The ability to visualize objects and situations in one’s mind and to manipulate those images is a cognitive skill vital to many career fields, especially those which require work with graphical representations such as visual arts and engineering. Spatial abilities have been widely studied and are known to be fundamental to higher level thinking, reasoning, and creative processes. However, individuals vary widely in these skills. Research on mental imagery has shown that several of the component skills can be improved by training.

Although native ability is a factor, there are also several additional variables that have been shown to impact performance. For example, students may have their confidence undermined by the emphasis that our culture places on native ability as opposed to effort. A program that demonstrates to a student that spatial skills CAN be improved should have an impact that goes beyond performance on a specific task. At Penn State Erie a prototype web-based tool to assess and provide training on spatial skills is currently being co-developed by faculty in engineering graphics and cognitive psychology with the help from Penn State’s Center of Academic Computing at University Park. The program will first assess three types of spatial skills; then based on the user’s scores, it will provide exercises designed to improve that skill. Using a participatory design process, we have a group of psychology and engineering students working in teams to help design and evaluate the learning activities.

The program will be first be used in the freshman seminar being developed for engineering by the first author, but it would be available to students in a variety of fields. Eventually the program will be made available to high schools and outreach programs to help prepare students interested in fields which require visualization skills.