

# Expert seminar

## What researches tell us

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# eCONFIDENCE

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# EDUCATIONAL BENEFITS OF GAMES

- support knowledge acquisition
- bring about behavioral, perceptual and cognitive change
- an important learning method when provided with sound underlying pedagogical design



# How can serious games support learning?

- *Motivate students, providing a different learning context (Gallego et al. 2014)*
- *Help develop learning that is more meaningful*
- *Facilitate problem solving activities*
- *Promote more innovative and fun learning.*
- *Could encourage teamwork and learning collaboratively*



# How can serious games support learning?

- *Encourage the acquisition of psychosocial skills* (critical thinking, communication, leadership, persistence, spatial vision and cognitive and social development skills)
- *Help to learn in simulated situations* that reproduce the real world
- *Encourage memorisation* - improving memory by practical learning



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# How can serious games support learning?

- *Improve the digital competence of students - capacity to cope in the digital world*
- *Have great flexibility of use, depending on the objectives that arise and different itineraries, scenarios or contexts students encounter in the games environment.*



# Psychological effects of video games

- The vast majority of psychological research on the effects of “gaming” has been on its negative impact: the potential harm related to violence, addiction, and depression
- The nature of the games has changed dramatically in the last decade, becoming increasingly complex, diverse, realistic, and social in nature



# Psychological effects of video games

- Possible positive effects of playing video games were summarized in Granic et al. (2014) review focusing on four main domains: cognitive, motivational, emotional, and social.
- Greitemeyer and Mügge (2014) - data from 98 independent studies confirmed that video games had a significant association with social outcomes, both short and long-term effects



# Psychological effects of video games

General Learning Model (GLM; Buckley & Anderson, 2006)

- the effects video game play on social outcomes are assumed to depend to a large extent on the content of the game being played
- learning process is mediated by the internal state - one's physiological arousal, feelings, and cognitions that vary as a function of the ongoing situational episode in game





# Psychological effects of video games

General Learning Model (GLM; Buckley & Anderson, 2006)

- The learning that may occur consists of factual learning, learning behaviours, perceptual learning, and changes in attitudes, beliefs, and emotional reactions.



# Psychological effects of video games

- Granic et al. (2014) - potential of the games for interventions that promote well-being, including the prevention and treatment of mental health problems in youth
- Playing a prosocial (relative to a neutral) video game increases helping and decreases aggression (Greitemeyer & Mugge, 2014).



# Psychological effects of video games

- Modern theories of effective learning suggest that learning is most effective when it is active, experiential, situates, problem based and provides immediate feedback (Boyle et al., 2011)



# Implementation of ABA

## **ABA (Applied Behaviour Analysis) / behaviour modification**

application of principles of behaviourism (primarily operant conditioning), in order to modify behaviour as part of an educational or treatment process

Through manipulating the environment, players' behaviour could be changed in order to achieve desired goal → especially important in serious games design (Sawyer & Smith, 2008).



# Structure of ABA programmes

ABA programmes structures resemble computer games in many important ways (Linehan et al., 2011):

- clearly specified and measurable goals
- repetition of skills in order to achieve that goal
- conducted under time constraints
- clearly specified rewards for reaching the goal
- complexity is increased through the game levels



# PHASES OF ABA

ABA design typically includes several phases (Woolfolk, 2010):

- (1) recording the baseline measurement of behaviour
- (2) applying the intervention
- (3) comparing intervention effects with baseline
- (4) reintroduce the intervention if necessary



# TYPES OF CONSEQUENCES IN ABA

present, add, provide  
stimulus

remove, take away,  
terminate, withdraw  
stimulus

behaviour **increases**  
or becomes more  
probable

**positive  
reinforcement**

**negative  
reinforcement**

behaviour  
**decreases** or  
becomes less  
probable

**positive  
punishment**

**negative  
punishment**



# Conclusion

- Serious games as a new paradigm for education – gamification and social learning as key constructs for changes in educational practice
- Necessity of game evaluation in future research
- Importance of interdisciplinary approach





THANK YOU



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