fasetto

EDUCATION WHITE PAPER

Seating Position And Its Impact On Student Performance In The Classroom

New technology can democratize the learning experience by giving every student a front row seat to visual content

Executive Summary

Educators want every student to clearly see what is being presented and to be actively engaged in discussions, but not every classroom is created equal. Not every seat provides a clear view of the instructor or whiteboard, and not every student has the same visual acuity. Multiple studies show a student's seating position can directly affect their understanding, participation and overall academic performance. Basically, students sitting up front tend to outperform those seated to the sides and rear of the classroom.

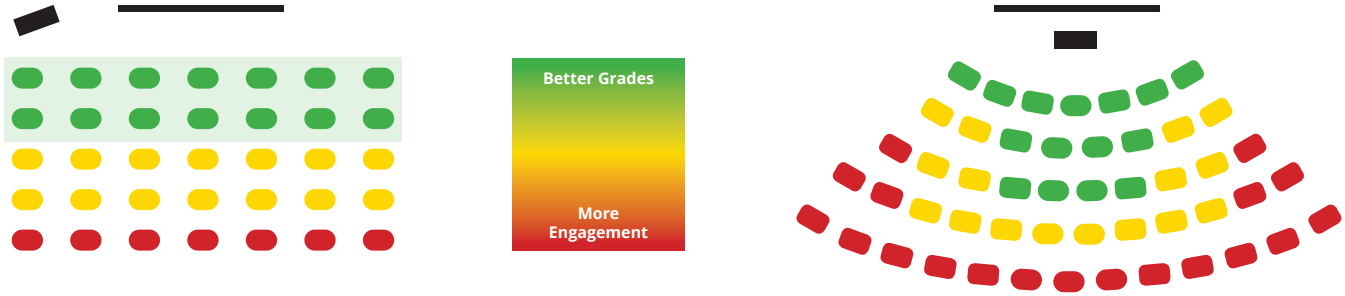
Today's presentation technologies offer some exciting new capabilities such as interactivity and the ability to integrate media and web-based assets from outside the classroom yet, classroom limitations remain—inadequate image sizing, distance to the screen, connectivity issues and cost. Even the largest smartboards may make it challenging for some students to see details from a distance. Much has been written about ways to improve student comprehension and engagement like optimizing seating patterns, periodically moving students, minimizing distractions, etc. But changing the physical layout or repositioning students does not address one static issue: there will always be a back of the classroom.

Forum™ is a unique solution that solves this problem by giving every student a virtual front-row seat to their own learning experience regardless of their position in the classroom. It enables educators to wirelessly present to every student equipped with a Wi-Fi-enabled device. Forum creates its own local wireless network environment or leverages an existing Wi-Fi network for secure content sharing without cords, dongles or the internet.

This white paper is intended to communicate the value proposition of Forum in classroom environments by examining the science behind learning, the advantages of the Forum solution, and several real-world examples of the Forum software in action.

Improving Student Performance in the Classroom

A number of studies find that seating position in the classroom impacts student engagement, comprehension and sometimes academic performance across all levels of education. While empirical evidence suggests seating position has less of an impact on test scores, it certainly influences student participation1, which can affect overall performance in classes where educators value creative thinking, teamwork and communication.



Classroom **Lecture Hall**

Research shows that students who sit in the front of the classroom (defined as the first two rows) consistently performed better than those towards the back of the classroom2. The principle also holds true in wider lecture halls where students seated in the periphery are less engaged than those in the middle. Increased distance from the instructor makes it easier to become distracted and fall off task. Sitting front and center allows for a direct line of sight to the teacher. Frequent eye contact naturally limits distracting behaviors and encourages participation3.

Consider the work of Robert Sommer, who in a landmark study reported that an average of 61% of students made voluntary statements from the front and center locations, but only 31% made statements from the back and side locations...students in the front and center communicated more with the teacher and were rated higher on attention and likeability1. A Totusek and Stanton-Spicer study from 1982 found students who sit front and center—whether by choice or assigned seating—were generally more assertive, imaginative and self-reliant2.

