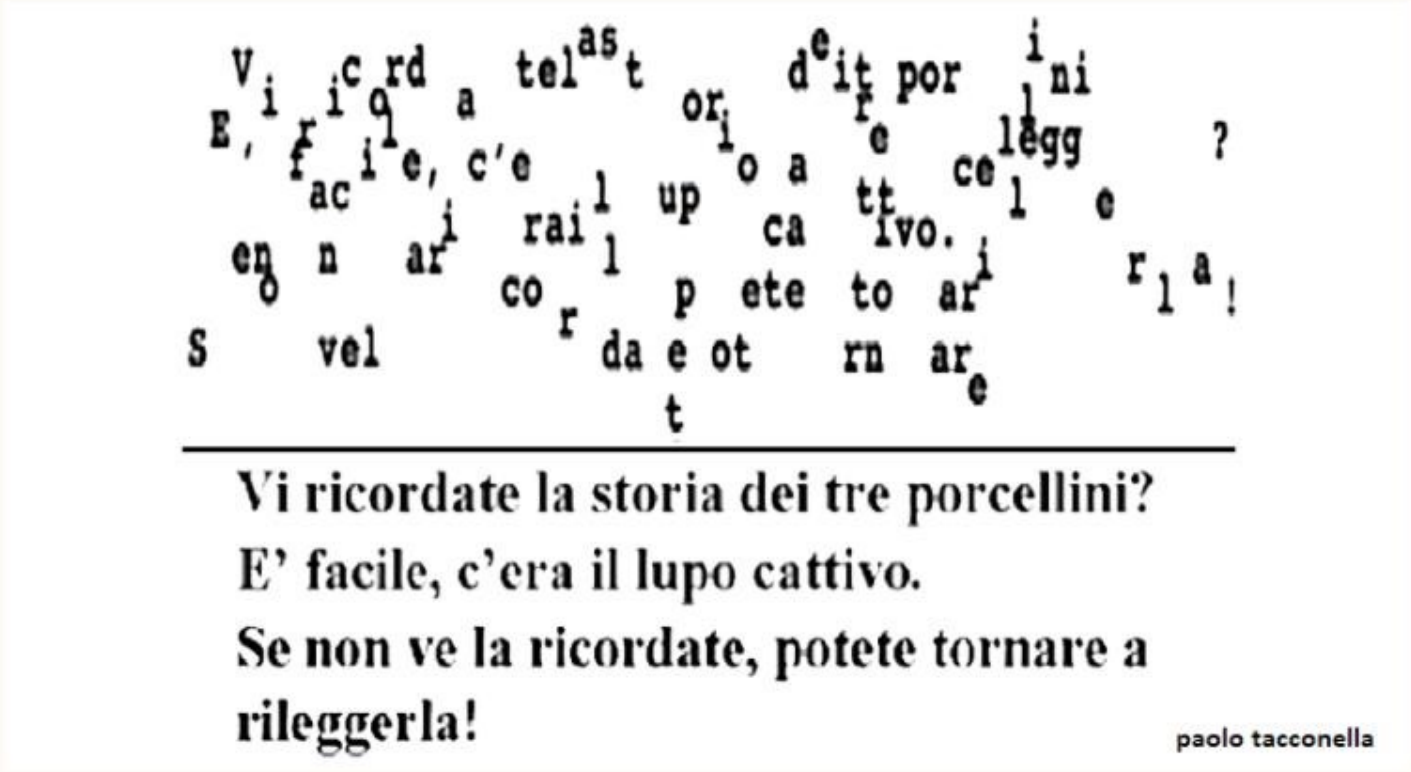
DISLESSIA:



Persons with dyslexia recognition of text (https://www.aiditalia.org/it/la- dislessia)

