

## Introduction

- Self-regulated learning (SRL) is currently in the focus of psycho-pedagogical research
- SRL is composed of three cyclic learning phases: “Forethought”, “Learning”, “Reflection” (Zimmermann, 2002)
- Good SR learners use appropriate learning strategies and techniques
- Good SR learners achieve better learning results and are more motivated to learn (Veenman, 2011)
- Technological-enhanced learning environments provide opportunities to enhance SRL skills, especially metacognitive skills but learners need additional help and guidance (Bannert, 2006)
- In the EU project “Immersive Reflective Experience-based Adaptive Learning” (ImREAL) additional services are developed to augment and improve simulated learning environments – among others w.r.t. SRL and metacognition

? Can ImREAL services increase the frequency of the use of SRL strategies ?

## Method

### Participants:

- 76 Irish medical students (males 45/females 31) • Age: 23 years ( $M=23.04$ ,  $SD=2.85$ )

### Instruments:

- Questionnaire for SRL (Fill Girodano, Lietzenberger & Berthold, 2010)

Cognitive Strategies	Metacognitive Strategies	Motivational Strategies
Memorizing	Planning	Time management
Elaboration	Self-monitoring	Achievement motivation
Organisation		Internal attribution
		Effort

- Internal reliability:  $r=.65-.85$  • Norm sample:  $N=457$ ; Age: 16 years ( $M=15.68$ ,  $SD=1.41$ )

- Empower The User (ETU) simulator

- Simulation of interview situations e.g. people with different mental disorders
- The user is the interviewer
- Select questions and get adapted responses
- Number of attempts:  $M=1.40$ ,  $SD=.64$
- Duration time:  $M=22.16$ ,  $SD=10.03$

