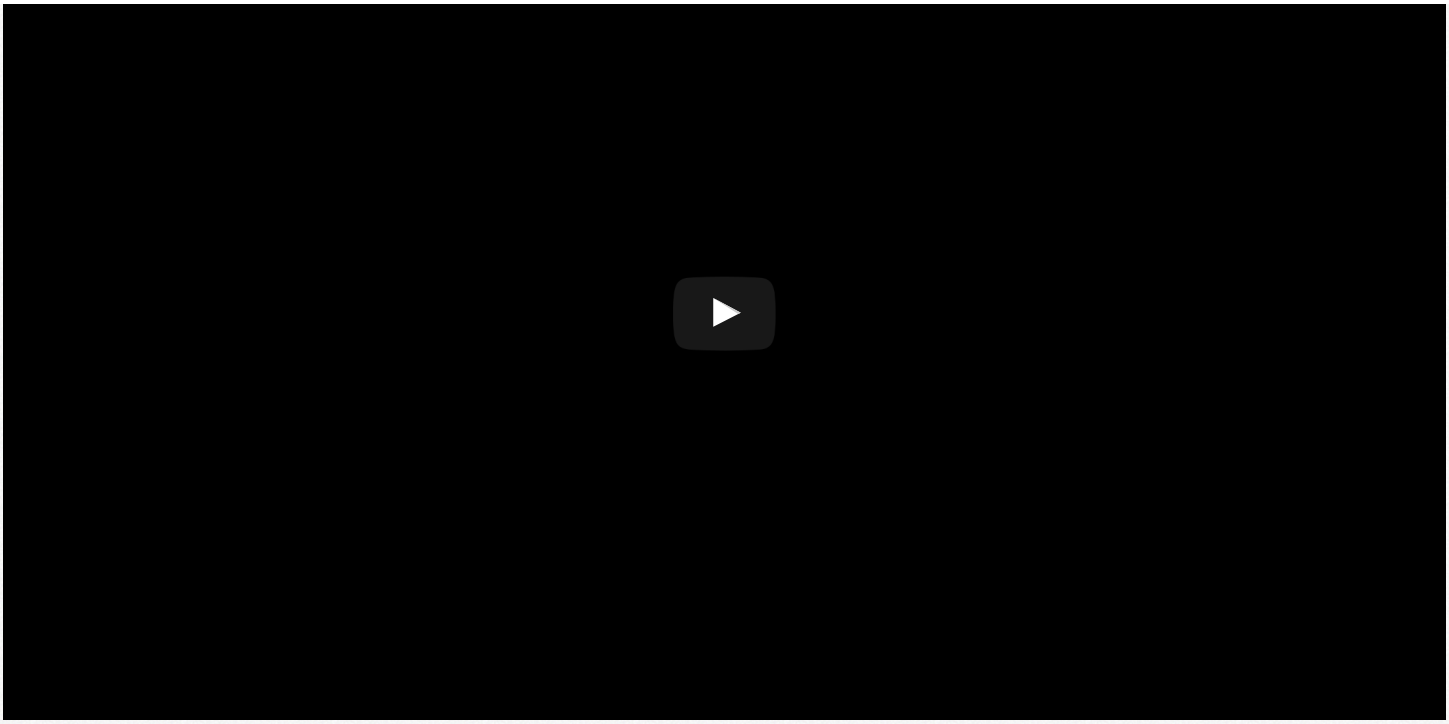
MEMORY SCIENCE & MAGIC

The Brains behind the Mind-boggling Memprize Competition

Who doesn't ask themselves the question; how can I accelerate my learning? How can I learn more in less time and actually retain this information later? For this precise reason we decided to create the Memprize competition to find the world's most efficient and effective vocabulary learning technique.

The winning learning method, not only doubled the memory performance compared to standard repetitive techniques, but was also the most enjoyable. It is based on a combination of adaptive, repeated spaced retrieval and mental imagery. The team from Radboud University and Radboud University Medical Centre based in the Netherlands are responsible for this victorious scientific outcome!



The team was led by **Gesa van den Broek**, a PhD candidate whose work is closely related to vocabulary learning and included Anke Marit Albers, Ruud Berkers, Paul Konstantin Gerke, Marlieke van Kesteren, Boris Konrad, and Nils Müller.

"We didn't really have specific roles in the team, it was more of a collective effort through brainstorming and discussions, where each of us had our own background and specific experience to bring to the table," Ruud Berkers explains.

MEMPRIZE WINNERS – CREDIT: RADBOUD UNIVERSITY

Just to introduce some of the team members;

Boris Nikolai Konad is a multiple time World Memory Team Champion and Guinness Book World Record Holder for memory.