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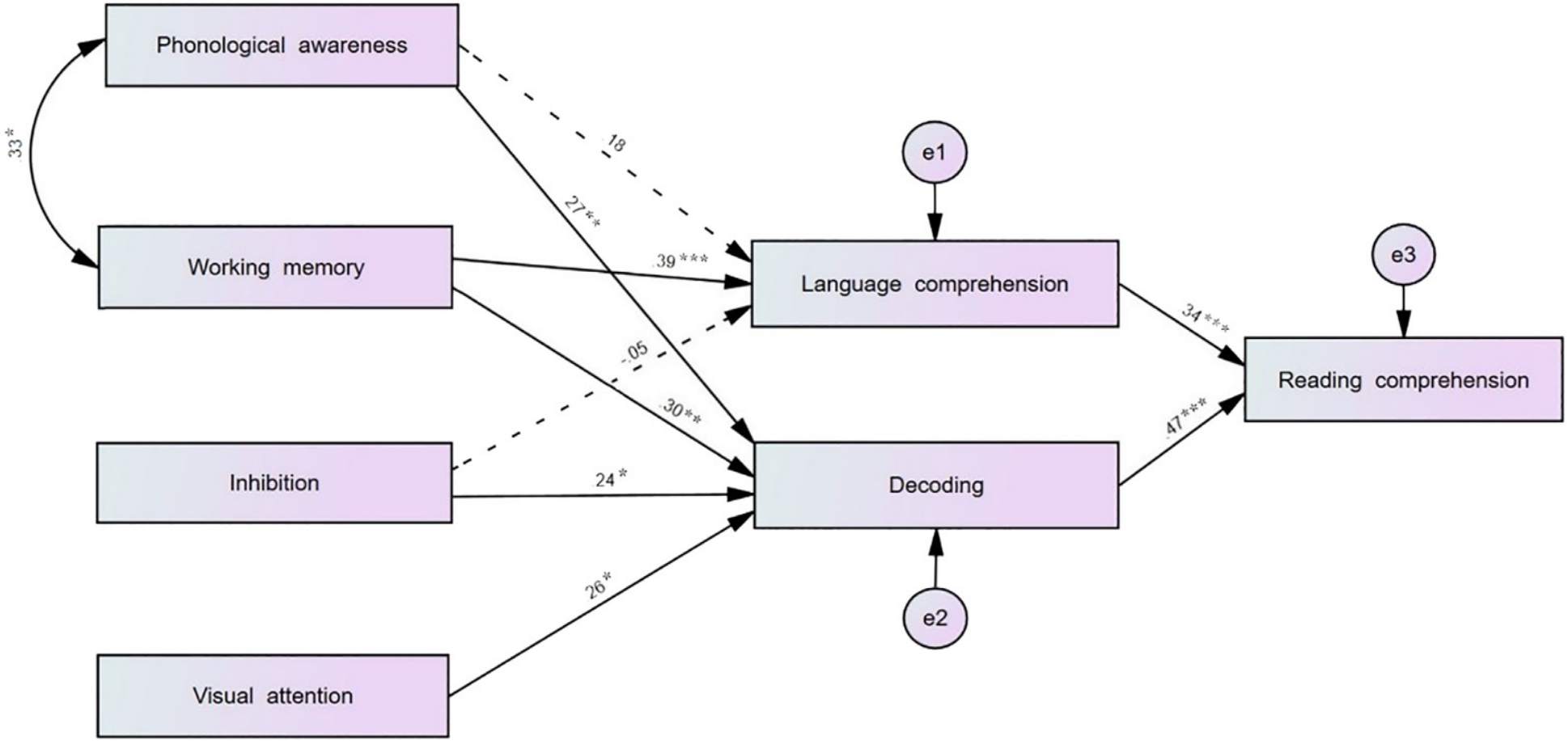

TARAN, NIKOLAY & FARAH, ROLA & DIFRANCESCO, MARK & ALTAYE, MEKIBIB & VANNEST, JENNIFER & HOLLAND, SCOTT & ROSCH, KERI & SCHLAGGAR, BRADLEY & HOROWITZ-KRAUS, TZIPI. (2022). THE ROLE OF VISUAL ATTENTION IN DYSLEXIA: BEHAVIORAL AND NEUROBIOLOGICAL EVIDENCE. HUMAN BRAIN MAPPING. 43. 10.1002/HBM.25753.

