Motivation of students in special education improves if they use gestures with computers

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The motivation for and involvement in learning among students with special educational needs improve through the use of gestural movements of the body rather than devices such as the mouse or the keyboard when they interact with computer programs of a pedagogical nature. This has been confirmed by the French computer scientist Benoît Bossavit in his PhD thesis read at the Public University of Navarre (NUP/UPNA)

Bossavit has tackled the pedagogical potential of Natural User Interfaces (NUI). These natural user interfaces are remote interactions with computing programs or systems based on gestural movements of the body rather than resorting to devices such as a mouse or keyboard. "Most of the works published explore the application of these interfaces with people whose cognitive and motor development is typical and relegates to a second position the study of their possible impact on children with special educational needs," pointed out Benoît Bossavit.

That is why his thesis has focussed on the hypothesis that these interfaces could also support learning in children with special educational needs. "With this aim in mind I designed two techniques for interacting with Microsoft Kinect, a videogame controller for the Xbox 360 video console and also for computers," explained Bossavit. "Firstly, an interface known as Body Menu, which associates icons with the body and allows them to be selected by touching the corresponding parts of the body. Secondly, the so-called Crank Handle, which allows virtual 3-D objects to be manipulated with one hand and which is based on the

metaphor of rotating handles to orientate these elements. These two techniques were integrated into educational tools whose pedagogical use was assessed in three studies."

Pamplona and England

These studies were run at the Andrés Muñoz Garde Public School for Special Education in Pamplona (Navarre) where the students have cognitive and motor disabilities; at the New Forest School (located in the New Forest in the south of England), a school specialising in teenagers with high cognitive functioning autism; and at three schools in Navarre in Primary and Secondary Education.

According to the conclusions of his thesis, "the natural user interfaces increase participant motivation and involvement, although evidence is still lacking to confirm its support for learning. What is more, the collaboration of the teaching staff at the schools is essential for the design and development of educational tools that can be adapted to the needs and skills of these children," he concluded.

More information: Designing an educational game for and with teenagers with high functioning autism. DOI: 10.1145/2940299.2940313

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