

THE CLASSROOM OF THE FUTURE

How does space influence learning?

Research is demonstrating that learning and collaboration results dramatically improve with innovative classroom furniture and design.



TECHNOLOGY and STUDENTS needs are evolving dramatically, but how university is coping with these new challenges ?

1.Executive Overview

Education is changing. The traditional primacy of “teaching” is rapidly becoming a new emphasis on learning, as schools and Universities compete to attract and retain a very dynamic new generation of students and teachers.

The driving forces in this change are technology and multimedia access to information, alongside a more instinctive desire for collaborative learning.

This new emphasis on learning brings with it an essential change to the design and nature of the classroom.

A pioneering research collaboration between Steelcase Inc., the global leader in the office furniture industry, and one of Germany’s most prestigious universities, the Ludwig-Maximilian University in Munich, has shown how space design and layout considerably influences learning.

The project reveals that whilst people initially feel less comfortable in their new environment, they rapidly adapt and their productivity, creativity and accuracy levels all dramatically increase.

So what should the classroom of the future look like?

And how can it benefit both teachers and students in the delivery of improved results?



CLASSROOMS OF TODAY look remarkably similar to the way they did a hundred years ago. Indeed many of our most distinguished seats of learning are promoted on their historic and traditional credentials.

2. Introduction

Classrooms are teacher focused, solely supporting the process of teaching, and generally overlook the needs of the student and the importance of learning.

The result is passive learning, with one directional communication. Students listen, watch and learn in a space and environment which is rarely comfortable, highly constrictive and which ironically in today's modern era offers ever-decreasing support to the teachers.

As the nature of education changes and the influence of technology on our younger generations increases, so the balance of power in the classroom changes also. Classroom design still favours the teacher, when education at large targets the students.

This Knowledge Paper will explain how education is changing and how classroom design can be adapted to meet the needs of the teacher and the aspirations of the student.



3. How is education changing?

From high school to universities, education is changing fundamentally.

- **Technology.** Perhaps the greatest influence on education today is that of technology. Students today eat sleep and breath technology. Students consider wireless networks and video streaming from the other side of the world not as clever new toys but as essential to everyday life and learning and they expect to see educators using technology to bring teaching to life.

- **Competition.** With greater mobility comes choice, and students are starting to exercise that choice. Universities and schools must change centuries of tradition and attract and retain the best students and teachers from home and abroad. They need to adopt innovation to stay competitive.

- **Work and Society.** Society as a whole is now better informed. Our expectations and aspirations are higher and we are less tolerant of rigid tradition. Education is a more constant aspect of life. We are permanently in training, specialization or learning soft skills. We dip in and out our whole lives and we expect it to be as fulfilling at 40 years of age as we did at 20.

- **New Attitudes.** Teachers cannot simply “stand and deliver” information. Students want to be active and involved. They want discussion and debate, they want to discover knowledge rather than simply be told, they want to learn and use simultaneously via a range of multimedia resources. And through all of this we want to learn as a group, rather than alone.

5. New methods. Teaching and learning is predominantly seen as static and one dimensional. Students today want more diverse styles. They want interaction, spontaneity, community and mobility. Students today come armed with laptops and wireless internet. They are as effective and comfortable learning in the canteen or atrium as they are in a lecture hall.

TEACHING AND
LEARNING
IS PREDOMINANTLY
SEEN AS STATIC AND
ONE DIMENSIONAL



4. The Partnership

The Research Partnership Steelcase International and the Ludwig-Maximilian University in Munich.

The LMU in Munich is one of the most famous Universities in Germany offering 150 courses to 47,000 students. In 2007, the department of Psychology and Pedagogic undertook to research “The classroom of the future” and created The Learning Science Research Lab.

At the same time Steelcase Europe, global leader in the office furniture industry, were looking for a partner to test and validate the research findings into learning environments completed in US Universities. Steelcase in Rosenheim, Germany identified the opportunity and brought both partners together.

5. The Learning Science Research Lab

The Learning Science Research Lab at LMU has hosted the development and evaluation of new learning technologies to support innovative approaches to learning and collaboration.

In partnership with Steelcase Rosenheim, a new research project has taken this process to the next stage and the research has now explored the relationship between furniture, design, layout, technology and teacher / student activity.

Scope.

The scope of the project was simple:

- improve classroom design and flexibility in schools, higher and further education facilities
- stimulate and support innovative approaches to collaborative learning
- evaluate the effects of different furniture and layout on the success of collaboration, teaching and learning
- develop layout guidelines for teachers to make most effective use of space

300 STUDENTS equipped with flexible and mobile Steelcase furniture were observed during a year

Method.

Researchers observed group work of about 300 students within the “classroom” equipped with Steelcase furniture and Apple laptops. They tested different room layouts, all designed to support group work (fixed, mobile, standing, sitting).