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ICT as a facilitator and equal conditions in terms of acquiring the necessary skills to function in different contexts

Outlines competitiveness in an integral way

ICT AND DYSLEXIA

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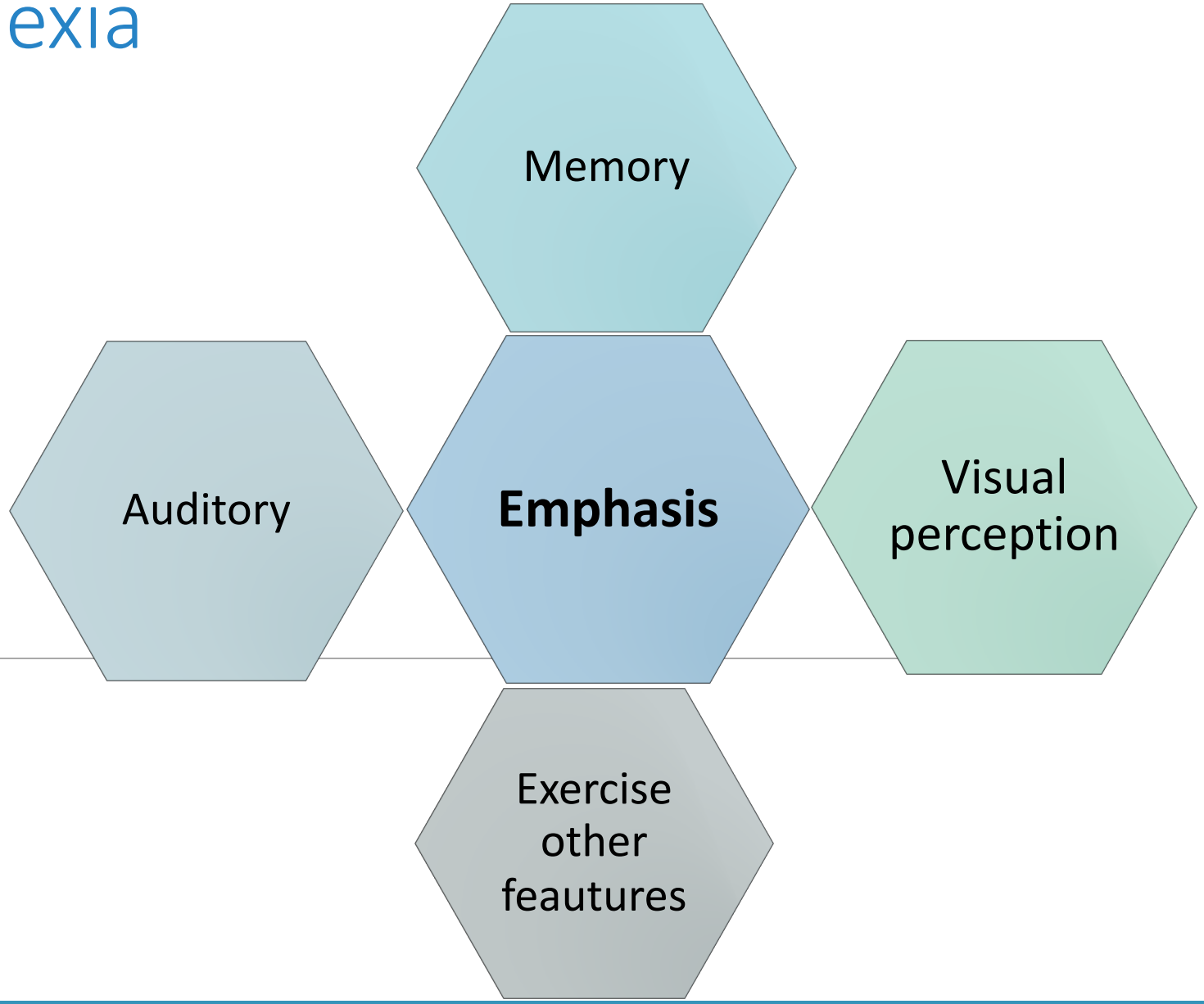
Applications in dyslexia