Many people assume the best and brightest students naturally gravitate to the front of a classroom, while the academically-challenged students tend to sit in the back, but research shows this is only a matter of perception. In fact, a 1980 study conducted by Stires acknowledges that many teachers stereotype their students based upon seating choice. They believe the front rows contain the brighter, more interested scholarly students, whereas the back rows contain those who want to hide their lack of knowledge or inattention1,6. Similarly, a 1973 study by Becker, Sommer, Bee and Oxley found the students themselves thought their highest performing peers sat up front, and the weaker students in the back3. But students who preferred to sit in the back, when brought up front, saw their performance improve markedly. The research indicates that a student's performance in the classroom is not based solely on

their natural academic ability, but their vantage point in the room plays at least some part in their success or failure2.

Class size as well as teacher behavior also influences student participation, which in turn impacts learning and performance. A 1973 Becker study reported that smaller classes (6 – 20 students) have nearly twice the amount of student participation (5.8 minutes per class) compared to medium (21 – 50) and large (50+) student classrooms (2.4 and 2.6 minutes, respectively)2. A 2013 study by Benton and Pallett also found that student achievement in higher education declines slightly as class size increases4.

While many states regulate the maximum number of students in K – 12 classrooms, (usually 32 – 35 students), colleges and universities have no such restrictions. A 2015 study of 90 national universities on class size (updated in 2019) shows most institutions attempt to limit class size of upper level courses to under 50 students, however many 101-level courses reported class sizes well in excess of 100 students5. Instructors in small and medium classes are more likely to involve students in hands-on projects and real-life activities, assign tasks that require original thinking, form teams for group presentations, and generally get to know a student better. Instructors in large classes are more prone to emphasize factual learning and testing methods and are less concerned about communicating with individual students. This has a profound effect on student attitudes, enthusiasm and participation in the classroom4.

There are some professors, who through no fault of their own, have become wildly popular on campus and are forced to teach in lecture halls seating several hundred students per class. Those in the back may want to be there but underachieve or feel excluded due to distance from the instructor and/or inability to see details on the whiteboard. Poor grades reflect negatively on the professor, with lower student satisfaction scores impacting class reviews for future semesters. How can an instructor preserve classroom integrity and maintain student relationships while remaining true to their teaching ideologies on that scale?

Then there are social pressures in the classroom. Some students will not ask questions for fear of peer ridicule or being viewed as ignorant; others may not want to be seen as a teacher's pet.

So the question becomes, what can educators do to change the dynamic to ensure every student ge ts the attention they deserve and has unobstructed access to the information they need regardless of the number of students or their location in the classroom?

Optimizing the Classroom Environment

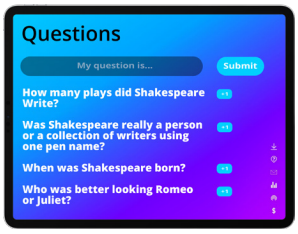
Much of the research points to many of the same recommendations to increase student engagement and comprehension while minimizing distractions. Most of these are physical measures. Educators can:

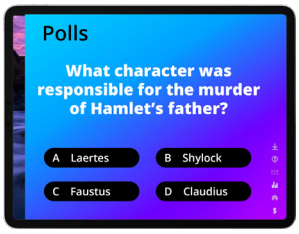
- Encourage all students to sit as close to the front as possible, especially in larger classrooms where there is excess seating.
- Identify and compensate for individuals with learning disabilities; position visually or hearing impaired students closer to the whiteboard or smartboard.
- Employ technology such as interactive flat panel displays (IFPDs), smartboards and projectors to import media and life-sized lessons into the classroom.
- Use a microphone to amplify audio in lecture halls.
- Periodically rotate assigned seating locations.
- Organize desks into fewer but deeper rows in wider classrooms to keep student attention directed forward.
- Reorganize straight rows into U-shaped curves to create a more intimate environment.
- Change rows of students into groups during team-based assignments.
- Build a more welcoming environment through the effective use of color, classroom decorations, lighting and window coverings to minimize outside distractions.

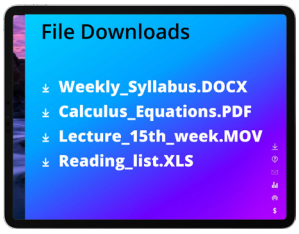
The last suggestion applies more to elementary environments; more mature high school and college audiences—especially those paying to be there—need less handholding and motivation for engagement. Nevertheless, some variables are beyond the instructor's control, such as student population and room layout. Even in average-sized classrooms equipped with smartboards, a typical 65" display can leave a high percentage of students outside the optimal viewing angle or too far away to see the details included in tables, formulas, maps and photos, reducing comprehension. Plus, maintaining a reliable internet connection can be a real challenge, especially in older schools built before Wi-Fi became prevalent.