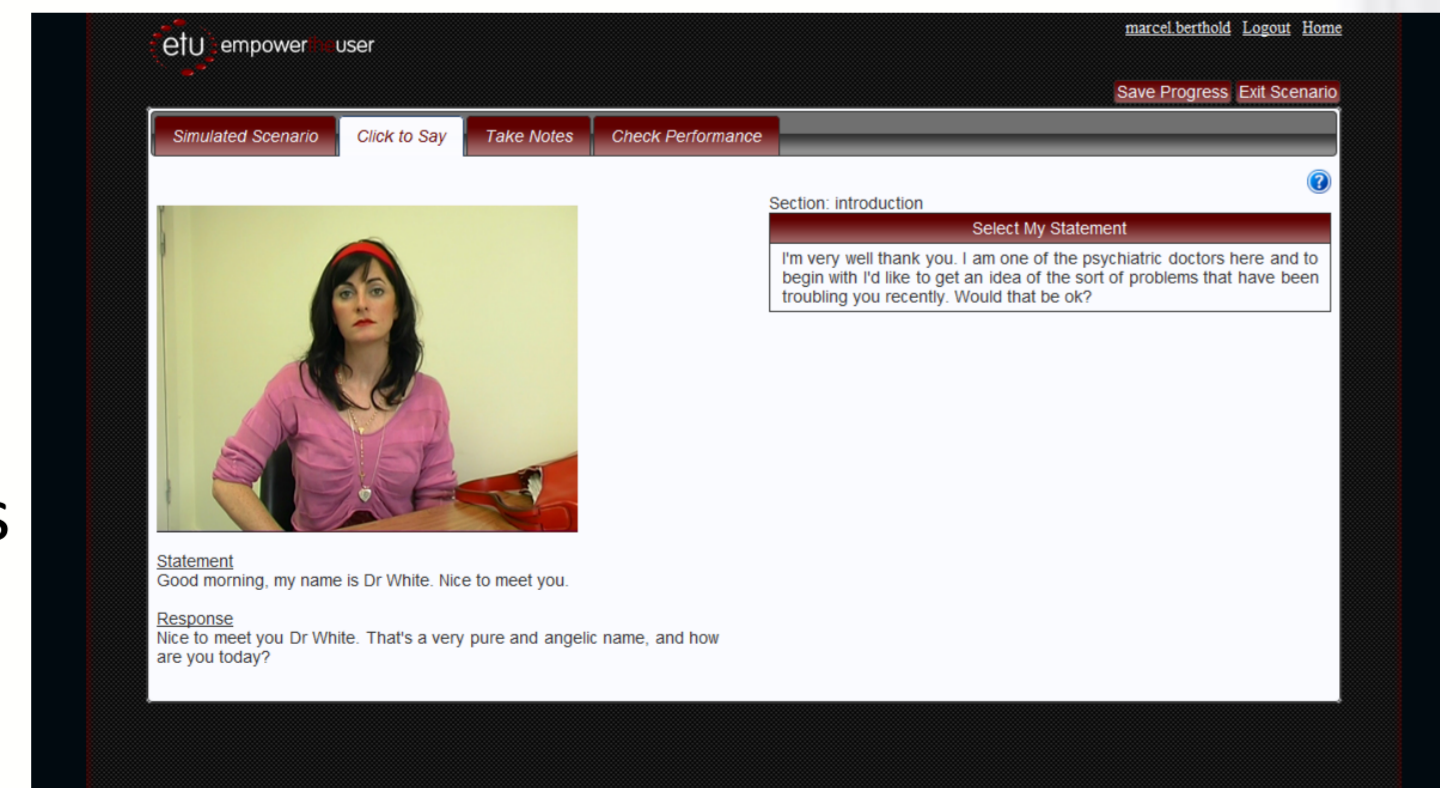


Figure 1: Screenshot of the ETU simulator

## Psycho-Pedagogical Framework: Self-Regulated Learning for Adults through Linking Real and Simulated experience (SRL-A-LRS)