EasyLexia



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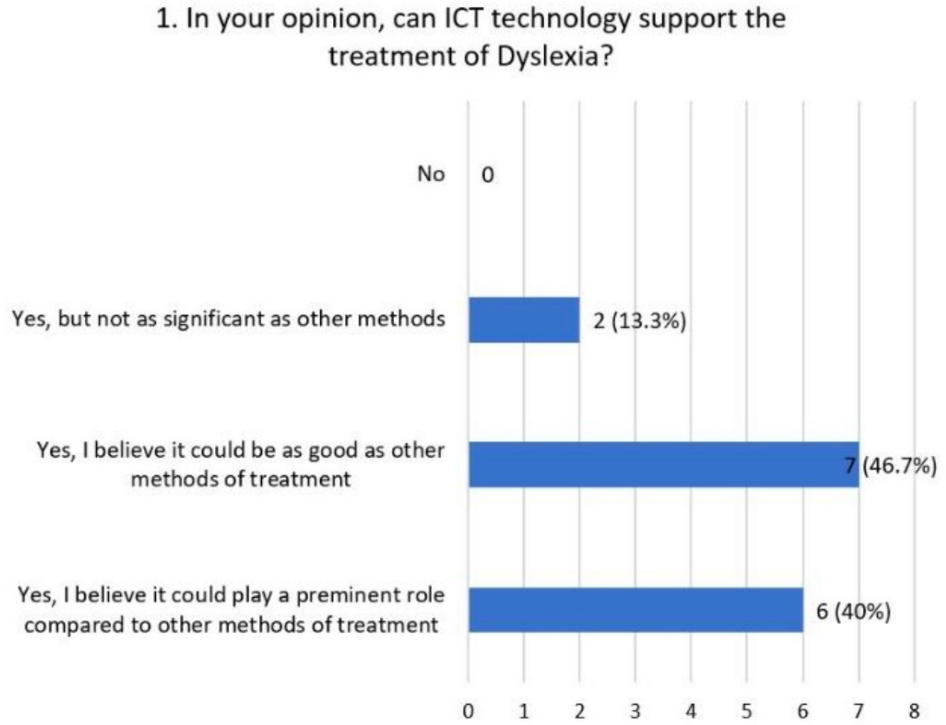
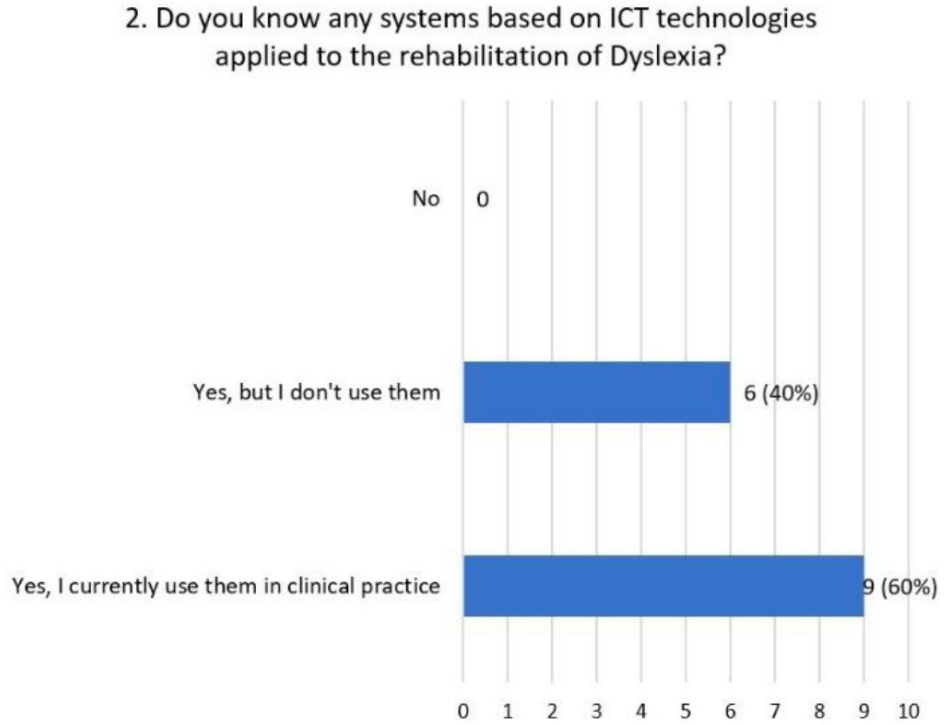


(a)



(b)

FORDYS-VAR:

LORUSSO, MARIA & BORASIO, FRANCESCA & ROLD, MARTINA & MARTINUZZI, ANDREA. (2021). TOWARDS CONSENSUS ON GOOD PRACTICES FOR THE USE OF NEW TECHNOLOGIES FOR INTERVENTION AND SUPPORT IN DEVELOPMENTAL DYSLEXIA: A DELPHI STUDY CONDUCTED AMONG ITALIAN SPECIALIZED PROFESSIONALS. CHILDREN. 8. 1126. 10.3390/CHILDREN8121126.

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Virtual Reality

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VR

Generation of dynamic and controllable 3D environments

It is one of the latest techniques in both education and entertainment which proved its effectiveness

Motivates the students to learn, interact and make the learning processes more productive

Successfully supported students learning in general, and students with dyslexia specifically.