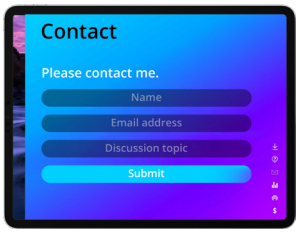
Implementing any or all of the above may alleviate some performance issues for some students, but the overall problem remains: students seated toward the front of the classroom outperform those in the back, **and there will always be a back of the classroom.**

The Fasetto Forum Solution









What if there was a way to wirelessly present content directly to every student regardless of their location in the classroom? What if all students could equally see materials, ask questions and be queried on content from any seat in the room—on familiar devices they carry every day, like smartphones, tablets and laptops? **Forum** is the solution. It equalizes the learning experience for all students in the classroom. Any classroom. With Forum, every student can see the presentation with optimal image quality, download associated materials and ask questions of teacher discreetly and directly. Forum does not require cords, dongles, or even the internet, allowing instructors to focus on the lesson and not waste time solving technical difficulties

Forum is a software-based educational screen sharing and audience engagement solution for all platforms. Any web-enabled device is supported. It changes the presentation dynamic of every classroom by broadcasting instructor content directly to everyone's device so every student gets a front row seat regardless of their actual position in the classroom. Forum provides audience engagement features to make every subject more engaging and interactive through Q&A capabilities, screen sharing, file sharing/ downloading, and live student polling.

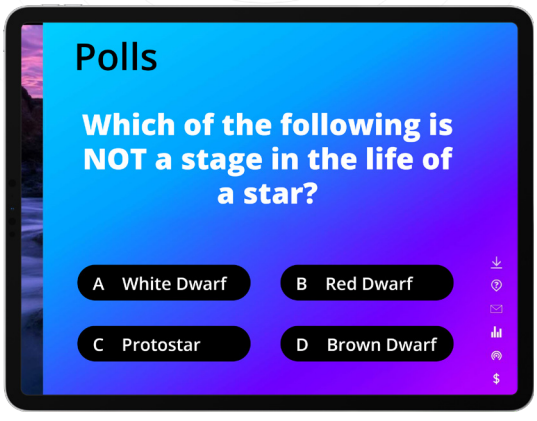
Simple and elegant, Forum is easy to use and delivers the following advantages to every classroom, instructor and student:

- **Direct line of sight to content.** Eliminate disparity in the classroom by presenting directly to all students. Everybody is in the virtual front row so details are clear no matter where the student is seated. Place a digital copy of the lesson in every student's hands and take obstructions, poor viewing angles, image size and distance out of the learning equation.

- **Overcome visual acuity issues.** Each student can adjust image size, position or angle for ideal viewing given their optical prescription or any visual impairment. This is critical when presenting information with lots of small details, like topographical maps, diagrams of cell structure or the Periodic Table, for example.

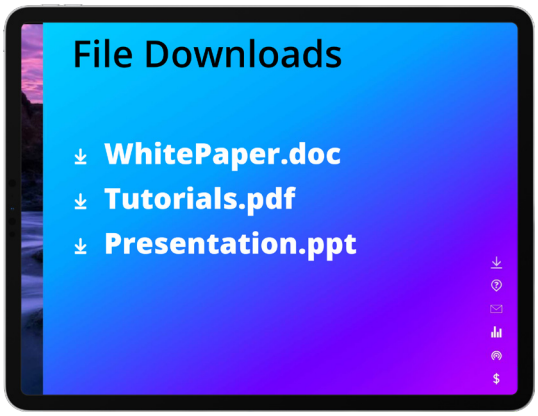
- **Affordable and instantly familiar.** Forum is a low-cost solution that does not require the purchase of any additional hardware. No training is required. Educators and students use devices they already own and use. Further, because Forum works with any wireless web-enabled device, it greatly reduces capital expenses and the need for other A/V equipment such as projectors, replacement lamps and screens, or smartboards and speakers, relieving stress on school budgets.

- **Increased engagement.** In addition to placing content within inches of every student, which naturally increases focus, Forum supports bidirectional communications. Students can privately ask the instructor questions without fear of embarrassment or interrupting the flow of a lesson. Teachers can conduct spontaneous assessments through live polling to determine if the material has been understood or requires additional review before moving on to the next topic.



