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DESIGNING A BOOK CHARACTER FOR KIDS WITH AUTISM SPECTRUM SYNDROME (ASD).

Presenter

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Introduction

The creation of an adaptive book character represents a challenge, even more so in books for children with ASD, in which their cognitive capabilities are more limited, in addition, a book design character that is not adaptive for children with autism, can have several negative effects; Among them, isolation, low motivation, difficulty in learning and low content understanding.



Importance

A correct adaptive book design character creation, focusing on autistic kids, it can generate positive effects, and improve learning and reasoning, instead of negative effects, as well as looking for book digital character interactive solution in which can improve motor skills in kids with ASD.

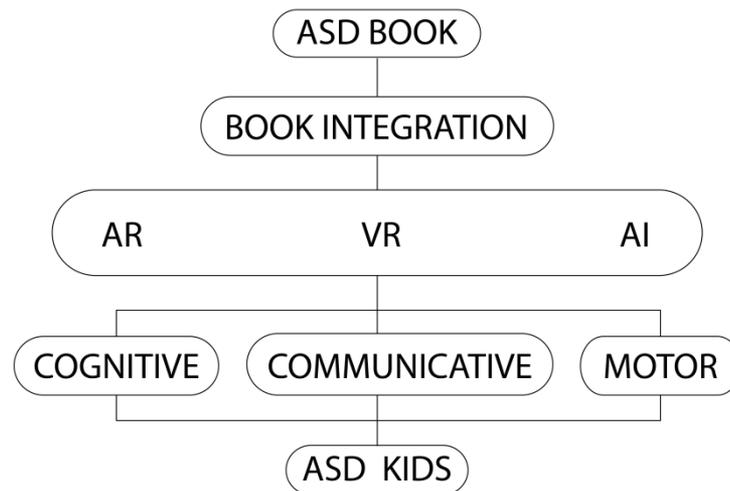
Furthermore, the combination of physical design with digital design using advance technology is a big step, will not only improve the learning education processes, but also to modernize the education in our digital time.

Key advantages:

- Interactive Learning experience.
- Improve learning processes.
- Motor, communicative and Cognitive skills stimulation.
- Turn education funny and interesting.

Adaptive (ASD) Book character design

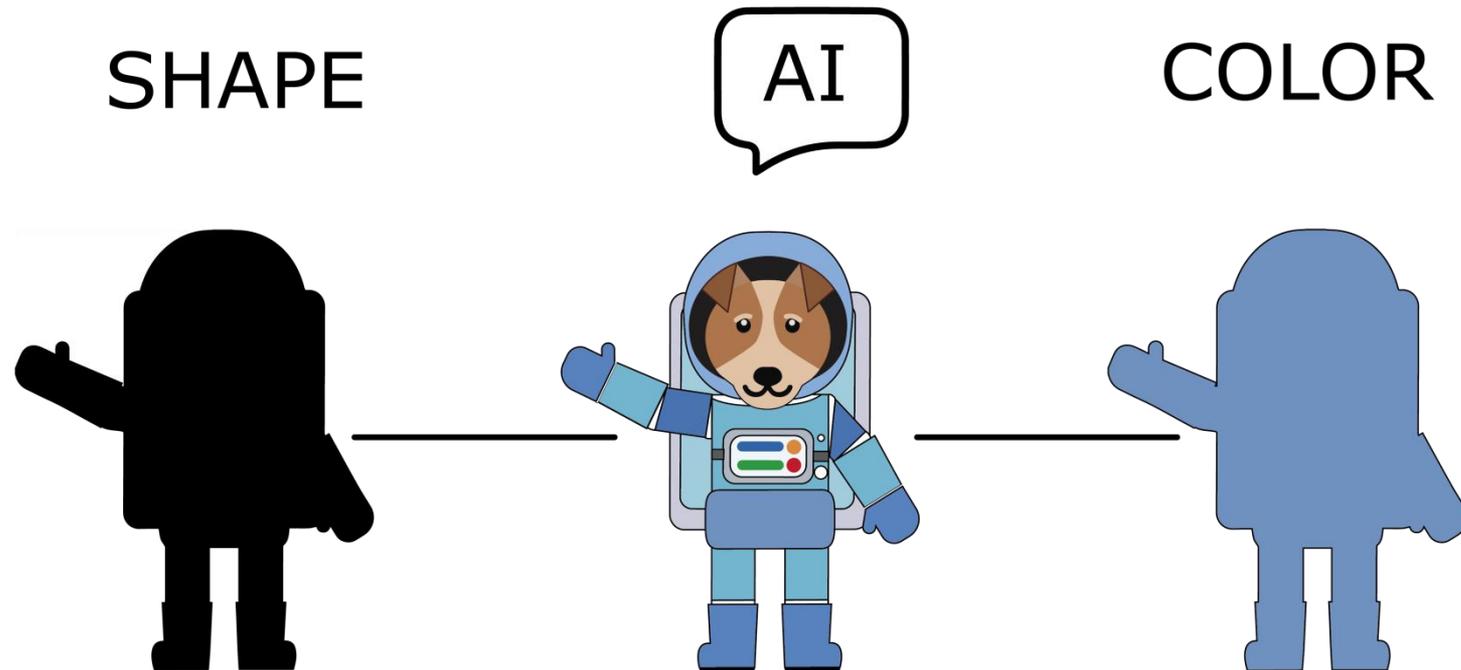
According to the author *Т. Ю. Быстрова, Л. В. Токарская* [1], explains that some of the key elements to improve the life of the autistic, is the improvement of: **cognitive capabilities, motor capabilities and communicative skills**, taking this as a reference is possible combine digital book character with the use of: **Augmented Reality (AR)**, **virtual reality (VR)** and **Artificial Intelligence (AI)**, in order to improve their Cognitive, motors and Communicative skills and in consequence their lifestyle and health.