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VR

- Customize
- Engaging further the user
- Design
- Adapt material

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VR has been applied to medical, educational and entertainment fields

"People initially use technology to do what they do now – but fast" (Fubini's)

Transition from the real world to the virtual world

Based on the idea an avatar and animated environment

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Effective VR?

Immersion	Inclusion of elements unrealistic that trap you
Presence	Connection between virtual world and reality
Transduction	Access the virtual stimulus

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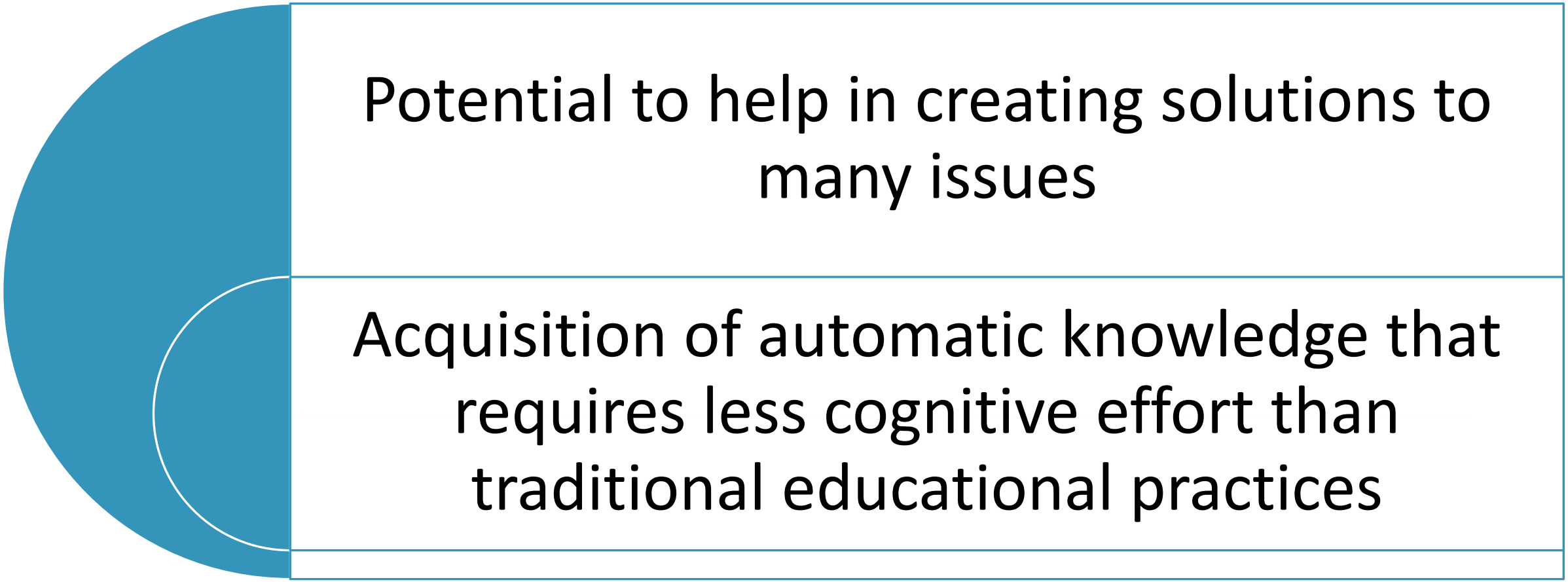
VR a tool for dyslexic students