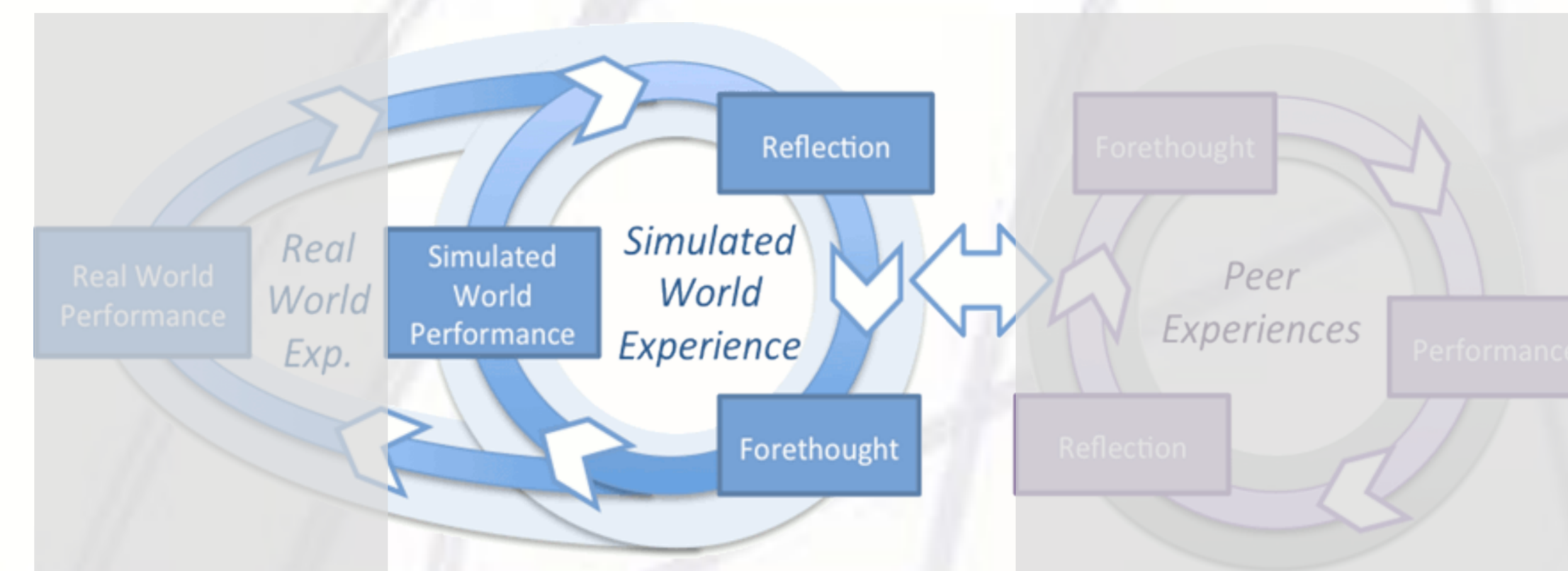


Figure 2: Psycho-pedagogical framework which proposes an extended SRL cycle when a real world are connected through ImREAL services. In this case learners go through a performance phase in the simulated and the real world. Forethought and reflection on the simulated as well as on the real world experience take place in the simulation. In addition, the learners will have access to information and support from peers (Hetzner, Steiner, Dimitrova, Brna & Conlan, 2011).

The full psycho-pedagogical framework will be realised, when all ImREAL services have been implemented (grey area Fig. 3) and will be addressed in upcoming studies (first and second user trial). The present study addressed the baseline simulator without ImREAL services, thus focusing on the SRL cycle in the simulated world.

