



## **The use of Kinect<sup>®</sup> to improve motor skills and increase autonomy**

### **The context for the use of ICT for Inclusion**

Microsoft's Kinect motion sensor was used in special needs education to improve students' motor skills. The students describe their own movement problems, experienced in real-life situations. Improving their motor skills is part of increasing autonomy and citizenship inside and outside school situations. Students who participated in this project experienced dynamic balance problems ('I often fall when I play outside') and physical fitness problems ('I get out of breath quickly when I play soccer with my friends').

### **The policy context**

Stated objectives/research questions:

- What is the effect of training dynamic balance and physical fitness with the Kinect?
- Does working with the Kinect improve motivation for motor learning?

### **The use of ICT**

The available games for Kinect were selected based on their suitability for physical fitness and balance training for students. Students trained their skills with the Kinect during a period of 15 weeks. Physical fitness training was provided twice a week. Balance training was provided once a week. The balance exercises could be made more difficult by standing on a balance board.

Students plan their work by choosing to train the motor skills they need in everyday life. They play the Kinect games that are most similar to their own real-world problems and they reflect on the learning process through feedback given by the Kinect. Once a student is used to learning using the Kinect, little supervision is needed.

The following is an example of planning and self-regulation. A student wants to play tennis in real life, but experiences postural balance problems. She describes the problem and chooses a Kinect tennis game to learn the necessary movements. She can choose to play the game alone or to collaborate with another student or teacher. While participating in the virtual game, the student sees her own movements as movements in the game. After each game she can view her own recorded performances and this facilitates self-reflection. The types of feedback given by the Kinect facilitate appropriate motor planning and self-reflection. The student gains knowledge about the trained motor skills and develops better judgement about her competence (perceived competence). Applying the learned skills to real-world situations is plausible because the skills were trained in an implicit way.

### **Key outcomes and benefits**

Learning outcomes/research outcomes:

- Significant improvement of balance (measured with the Movement Assessment Battery for Children test) and significant improvement of physical fitness (measured with the shuttle run Gross Motor Function Classification System 1 test)
- Significant increase in motivation (measured with a motivation questionnaire).

### **Main challenges and obstacles**

- Converting an existing game into a learning situation where the set goals had to be achieved



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- Developing the necessary additional material.

**Additional information**

<http://onderwijsinbewegingmetkinect.wordpress.com/about/>