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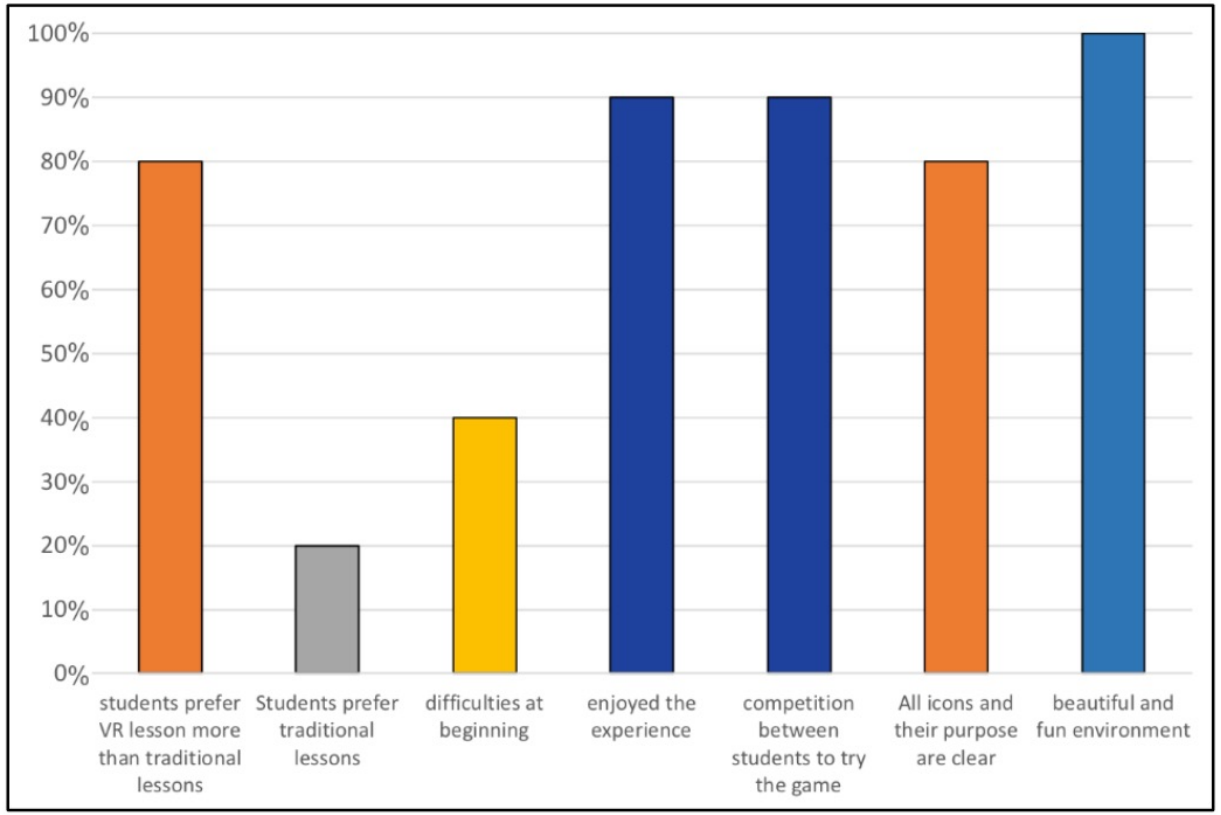
VR for education of dyslexic students



MASKATI, E., ALKERAIEM, F., KHALIL, N., BAIK, R., ALJUHANI, R., & ALSOBHI, A. (2021). USING VIRTUAL REALITY (VR) IN TEACHING STUDENTS WITH DYSLEXIA. *INTERNATIONAL JOURNAL OF EMERGING TECHNOLOGIES IN LEARNING (IJET)*, *16*(09), PP. 291–305. HTTPS://DOI.ORG/10.3991/IJET.V16I09.19653

