



# Playing Games on-line and at the schoolyard for generating meanings on Science

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Engaging in processes that require working together in groups for addressing complex scientific problems is an issue that has come at the surface lately in the field of Science Education. The Study on which this poster reports concerns how students come to generate meanings about moving in Newtonian spaces as they collaboratively addressed complex scientific situations.

The Study took place in the 1st Experimental High School of Athens with fourteen 13 to 14-year-old students divided in three Groups and lasted for 20 school hours. We particularly focus on how students talked about scientific laws and concepts as they observed the motion of different objects while playing games at the schoolyard and as they worked on-line with a 3d microworld called “3d Juggler” (Smyrnaïou et al., 2012). 3d Juggler (Kynigos, 2007) is a game microworld that is designed to offer students opportunities to build and explore models of motions and collisions inside a Newtonian 3d space. The students, after carrying out a set of experiments at the schoolyard using different types of balls (e.g. tennis balls, basket balls etc), moved to 3d Juggler to collaboratively create their own games that would include shooting balls and hitting specific targets. To explain in detail the exact design of their game, the students were also encouraged to use Pixton, a story-telling tool. While working on-line with the 3d Juggler microworld, the members of the Group communicated through a Discussion Tool, which, just like the 3d Juggler Microworld, is integrated in a web-based Platform call METAFORA.

The poster presented during the Constructionism 2012 Conference will include episodes in which the Groups of students discuss around their game constructions and engage in meaning making processes with regard to scientific concepts and laws that underpin the design of their games.

## Acknowledgements

Metafora: “Learning to learn together: A visual language for social orchestration of educational activities”. EC - FP7-ICT-2009-5, Technology-enhanced Learning, Project No. 257872.

## References

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