

WHITE PAPER:

Teaching Styles, Equipment Challenges and Optimal Technology Support Furniture for Educational Environments

Bretford Manufacturing, Inc.

I. Overview

Technology is revolutionizing the way we think, work and play. As the use of projectors, flat panels, laptops, document cameras and other electronic equipment in K-12 and higher education environments increases, the methods in which teachers teach and students learn is also evolving. The growing use of technology in schools has also created a fundamental need for supportive furniture to house, move, store and safeguard this expensive and precious equipment.

The purpose of this white paper is to outline the most widely used teaching styles for both K-12 and higher education environments today, explain the positive influence of technology on teaching and learning, review the challenges involved with using technology in schools, then describe the different types of technology support furniture available and the role this furniture plays in caring for the equipment and ultimately enhancing the overall teaching/learning process.

II. Teaching Styles

Based on the book "Teaching with Style" by Anthony Grasha, professor of psychology at the University of Cincinnati, an understanding of teaching and learning styles can help faculty enhance teaching. Grasha breaks these styles into four key clusters:

1. The **expert/formal authority cluster** tends toward teacher-centered classrooms in which information is presented and students receive knowledge.
2. The **personal model/expert/formal authority cluster** is a teacher-centered approach that emphasizes modeling and demonstration. This approach encourages students to observe processes as well as content.
3. The **facilitator/personal model/expert cluster** is a student-centered model for the classroom. Teachers design activities, social interactions, or problem-solving situations that allow students to practice the processes for applying course content.
4. The **delegator/facilitator/expert cluster** places much of the learning burden on the students. Teachers provide complex tasks that require student initiative, and often group work, to complete.

While the optimal teaching style varies depending on the educator, grade level, class size and curriculum, one point remains clear: all of these styles can be greatly enhanced with the addition of technology products.

III. Technology Advantages

More and more studies show that technology integration in the curriculum improves students' learning processes and outcomes. For example, teachers who recognize computers as problem-solving tools change the way they teach. Students are naturally more engaged in learning when using these powerful tools.

According to the magazine *Edutopia: What Works in Public Education*, another reason for technology integration is the necessity of today's students to have 21st Century skills. These skills include:

- Personal and social responsibility
- Planning, critical thinking, reasoning, and creativity
- Strong communication skills, both for interpersonal and presentation needs
- Cross-cultural understanding
- Visualizing and decision-making
- Knowing how and when to use technology and choosing the most appropriate tool for the task

There is a growing body of evidence that technology integration positively affects student achievement and academic performance. The Center for Applied Research in Educational Technology (CARET) found that, when used in collaborative learning methods and leadership that is aimed at improving the school through technology planning, technology impacts achievement in content area learning, promotes higher-order thinking and problem solving skills, and prepares students for the workforce.

IV. Technology Challenges

While the advantages of technology are evident, educators are faced with the responsibility of operating and caring for the equipment. At the same time, they must determine the best way to integrate the technology into the classroom. Some of the most common issues include:

Mobility. Many schools can't afford a projector and laptops in every room so the equipment must be shared and oftentimes moved from room-to-room or even building-to-building. Since there isn't a lot of time between classes during the school day, those moving the equipment – sometimes an educator, but usually a facilities or AV manager – must bring it to its next location. If the technology arrives late, it can be disruptive and interfere with the lesson.

Storage. Evenings, weekends, summer and holiday breaks. These are all times when the technology products are least likely to be in use. Opposite the challenge of getting the equipment from place to place, educators need an efficient and safe, secure place to put their electronics and accessories – wires, cables, batteries, etc. – when not in use.

Safety. Keeping the equipment free from damage can be an issue, especially during transport. Flat panels, document cameras and laptops are fragile and, if damaged, can lead to a loss in productivity as well as expensive repair costs. Educators may experience a disconnect in the overall teaching/learning process if they are without the tools they normally use. More important is the safety of the people using the technology, especially children. Some of the equipment is heavy and made with breakable materials like glass, which can cause injury.

Security. Particularly in a down economy, technology theft is on the rise. Schools, especially at the high school and higher education levels, must take extra precautions to ensure the valuable equipment they use every day is securely locked up and protected from theft.

Ease of Use. Not only is it vital for the technology to be easy to use, but it must also be easy to access and reconfigure in support of the different teaching styles. If the technology isn't set up properly or if it's difficult to reach or use the accessories, the time spent learning will be impacted, causing everyone unnecessary frustration.

V. Technology Support Furniture

Based on the common teaching styles and the challenges associated with using technology in a school setting, the evidence clearly ties back to the need for specialized furniture to support the electronics equipment used for teaching and learning – and the ramifications of not having this type of furniture.

Below are some of the fundamental technology and media furniture categories. These are the products that are most likely to be used with laptops, computers, projectors, flat panels and other professional electronic equipment in schools:

Laptop and AV Carts. Laptop carts can store, secure and charge dozens of computers while safely transporting them. AV carts can include everything from freestanding flat panel carts to full-on technology carts that incorporate space for laptops, flat panels, projectors, document cameras and more. They are typically made from highly durable steel materials and include safety or keyed locks to keep the equipment inside when not in use. Many have UL certification, which means they have passed multiple weight and load tests ensuring the product is safe for children and adults. They tend to have multiple shelving units and/or 19" rack mounts inside to house all the electronics, cords and accessories needed. And most are on casters, which is especially ideal in schools where the technology must be shared.

Tables. Training tables with power and data ports can be used for small group sessions or they can be pushed and ganged together for training, conference or other group activities. They can also be folded and stored when not in use. Some large conference tables are available with flip-up doors for access to power and data ports. These tables can be reconfigured, depending on the size and style of the room. Some tables are great space savers, allowing for a computer to be tucked and locked out of the way when they aren't being used, which is perfect for computer labs, libraries and educational training rooms.

Projection Screens. Portable screens for the floor and tabletop give educational trainers on-the-go presenting capability. At the same time, wall mounted remote-controlled screens are perfect for permanent installation in larger spaces, like lecture halls.

Lecterns. From simple styles to complex units that provide space for video projection, lecterns are a necessity in presentation environments such as conference rooms, classrooms or lecture halls. Lectern styles range from mobile to traditional to tabletop, and use varies depending on the electronics equipment and the overall size and style of the room.

Carrels. Carrels come in a variety of styles, including student access stations, study carrels, and technology carrels, and most have the ability to add power. They are primarily for applications like independent study and testing and can usually be found in libraries, study areas and some classrooms.

Utility Trucks/Stands. Utility trucks can be used to move media and other small accessories like power cords, cables, headphones, etc. Most trucks are slim and sleek so they don't take up a lot of space. And because they are on wheels, they can be easily navigated into small corners or stored in closets.

VI. Conclusion

Truth be told, technology is constantly improving. And technology advancements will inevitably continue to change the way teachers teach and students learn. But one fact is constant: as long as technology is used in K-12 and higher education facilities, there will continue to be a primary need for technology support furniture.

Resources:

- "Teaching with Style" by Anthony Grasha, professor of psychology at the University of Cincinnati
- *Edutopia: What Works in Public Education* (www.edutopia.org)



11000 Seymour Avenue
Franklin Park, Illinois 60131 USA
Toll Free Phone 800-521-9614
Phone 847-678-2545
Toll Free Fax 800-343-1779
Fax 847-678-0852
www.bretford.com