## Technological Framework of (integrated) ImREAL Services

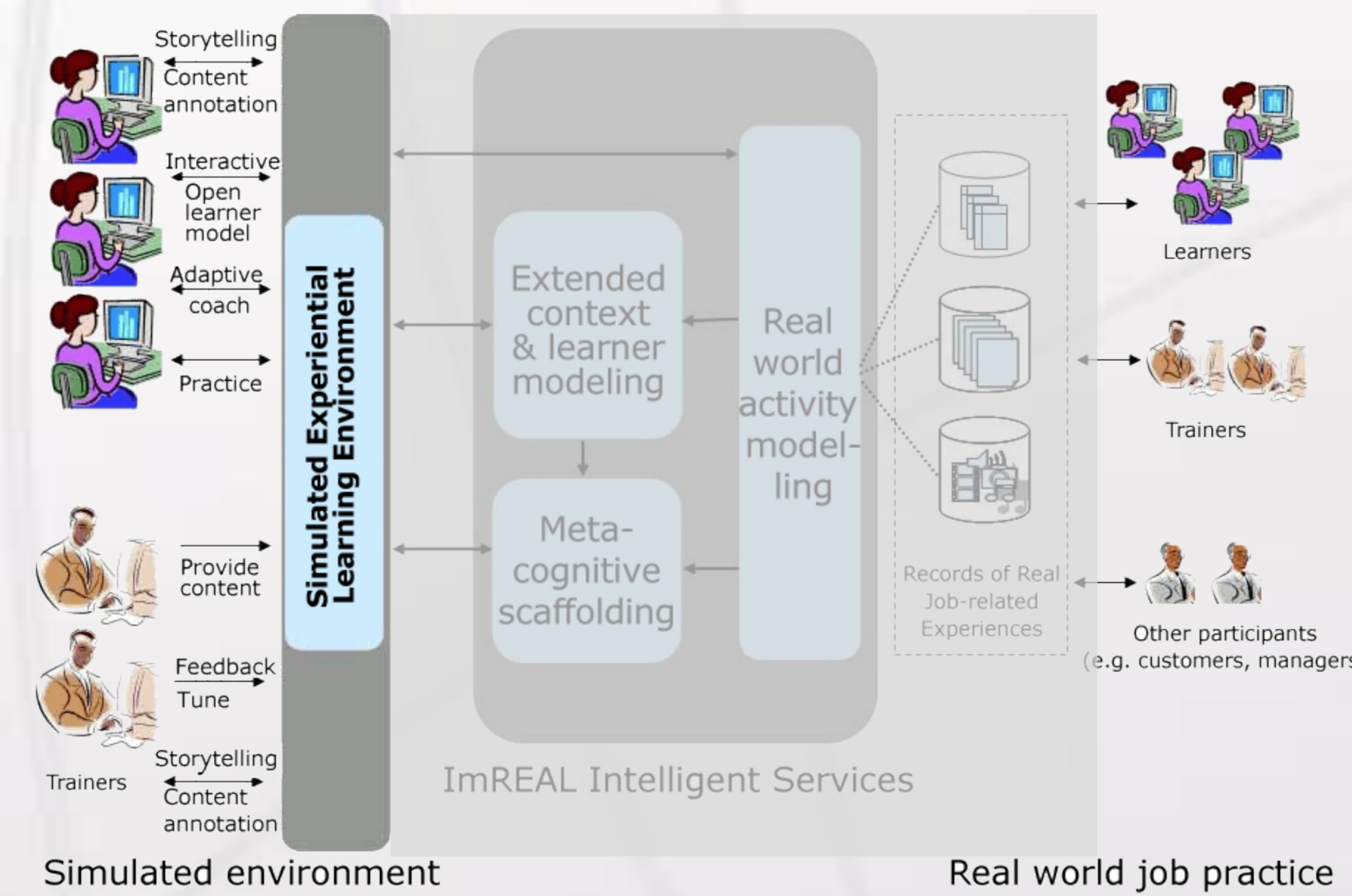


Figure 3: Technological framework with integrated ImREAL services linking real world and simulated world. At the baseline stage these services have not been implemented (grey area).

## Results

- Use of memorizing strategies correlates negatively with duration time ( $r=-.265$ ,  $p<.05$ )
- Students report moderate metacognitive strategies
- Students report high use of elaboration strategies compared to a norm sample ( $t_{75}=9.51$ ,  $p<.01$ )