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Positive effect

More playful environments that can improve adherence to treatment

Reduce negative consequences for the learner

Immediate feedback and can have high levels of interactivity

A multisensory approach: learning process

Most promising avenues of treatment in the field of dyslexia

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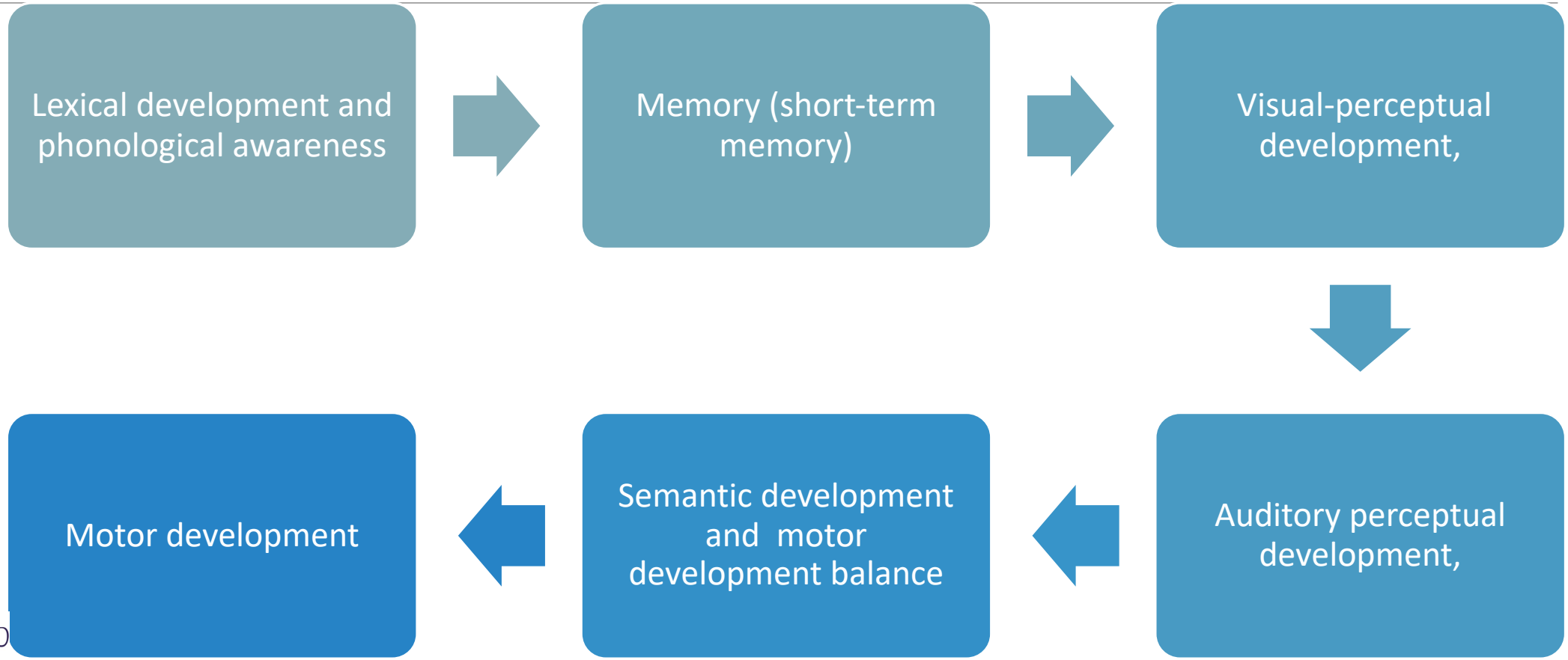
What has been improved by VR?



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How has been implemented?

Gamification	flexibility	Diverse levels	Encompass the contents
Indirect interventions	Determination of issues	Possibility of grow	Advancement of inclusion, treatment and rehabilitation

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VR and dislexia: two main areas

TREATMENT

Development of other set of skills

Before grade three and should last up to six months

EVALUATION

As screening of further issues

As a initial or continuos to determine the impact of the interventions

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Difficulties of the VR and dyslexic students

Combination of multiple Scientifics:	Requirements for carrying out the VR experience:	Education to educators:
• Neurosciences, linguistic, educators and engineers for the creation and definition of the adequate VR according to the purpose of analysis	• Control room or specific area	• Some previous training

