



# Press Release

## Students learn better when sitting in the front row

### University of Tübingen study in a virtual classroom shows that seat location affects learning outcomes

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Students do not learn equally well in every seat location of a classroom: A study conducted at the University of Tübingen has shown for the first time that students learn better when sitting near the teacher compared to sitting in the back of the classroom. This holds for all schoolchildren equally and there is no stronger effect for children with more pronounced difficulties in self-regulating attention and behavior. The scientists of the LEAD Graduate School & Research Network at the University of Tübingen used a specially programmed virtual reality classroom for their study. Using head-mounted displays, all children experienced the exact same classroom situation: either in a seat location close to or distant from the teacher. The study has been published in the journal *Learning and Instruction*.

The results of this experimental study show that teacher proximity can make a difference for students' learning. "Following the math lesson, students sitting closer to the teacher solved math tasks faster than students sitting further away," says first author Friederike Blume, who conducts research in the field of school psychology. "It is now important to consider how all students of a class can benefit equally from teacher proximity." This could, for instance, be achieved when the teacher moves around the classroom during the lesson or by rotating students' seat locations regularly throughout the school year

The study also shows that all students benefit equally from sitting close to the teacher and that this effect is – contrary to expectations – not more pronounced in children with self-regulation difficulties. "These children require further support, for instance, by being spoken to directly, to facilitate learning. This aspect should be emphasized in existing recommendations for teachers", says Blume.

In total, 81 secondary school students, mainly from the academic track, aged between 10 and 13 participated in the study. With virtual reality, a

typical classroom situation was created, which students entered using head-mounted displays. They were randomly assigned to a seat near to the teacher or in the back of the classroom. Virtual fellow classmates disturbed the lesson every now and then by whispering to each other or turning around, for example. During the virtual learning situation, the teacher explained a solution strategy for a math problem. Subsequently, the students' learning was assessed using a test. The students who sat near the teacher during the instruction phase performed the tasks substantially faster. This leads to the conclusion that they paid more attention to the teacher's instructions and hence learned better than those who sat at the back of the classroom.

Future studies in school psychology will use virtual classrooms to examine which support measures or interventions help schoolchildren to be less distracted or to better self-regulate their attention. In doing so, they will also measure eye movements or brain activity, which would hardly be possible in real-life experimental arrangements. Education scientist and co-author Richard Göllner aims to focus on further classroom scenarios, "We will investigate the relevance of other teaching procedures and conditions for students' learning: for example, the behavior of classmates or the didactic methods of a teacher." It is costly to conduct such experiments with real classes, whereas virtual environments allow researchers to examine influencing factors in a straightforward and systematic fashion. "How more complex classroom scenarios can best be realized in virtual environments is therefore another important goal of our work", says Göllner.

**Original Publication:**

Blume, F., Göllner, R., Moeller, K., Dresler, T., Ehlis, A.-C., & Gawrilow, C. (2018). Do students learn better when seated close to the teacher? A virtual classroom study considering individual levels of inattention and hyperactivity-impulsivity. *Learning and Instruction*.

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The students sitting in the first row paid more attention during the lesson. Image: Katana Simulations Pty Ltd / Australia



Distraction is greater in the back row. The children sitting here performed worse in a math test. Image: Katana Simulations Pty Ltd / Australia