

Educational Management and Resarch in Further Education

THE CONTRIBUTION OF MENTAL SIMULATION TO THE DEVELOPMENT OF INTUITION

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1. INTUITION

2. MENTAL SIMULATION

Intuition is an important quality of expertise which is

- developed through learning through experience,
- needed to recognize situational cues that allow experts to access memorized information spontaneously (Simon, 1992),
- the ability to distinguish patterns by small and opaque differences and make fast and successful decisions in uncertain non-routine situations (Dreyfus, 2016),
- and utilised to decide adequately and, therefore, to act appropriately in insecure and novel situations.

Mental simulation describes the process in which individuals mentally simulate difficult scenarios to evaluate possible courses of action (Klein, 2008). Decisions are evaluated to prepare for challenging tasks in the future.

The outcomes of mental simulations are assumed to enable professionals to

- develop rich schemata and mental models,
- solve problems and to make appropriate decisions within a limited time span (Kappes & Morewedge, 2016),
- and successfully act in future situations (Klein, 1997).

3. CRISIS RESPONSE WORK

CRW are trained volunteers who are called to emergencies (e.g., sudden deaths, severe accidents) and offer on-site spiritual support or counseling to victims and other affected individuals in a short time (<3 h) intervention (Martens, 2004). They aim



to prevent development of trauma by reactivating individuals' social networks after these individuals have overcome first reactions (Müller-Lange & Autschbach, 2013).

4. Research Questions

- 1. How does intuition help CRW to act successfully in novel and complex situations?
- 2. How do CRW use mental simulation to prepare for challenging tasks?
- 3. How does mental simulation help CRW to come up with solutions in

novel and complex situations?

5. Method

- Modified critical incident interview approach (Klein et al., 2010) using a semi-structured interview guideline (König et al., 2005).
- Participants with 3 to more than 500 operations; participants' experience:
 four novices (<3 years),
 - three intermediates (8–10 years),
 - and three experts (>20 years).
- Analysed using qualitative content analysis (Braun & Clarke, 2006, Mayring, 2008, and Schreier, 2013) with deductive and inductive coding (supported by MAXQDA).

6. Results

RQ 1: Pattern Recognition

The concrete grasp on this meta level, that you feel there is a human being who is steady. People clearly talk about their feelings. I don't mean saying, "Everything is alright. No problem." Hiding behind a mask doesn't work. Saying something like, "I just felt bad and now it's sinking." When people share their thoughts. (IV4)

RQ 2: Preparation

Some try not to think at all, others think/simulate (e.g. questions, hypotheses).

First, there was a motorcycle accident. I had been super nervous because I

did not know what to expect. And then I thought, "What should you do now? Do you go to the other motorcyclist? Or do you go to the one who slipped underneath the car?" (IV1)

RQ 3: Learning Outcomes

- Development of richer mental models.
- Feeling of being better prepared for tasks without prior experience.
- Having concrete goals.
- Focus on the important cues in a situation (professional vision and situational awareness).
- Taking the time to gain an overview.

7. Stages of Mental Simulation



- 4. Hypotheses for several steps ahead, the possible decisions, and the influence of those decisions on a situation.
- 3. Hypotheses about a potential situation and its influence on decisions.
- 2. Questions that formulate hypothetical answers.
- 1. Questions guiding situational awareness.



• Small sample size and only selfdescription of situational awareness/performance quality.

8. LIMITATIONS

 Need of replication through other measures of intuitive decisionmaking (e.g., skin conductance analysis or eye-tracking methods).

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