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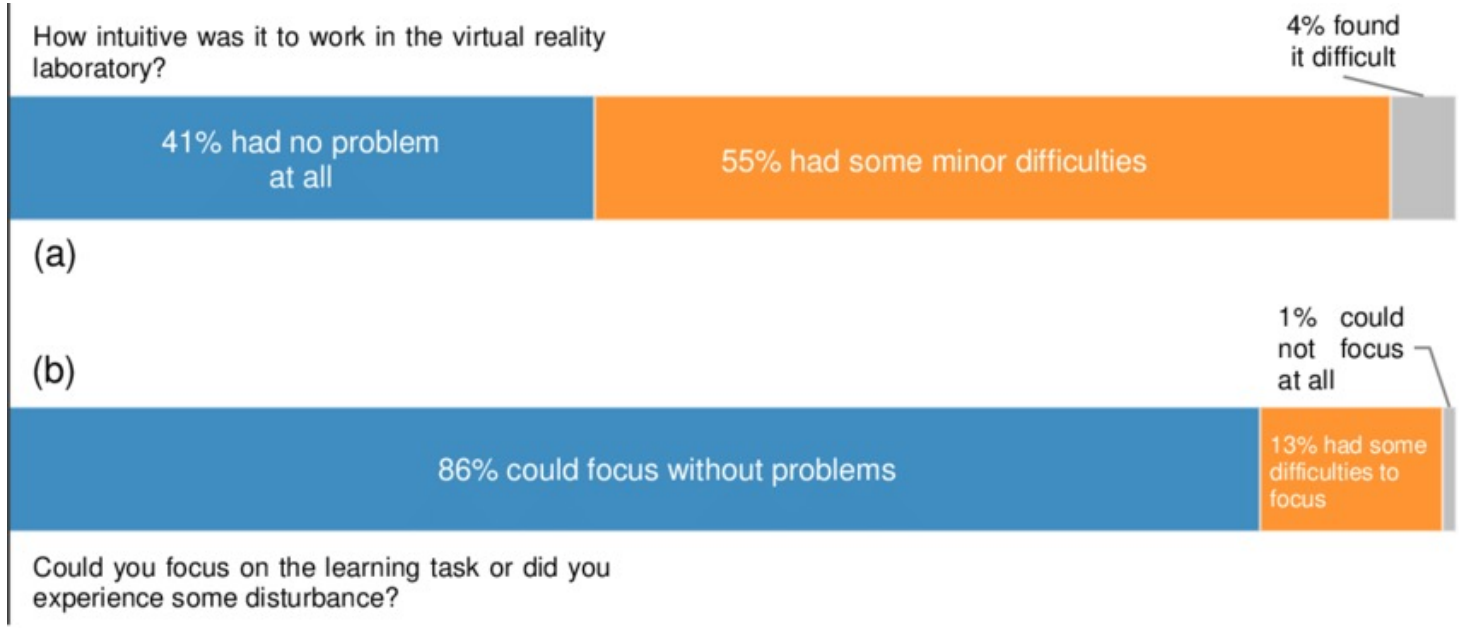

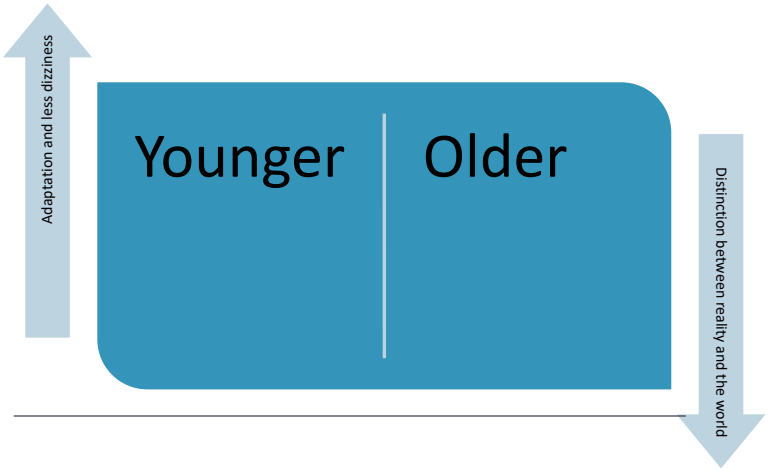

Schminder, Jörg & Nilsson, Filip & Lundberg, Paulina & Hag, Christoffer & Najafabadi, Hossein. (2019). An IVR Engineering Educational Laboratory Accommodating CDIO Standards.

What has been made?

Little studies have incorporated the VR with dyslexic students

- Started 5 years ago

The tests focused on:

Movement

Distinguishing letters and learning process

Decrease the reading anxiety

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WE CAN FIND THREE MAJOR VR FOR CHILDREN

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KOBI-360

Kobi – the mobile app

Colouring method helps the brain to distinguish letters faster

Continuous training

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500

SPELLBOUND

Created for children with dyslexia and dysgraphia

Better formation and word recognition

Based on magic and spells

Only under the supervision of a qualified professional such as an occupational therapist or special-ed teacher

Saved all the performance of the child in the dashboard: improving their reading and writing skills.

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FORDYS-VAR: VR EXPERIENCE

- Created for children with dyslexia and dysgraphia
- Improvement of diverse areas not only letters
- Based on space and intergalactic missions
- For educators aid for dyslexic students and theirs needs
- Saved the data
- More complete and complex

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fordyVAR

Fostering Inclusive Learning for Children with Dys

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What we have?

Previous studies	Children and adolescents
	Connected with severe resources
	Initial development
Our study	Young adults
	Same difficulties with compensatory mechanism but without correct implementation
	Lack of research and educational tools at HEIs level
	Lack of VR focused on understanding and comprenhesion

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Thank you for your attention. Any questions?

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