

# case study<sup>o</sup>

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## **node: Keeping Pace with Active Learning**

Pre- and post-installation studies at the University of Michigan confirms node transforms the traditional classroom

**Steelcase**

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## node: Keeping Pace with Active Learning

Amidst a variety of changes in education, both educators and designers of learning spaces are rethinking the classroom, looking for a comprehensive space that incorporates user-friendly technology, flexible furniture, and other tools that support active learning.

Laptops, whiteboards and handheld devices have been added to the traditional tools of paper, pens and chalkboards. And a new generation of students, with deep immersion in social, entertainment and learning technologies, expect a media-rich but hands-on classroom experience.

These changes are driving the adoption of active learning instruction models that create more collaborative learning environments, giving students more control over how content is learned and who they learn from. But have most classrooms kept pace? Does the average classroom support the flexible agenda of active learning?

Universally, the answer to this question is no. No matter where in the world you look, the typical university and college classroom hasn't changed in decades. At almost every educational institution, most classroom furniture is not really suited for multiple modes of learning. Desks and chairs often sit in tight rows that restrict movement, block sightlines and discourage discussion and collaborative work. Moving them is

time-consuming and inconvenient to such an extent that the next class often sits in the configuration of the previous class, whether it's appropriate to the day's activities or not.

Within the four walls of the typical classroom, there is little in common with today's dynamic teaching methodologies, technologies and active, engaged students.

In an effort to better understand how to support the needs of active learning in classrooms, Steelcase Education Solutions (SES) went straight to those with the first-hand knowledge and the most at stake: students and educators.

### THE CLASSROOM RESEARCH

SES is a dedicated group within Steelcase created, essentially, to "go back to school": to partner with educational institutions in order to develop active learning solutions

that solve for the realities of teaching and learning today. Through these partnerships, and as a part of its commitment to human-centered design, SES works directly with educational professionals and students, conducting extensive discussions and research to obtain insights from the front lines about what's needed and what actually works in day-to-day classroom use.

During the research, SES performed trend analysis, ethnographic study, photography and interviews in more than 35 classrooms at 12 universities, and the consultants' observations led to important insights. They found that most classrooms act as a barrier to collaborative learning rather than a tool for learning under the demands of today's teaching pedagogies. Multiple teaching modes are necessary to support multiple learning styles, but classrooms generally do not support easy transitions from one mode to the next.



They documented many examples:

- Moving desks from rows into groups to allow sharing documents or close discussion.
- Sitting in configurations left from previous classes.
- Sitting at a distance from the instructor and each other, with empty chairs at the front acting as a further barrier.
- Looking around other student's heads or backs to see the instructor, a media screen or a speaker in a discussion.
- Stretching or arching backs uncomfortably against a rigid seatback during long class discussion periods.
- Sitting on desks or turning sideways in their chairs while participating in conversation or group discussion.
- Putting laptops on the student's lap because the tablet arm chair is not wide enough.
- Piling personal belongings on the lap or floor.

#### A NEW SOLUTION

It was clear that a new solution was needed, and that it needed to support a variety of learning modes—lecture, large group discussion, small project groups, and presentation. The class had to be able to convert quickly and conveniently from one configuration to the next. Students needed to be positioned so that everyone could be seen and heard, and instructors needed to be able to see and reach every student.

Inspired by the SES findings and the input of instructors and students, Steelcase Design Studio in collaboration with the design and



innovation consulting firm IDEO created node, a chair designed to meet the many modes of learning. Every aspect of node's design was focused on one purpose: to create a chair for the active learning environment of today's classroom. The next step was to put it to the test.

#### UNIVERSITY OF MICHIGAN BETA SITE

Steelcase conducted pre-and post-installation studies to evaluate node's impact on the classroom experience. The two-month study involved a non-dedicated general-use classroom filled with traditional tablet arm chairs used for English, Greek, French, History of Film, Psychology and History classes. During the course of the study this single classroom was exposed to various instructors, students and subjects.

The installation itself revealed something of node's added value. A crew of three people unpacked, assembled and installed Room 3333 with node chairs in two hours, essentially turning a static classroom into an active classroom in a matter of minutes. Easy assembly and installation proved that

a classroom can undergo a significant visual and functional change in an evening or weekend with no change to infrastructure.

Once installed, the U-M beta site validated important aspects of the previous classroom research, but it also demonstrated a great deal about how node contributes to the learning environment and delivers a positive impact on the classroom experience.

#### MOVE

It was node's mobility and how it affects the classroom's performance that made most instructors stand up and take notice. "The biggest thing was the mobility," said Rachel Criso, a French language and culture instructor at U-M. "I do a lot of group work and I like to have them move around to work with different classmates. I also like the students to face each other for conversation, and the swivelling ability makes that easy to do."

Where instructors were once isolated at the front, they now moved easily and frequently among their students. Extra chairs were rolled away. Students sat closer. Some instructors even sat with the students.

