

mathematikus – train spatial abilities online

A new offer from the Mathematics Section at NORD University Bodø

Just in time for the new school year, the website *mathematikus.de*, developed under the leadership of Prof. Klaus-Peter Eichler, was launched.

With *mathematikus.de*, students have free access to interactive origami folding instructions and tasks to develop their spatial abilities. A variety of motivating tasks encourage students to imagine spatial objects and processes.

The ability to imagine spatially is essential in many areas of life. Often, spatial imagination is considered as the fourth cultural technique in addition to reading, writing, and computing.

Our world is three-dimensional, but all descriptions of objects or processes in this three-dimensional world are verbal or using two-dimensional images. Therefore, the translation between verbal descriptions or 2-dimensional images and the three-dimensional reality in the imagination is crucial for success at work and in daily life. Spatial imagination is necessary to solve many problems: Whoever hears a route description has to imagine how to go. Whoever sees a folding instruction like an origami diagram must imagine the process of folding.

Last but not least, spatial imagination is a crucial prerequisite for arithmetic performance: many students with arithmetic weaknesses have these problems because they have difficulties imagining objects and processes.

The animations on the website *mathematikus.de* offer users informative just-in-time feedback: everyone can immediately see why the selected solution is correct or not. Animated fold-steps make it easier to imagine the folding in reality. Last but not least, the user can watch the animation of each fold-step as often as necessary.

Thus, everyone can work at their speed and try, err and correct at their convenience.

The website *mathematikus.de* was originally developed with Flash. As part of the **iTEM** project, the website is completely redesigned, newly programmed, and significantly expanded.

The website *mathematikus.de* now automatically adapts to the screen size and can also be used on devices with touchscreens.

The website *mathematikus.de* is a part of the project **iTEM** (improving Teacher Education in Mathematics), which is carried out jointly by scientists from the TU Liberec and the NORD University Bodø. Project members from the NORD University are Klaus-Peter Eichler, Dag O. Madsen, and Asif Mushtaq.

The **iTEM** project is led by

Ass. Prof. Mgr. Daniela Bimová, Ph.D. (Technická univerzita v Liberci) and

Prof. Dr. Klaus-Peter Eichler (NORD Universitet Bodø)

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