Researchers used observation, questionnaires, video monitoring, and data analysis to evaluate the impact of the different layouts and furniture on the student’s learning capability. The results were illuminating.

Results.

In the standing more mobile positions, both accuracy of thinking and idea innovation were higher than when sitting down, but students felt marginally less comfortable working in a standing position.

The influence of guided space layouts on group work was stark. **The group made 40% more correct decisions.** Also acceptance of the new furniture went up when use was guided.



THE RESULTS were overwhelming. Working in a standing position significantly increases creativity and solution finding.

Findings

Adapting the space layout according to the task significantly improves learning, decision making and teamwork. Working in a standing position significantly increases creativity and solution finding.

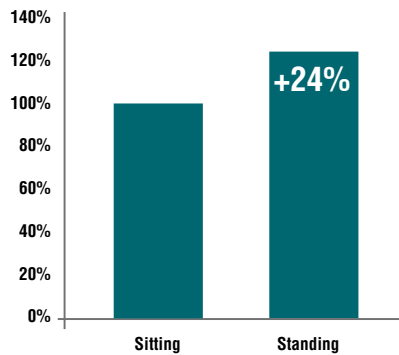
However, the success was dependant on clear instructions about how to use the layout and furniture and how to adapt it to the task.

People need time to adapt to the dynamics of a flexible mobile learning environment and feel comfortable.

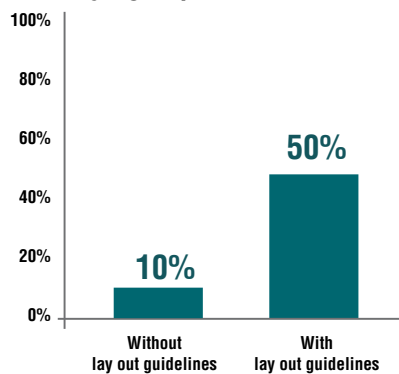
Students had no natural reflex to take advantage of the new furniture and mobility as a tool to be more efficient. They had been conditioned to sit still behind a desk and listen.

Adapting took some weeks. At first students appeared disorientated and ill at ease with the lack of formal structure, but after some weeks they became fully integrated with the process and started to use the furniture and freedom of collaboration very effectively.

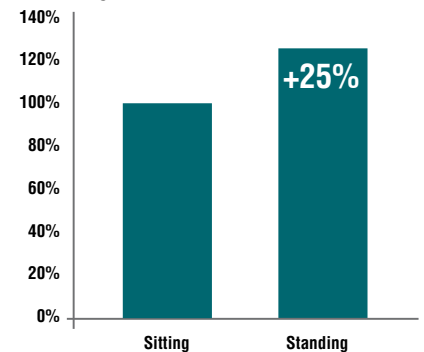
Amount of ideas



Right group decisions



Right conclusions



In the standing more mobile positions, both accuracy of thinking and idea innovation were higher than when sitting down.

6. Steelcase Solution – Research Based

Classroom Design

Following directly from this research, Steelcase have developed 5 classroom design principles

- **Plug and Play** Intuitive connectivity for power and data, wired and wireless
- **Fold and go** The ability of users to quickly and easily move, store and reconfigure their space
- **Say and see** Support for formal presentations as well as dialog and the recall of information
- **Relate and reflect** Simultaneously enabling collaboration, reflection, and informal learning
- **Inspire** Motivate and comfort learners, making the overall learning experience enjoyable and rewarding

For 3 types of learning spaces

Informal – Lobbies, atriums, hallways, cafeterias

Student lead – team and project rooms, individual concentration

Teacher lead – traditional classrooms, auditoriums, computer labs, multipurpose seminar rooms, teacher space

1. Plug and Play / 2. Fold and Go
3. Say and See / 4. Relate and Reflect
5. Inspire



7. Conclusion

Our research is directly influencing the design concepts and principles we will promote for the future. They are the result of extensive user feedback. Steelcase wants to enable “information immersion” and create a direct link between teacher-lead spaces and student-lead spaces.

Steelcase believes that it is possible to create furniture layouts and space design which actively support and encourage learning, communication and collaboration, and most importantly, improve results and outputs for teachers and students alike.

Steelcase

steelcase.com

About Steelcase

#1 global leader in the office furniture industry

\$3.4 billion annual revenue in 2007

Complete global reach with **13,500 employees worldwide**

31 plants: located in America, Europe, Asia, Middle East & Africa

Management systems for Quality (**ISO 9000**) and for Environment (**ISO 14000**)

Multi-site **PEFC** certification in 4 European plants

More than 600 independent authorised dealers

More than 500 product lines

\$152.5 million invested in research, design and development activities over the past 3 years alone

More than 1200 active patents worldwide

80,000+ clients served in the past 5 years