Both instructors and students gained flexibility over where they sat and in which configuration.

Instead of being locked into the existing static configuration of their desks, students could now swivel or "scoot" to work in pairs or groups, often at a moment's notice from their instructor. Researchers also observed

**"I do a lot of group work and I like to have them move around to work with different classmates. I also like the students to face each other for conversation, and the swivelling ability makes that easy to do."** — Rachel Criso, Professor, U-M



## University students say node makes a difference

Students in a non-dedicated classroom at the University of Michigan found the node chair greatly improved both their learning experience and their comfort in class.

### What they said about how node affects the learning and classroom experience:

- 89%**  
improves concentration and focus
- 93%**  
improves group work
- 95%**  
improves overall classroom experience
- 99%**  
easy to move into different activities

### What they said about how node affects their comfort level in class:

- 88%**  
armrest provides enough support
- 96%**  
easy to get in and out
- 97%**  
like the look
- 99%**  
easy to use laptop  
easy to adjust work surface  
enough horizontal work surface
- 100%**  
more comfortable  
backrest provides enough support

N=90 students

instructors taking the center of a circle of desks for some instruction sessions, then moving to become “guides on the side” during discussion and project work as students smoothly reconfigured from one segment of class activity to the next.

Students also noticed the comfort. “The chair swivels easily, providing some needed stimulation during class,” said one U-M student. Research confirmed that students valued the ability to sit in a variety of positions.

Students overwhelmingly reported that node improved the classroom learning experience. In a user survey, 100% said it improved their comfort in class, mainly due to the flexible seatshell and the swivel function, but 100% of students also said the backrest provided adequate support and 88% said the armrest support was sufficient.

Students could move independently. Instead of twisting or craning to see the instructor or media presentation, they could now shift or swivel without disrupting nearby students. When new students joined a group, the others could easily move back to bring them into the circle.

#### FIT

Students personal belongings, like laptops, mobile devices, notebooks and textbooks all fit comfortably on the adjustable work surface, not on their laps as previously seen.

It was 99% of students that said node had sufficient worksurface space, making it convenient to use a laptop and, with its movable worksurface, was handily adjustable. “Definitely, a little more desk space is really nice,” said one user, “because you can fit a computer and a notebook.”

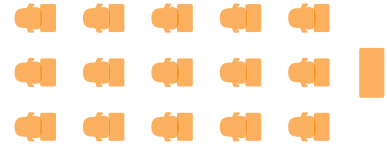
#### STORE

Students commented that both the base of node and the arm were useful for storing personal belongings like backpacks and hand bags, keeping them off the floor allowing for quicker and easier transitions between classroom modes. “I hung my bag from the arm rest and that worked really well”, said one student. With aisles clear, the instructor moved around and approached the students more easily and frequently. Students sat in the node chair and scooted to socialize with students.

**Research showed that the node chair encouraged group activity and helped students better focus on course material.**



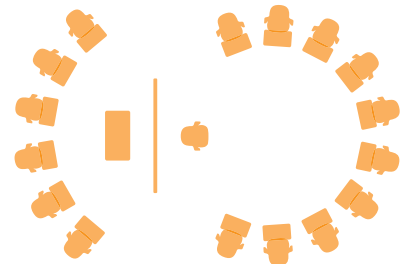
**LECTURE**



**SMALL GROUP PROJECT**



**LARGE GROUP DISCUSSION AND INTERACTIVE LECTURE**



**NODE: FOR THE MANY MODES OF LEARNING**

**CONNECT**

Several instructors reported significant improvement in their ability to reach and engage students in an active learning environment. Others noted the empowerment that node conferred upon both instructor and student.

The students appreciated how node affected their in-class performance: 89% of the U-M students said the new seating increased their levels of concentration and focus. Research showed that the node chair encouraged group activity and helped students better focus on course material. Students were clearly connecting more readily to each other, their instructors and the ideas presented in the classroom.

99% of students said it was easy to move node for different activities. Research

confirmed that the node chairs were more comfortable, making a better classroom environment, specifically for discussion-based classes.

Most importantly, from a learning and teaching perspective, node earned equally high praise: 93% of students felt node improved groupwork. Many found node's comfort gave them greater ability to absorb subject material, as 89% said it improved their ability to concentrate and focus. Overall, node improved the overall classroom experience for a remarkable 95% of students.

node was even a hit on the aesthetic front, with 97% of students saying they also liked how it looked. "I really think the chair is kind of futuristic," said one student. "They make it look like you're walking into an up-to-date class."

Transformations in students and education left the classroom lagging behind, but node brings it into the 21st century quickly, effectively and economically, without renovation or reconstruction. The purpose of the node chair from the beginning was to support active learning and modern teaching methods within the traditional classroom. From the response of those who have used it, it's a front-row seat on education's next big drive forward.