Structure Adaptive Book character design

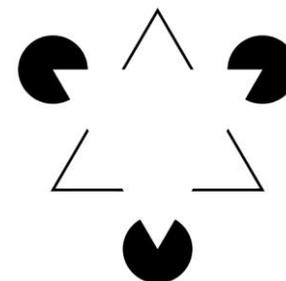
Development adaptive Design character

The following rules of character development, involve 3 main steps, **shape**, **color** and **AI** communication, in which can be used in a 2D physical media or in a digital artificial media (AR or VR).



Shape

Shape: The correct shape of adaptive character design book for kids with autism spectrum disorder need to have a design adapted to their cognitive and visual perception, highly detailed character, can lead the child to have stress due to the need to understanding of each element, but also is fundamental to avoid the Gestalt rules of Closure, by the fact that kids with ASD understand each element as an individual element and not as a whole



Correct form character design creation comparisons.

Rules of Closure, Gestalt theory.

Color

Colors, can affect emotions and decisions individually. Adaptive color choices for children with autism spectrum disorder are the basis of a positive experience due to their difference in color perception [5]. One can agree that the right color for children with autism can increase the human sensory sense (vision), in which it is associated with focusing, communication, and learning [6].

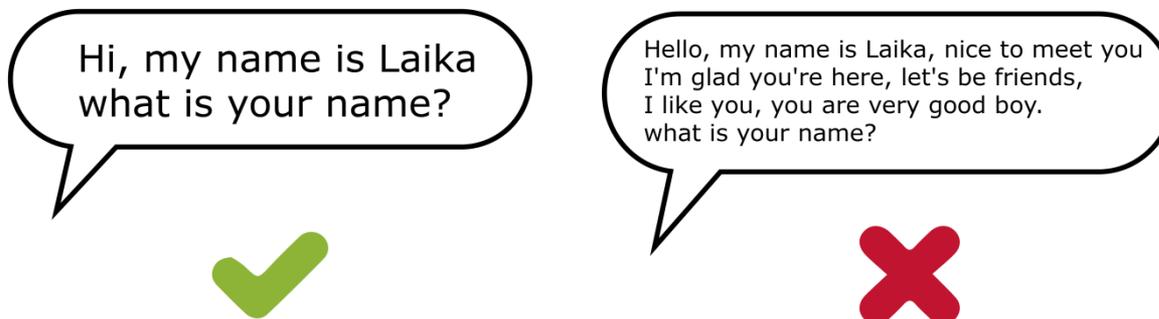
The wrong color choices can make children with autism feel confused, irritate and avoiding them to participate in a particular task [Img04]. This color should work as a sensory integration in which children with autism can be helped to improve cognitive capabilities [6] [5].



Incorrect and correct color palette for kids with autism spectrum disorder (ASD).

AI

Artificial intelligence (AI), is a powerful tools in which integrated, can allow the character to understand and answer some questions, but also to ask some question or task in which the kids can follow, this communication need to be easy to understand with short, slow sentences [7], but also the text need to be easily visible and readable due to the fact that autistic kids, tend do avoid visual contact, or in short period of time.

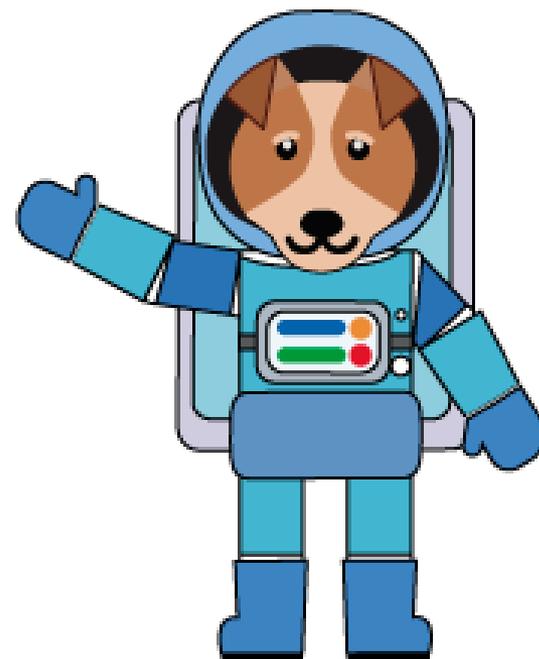


Incorrect and correct character dialog for with autism spectrum disorder (ASD).

Conclusion

was made a practical test in a school with kids with ASD, in Russia, from kids between 8 to 14 years old, and showed that the kids have a better understanding of 2D and 3D character, when have the correct selective color palette, shape and correct dialog using AI, while high contrast images, with many elements, details, with very bright colors or complex dialog showed a negative emotional effects from kids with ASD.

Is important to highlight that, this rules of design and solution of character creation, do not attempt to replace teacher or pedagogue from school, instead seeks to offer a tools in which teacher can use for helping the kids with autistic spectrum disorder.



Correct adaptive book character design

Literature

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7. *Tuomi, Ilkka. The Impact of Artificial Intelligence on Learning, Teaching, and Education: Policies for the Future, 2018. 31с.*