- **Equalizes the student experience.** Virtually speaking, Forum eliminates the edges and back of a classroom. Every student gets the same exposure to information regardless of location. Toward that end, Forum can help overcome spatial issues in larger classrooms and lecture halls, making everyone feel included, even those in the back.

- **An environmentally-friendly solution.** Forum reduces the need for paper in the classroom. Students download handouts, study aids and assignments directly to their wireless device.



- **Go beyond the classroom.** Allow students, teachers and coaches to connect anywhere. Forum is a mobile solution that turns any space into a learning space—courtyards, cafeterias, locker rooms, even the school bus during field trips and team rides to games. Presenter devices can be pre-loaded with content to share with users during walking tours, off-site field trips or hands-on activities.

Fasetto Forum Functionality and Use Cases

Forum is a presentation software solution that is installed on an instructor's computer. It does not need to be loaded on student devices in the classroom. Forum is NOT a solution for live video conferencing, like Skype. It is NOT an application for creating classroom lessons, like Keynote. Rather, Forum IS a tool for wirelessly broadcasting pre-existing content—from any source—to in-person audiences using any web-enabled device with a browser.

Forum is platform independent. It supports both Windows and Macintosh computers and laptops, as well as Microsoft Surface Pro, Android and iOS tablets and smartphones. Forum eliminates compatibility and interoperability issues between teacher and student devices. Any device can work with Forum, as long as it can connect to Wi-Fi and launch a browser (any browser will work). It minimizes cost and confusion by allowing teachers and students to use hardware they already own and know how to use.

Extremely affordable, Forum is available through monthly subscription programs for presenter licenses. Forum is flexible, scalable and can be implemented in multiple ways. Here are a few examples of Forum in action:

Cater to Students with Special Needs

Improving the learning experience for the visually impaired is a key advantage of Forum. Students come to class with varying levels of vision abilities, and often times the instructor is unaware of those with special needs.

Whether dealing with simple near- or far-sightedness or more serious visual acuity problems, Forum neutralizes these inequities. It improves classroom utilization by giving each student control over viewing content so they can manipulate the image on their device for the best possible comprehension given their issue.

Facilitate Group Exercises

Students working in groups on team projects can connect and present to their teammates using their own devices loaded with Forum. No more huddling over or passing around a single laptop—every student has equal access to the same content on their own device.

Unlike the business world, conference rooms are not available to most students. Forum allows teams of students to spontaneously get to work on the quad, in the cafeteria, the library or dorm room, wherever it is most convenient for everyone to get together.

Team Sports Coaching Tool

Coach from the sideline or make better use of travel time. Forum is perfect for reviewing strategies and plays on bus rides to games, covering halftime adjustments in the locker room, and sharing game film highlights and statistics with the entire team on the way home.

On a road trip? Get all players on the same page without accessing A/V equipment or the internet. Conduct team meetings from anywhere and allow athletes to see and revisit training exercises as much as they want after the meeting. Forum gives teams a winning edge.

Make Campus Tours More Memorable

Engage visiting students and parents with more exciting, immersive tours of campus. Forum is an easy way to link with visitors' smartphones and tablets to provide enrollment documents, campus maps, photos and video downloads for prospective students and parents to review during and after a tour.

Don't just walk by the dorms, show pictures and floorplans. Don't just say a professor's name, launch a video to see and hear right from the professor! Show athletic recruits videos of exciting moments at sporting events to give them a taste for what the school offers in season.

Forum is changing the way students learn in the classroom, giving students at every level a chance to exceed expectations through interactivity and increased engagement. To learn more about what Forum can do for your school, we invite you to visit **ForumForEducation.com**

Sources & Acknowledgements

This white paper draws from multiple published sources on research into the effects of classroom seating location and class size on student performance. Several of those assets also reference previously published findings. The information referenced herein has been synthesized from the following sources:

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[2] *The Effects of Classroom Seating on Students' Performance in a High School Science Setting, Brian J. Minchen, College of Brockport, 2007*

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[4] *Essay on Importance of Class Size in Higher Education, Stephen L. Benton & William H. Pallett, InsideHigherEducation.com, 2013*

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[6] *The Impact of Class Size and Number of Students on Outcomes in Higher Education, James Monks and Robert Schmidt of University of Richmond, published by Cornell University ILR School, 2010*

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