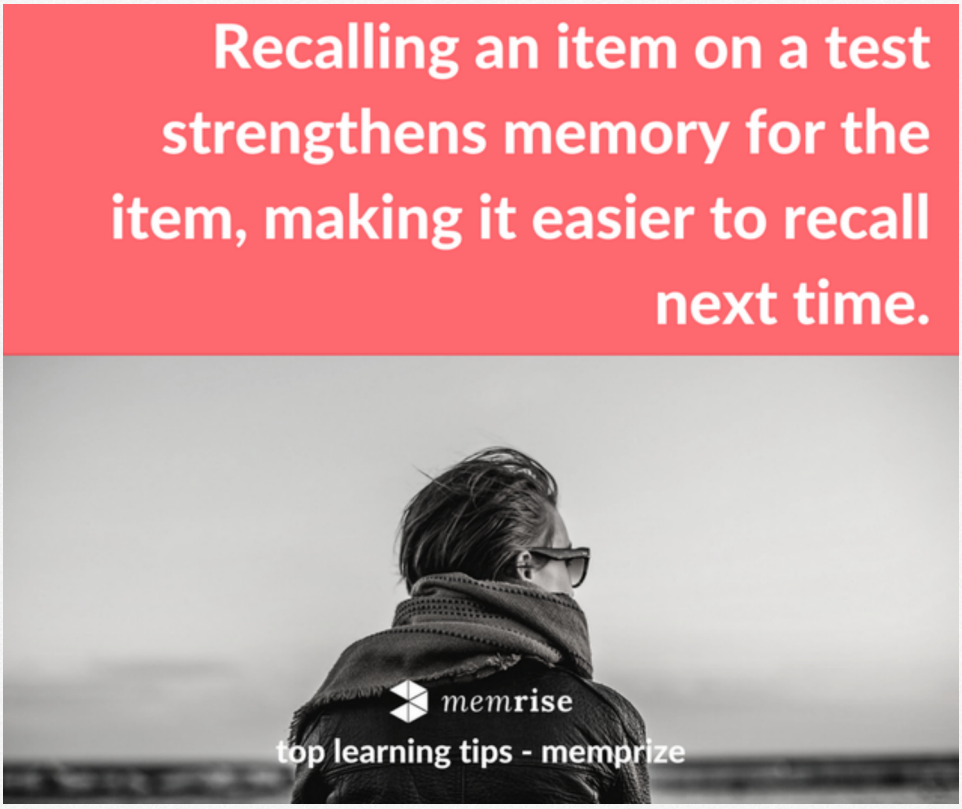
In her current research in educational neuroscience, **Marlieke van Kesteren** tries to convince teachers and students that there are several ways to learn and we shouldn't stay focused on 'old-fashioned' methods primarily.

Ruud Berkers' PHD research " *investigated learning and memory, specifically the influence of prior knowledge on novel learning and how these influence learning processes in the brain.....The Memprize for me was a great exercise in trying to translate cognitive and neuroscientific insights into practical applications."*

Gesa van den Broek explained the technique they developed for learning languages more efficiently;

"We used repeated, spaced retrieval and mental imagery with keyword mnemonics. These are techniques that have long been known to enhance the retention of factual knowledge. We tried to use these principles as optimally as possible: We made the spacing of the retrieval trials adaptive with a computational model that predicts how quickly an individual learner forgets and which words are difficult and must be presented more often. We used images and step-wise presentations of the words to stimulate users to form effective mental images. As a bit of an experiment we also included images to quickly get people to use the method of loci, a spatially oriented mnemonic technique where people would for example imagine words in a kitchen or bathroom. And we had two interim recall moments based on those locations. These were meant to enhance the chance that users could later think back to the experiment and go through the words they had practiced. For example, we were hoping that users would think back to practice and ask themselves

which words they imagined in the kitchen. In addition, we added some features that we found motivating or helpful ourselves: feedback that showed words that learners mixed up, for example, and a very brief high score animation to motivate people to keep going."



Ruud Berkers goes on to explaining; *"Our specific program helps for initial vocabulary acquisition, but it is not a panacea of language learning, and at some point it needs to be supplemented with other approaches and software implementations that allow to track people's existing knowledge and gaps in knowledge in a smart way, informing what further information needs to be learned next. If we, as a community, succeed in helping students all the way into reaching language fluency using fun and intelligent software based on scientific insights, it would greatly help students in making learning easily accessible."*

Incorporating behaviouristic principles was Mario de Jonge's idea. *"To be specific, if an item was correctly answered, the participant would hear a rewarding sound. This was done to increase motivation and make the whole experience a little bit more game-like....I think motivation is a crucial factor. Basically, you can have the best learning intervention in the world, if nobody likes using it then it is still useless."*

"In the current digital age, where smartphones and tablets come to dominate our everyday lives, we can really develop software that can interact more directly with people, and as such boost learning in a highly personalised, smart and fun way." Ruud Berkers claims.

Mario de Jonge goes on to saying; *"Joshua Foer once argued, in his excellent book on mnemonics called "Moonwalking with Einstein", that it might be a good idea to start teaching kids at school how to use mnemonic strategies....Mnemonic strategies have been around for centuries, and they seem very effective for remembering information. So, why not teach kids how to use these kind of strategies from an early age on?"*

The Memprize is bridging the gap between science and practice. We're writing education technology history together for sure! Only time will tell what sort of an impact we're making....