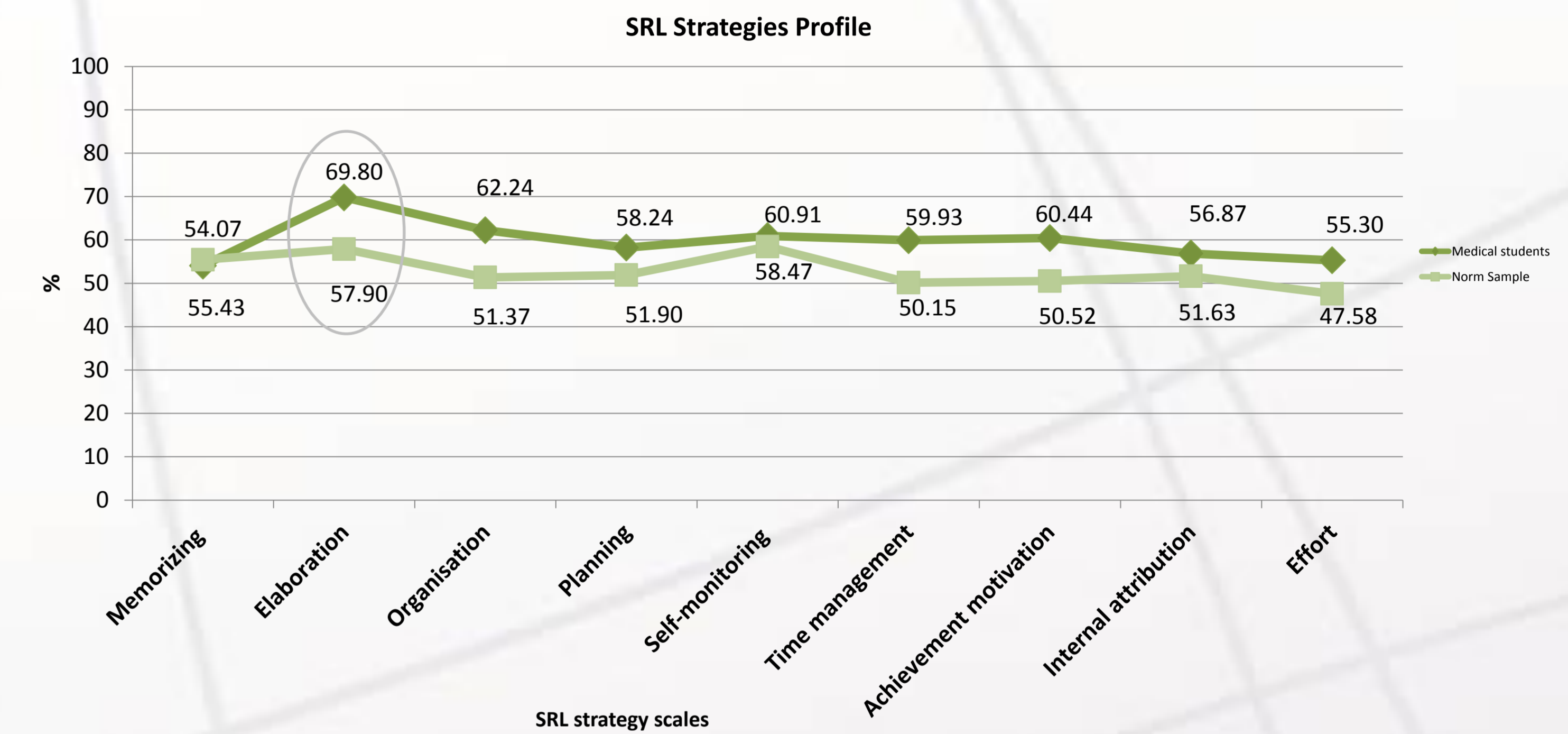


Figure 4: SRL profile of Irish medical students compared to a norm sample

## Discussion and Outlook

- Irish medical students tend to use more elaboration strategies compared to a norm sample
  - Connect content to pre-knowledge, use mnemonic techniques, develop own ideas (Mandl & Friedrich, 2006)
  - Especially in medicine learning by heart is a core competence → people who apply for this subject might know this already or develop these strategies during studying
- Irish medical students spend less time in the simulator when they report high use of memorizing strategies
  - Rehearsing consumes time and patience is needed → this are characteristics also needed to run the simulation
- At a later stage ImREAL services will be integrated: User profile services, content assembly services, metacognitive scaffolding

### Three evaluation stages

- Baseline evaluation stage
- **First user trial**
- **Second user trial**

### Intended procedure

- Perform in the simulator
- Fill in QSRL
- Conduct real world interviews
- Fill in QSRL

### References:

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- Fill Girodano, R., Lietzenberger, M., & Berthold, M. (2010). On the Assessment of strategies in self-regulated learning (SRL)—differences in adolescents of different age group and school type (p. Poster). Salzburg: 9. Tagung der Österreichischen Gesellschaft für Psychologie, Salzburg.
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- Hetzner, S., Steiner, C., Dimitrova, V., Brna, P., & Conlan, O. (2011). Adult Self-regulated Learning through Linking Experience in Simulated and Real World: A Holistic Approach. In C. D. Kloos, D. Gillet, R. M. C. Garcia, F. Wild, & M. Wolpers (Eds.), *Towards Ubiquitous Learning 6th European Conference on Technology Enhanced Learning, EC-TEL, 2011*. (pp. 166-180). Palermo: Springer.
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- Zimmerman, B. (2002). Becoming a Self-Regulated Learner: An Overview. *Theory Into Practice*, 41(2), 64-70.

### Important Links:

- Empower The User (ETU): <http://www.etu.ie> ImREAL Project: <http://www.imreal-project.eu> Knowledge Management Institute: <http://www.kmi.tugraz.at>