OPTIMIZING LAB EFFICIENCY

How 5S & Strategic Furniture Selection Enhance Lab Performance

By Jaison Yoshimura | Dealer Development Manager
Kewaunee Scientific Corporation

Kewaunee Scientific Corporation
2700 West Front Street | Statesville, NC 28677
kewaunee.com

KEWAUNEE®

EXECUTIVE SUMMARY

In the modern laboratory environment, efficiency, safety, and precision are paramount. The 5S methodology—Sort, Set in Order, Shine, Standardize, and Sustain—provides a lean framework for optimizing workspace performance.[3] While often viewed as a procedural shift, the physical infrastructure, specifically modular and ergonomic furniture, acts as the primary enabler of these principles.[7] This paper explores how the synergy between 5S and furniture selection reduces waste, minimizes errors, and fosters a culture of continuous improvement.

INTRODUCTION TO 5S IN THE LABORATORY

The 5S system originated in Japanese manufacturing but has become indispensable in R&D and clinical labs.[3] In a space where cross-contamination and reagent mismanagement can lead to catastrophic data loss, 5S provides a visual and physical “reset” for the environment.

THE INTERSECTION OF LAB FURNITURE & 5S

I. SORT (SEIRI)

The Goal: Remove unnecessary items (broken glassware, expired chemicals, redundant tools) from the workspace.

Furniture's Role: Integrated storage solutions, such as mobile cabinetry, suspended cabinetry, and vertical shelving, prevent the accumulation of "clutter magnets" on the work surface. When furniture is designed with specific dimensions for required equipment, it becomes immediately obvious when non-essential items are occupying valuable real estate.[5]

II. SET IN ORDER (SEITON)

The Goal: Create a specific home for every tool so items can be retrieved in seconds.

Furniture's Role: This is where modular workstations shine.[7]

- Pegboards and Slotted Rails: Allow for high-frequency tools (pipettes, shears) to be mounted at eye level.
- Labels/Designations: Assign specific areas for tools and products; empty spaces serve as a visual cue that an item is missing.
- Work Surface Zones: Use chemical-resistant epoxy resin, phenolic resin, or stainless-steel tops to designate "wet" and "dry" zones.[5]

III. SHINE (SEISO)

The Goal: Ensure the workspace is cleaned and inspected daily to maintain equipment health.

Furniture's Role: These features help make cleaning faster, more effective, and easier to sustain as part of daily routines.

- Suspended Cabinetry: Units that hang from the frame rather than sitting on the floor allow for easy cleaning of the floor surface.
- Coved Backsplashes: Seamless transitions between the benchtop and the wall prevent chemicals from seeping into hard-to-reach crevices.
- Marine Edges: Often used around sinks, these edges help keep spills from straying far from designated "wet" zones.
- Materials: Selecting non-porous surfaces that withstand rigorous sterilization (e.g., 316-grade stainless steel) reduces the time required for the "Shine" phase.[5]

IV. STANDARDIZE (SEIKETSU)

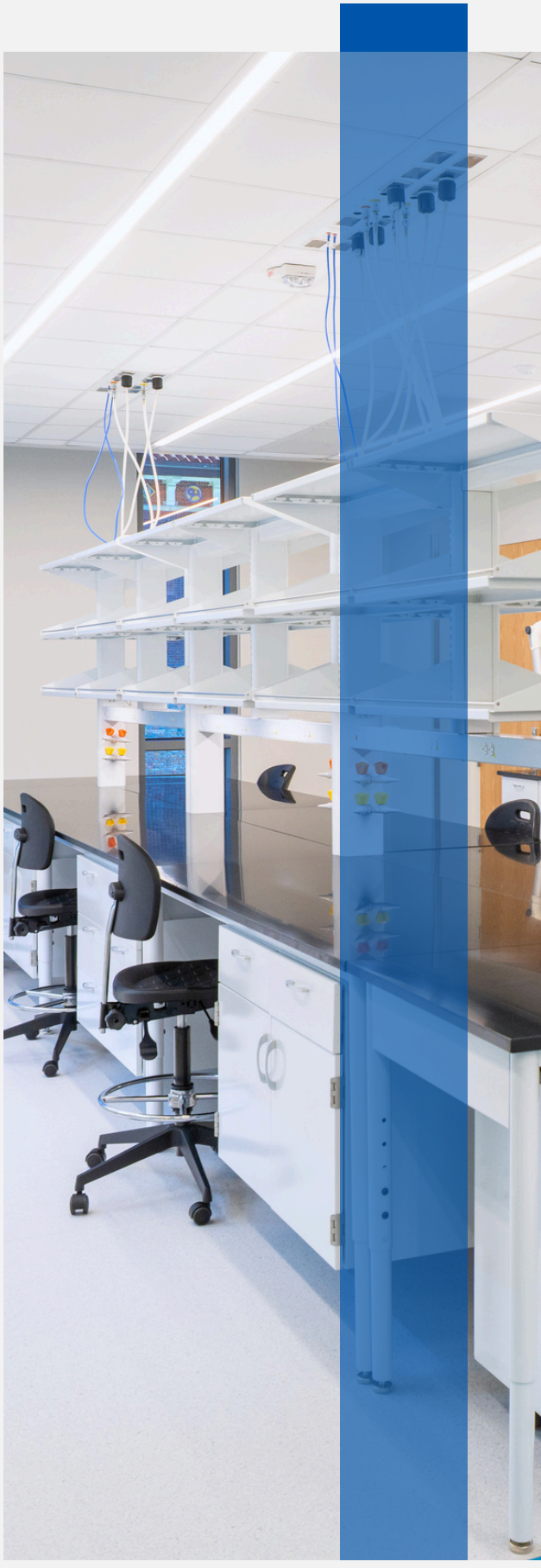
The Goal: Create uniform practices and layouts across multiple lab modules to enable "plug-and-play" staffing.

Furniture's Role: Implement interchangeable furniture systems. If every lab station in a facility uses the same height-adjustable tables and shelving units, a technician can move from Lab A to Lab B and find everything in the exact same ergonomic position.[2]

V. SUSTAIN (SHITSUKE)

The Goal: Maintain the discipline of the first four S's through habit and audits.

Furniture's Role: Adaptability. As lab needs evolve, some static furniture placements may become an obstacle to 5S. Mobile, height-adjustable benches allow the lab to reconfigure its layout as workflows change, ensuring the 5S system doesn't break down simply because new equipment no longer fits the old layout.



TECHNICAL CONSIDERATIONS FOR FURNITURE SELECTION

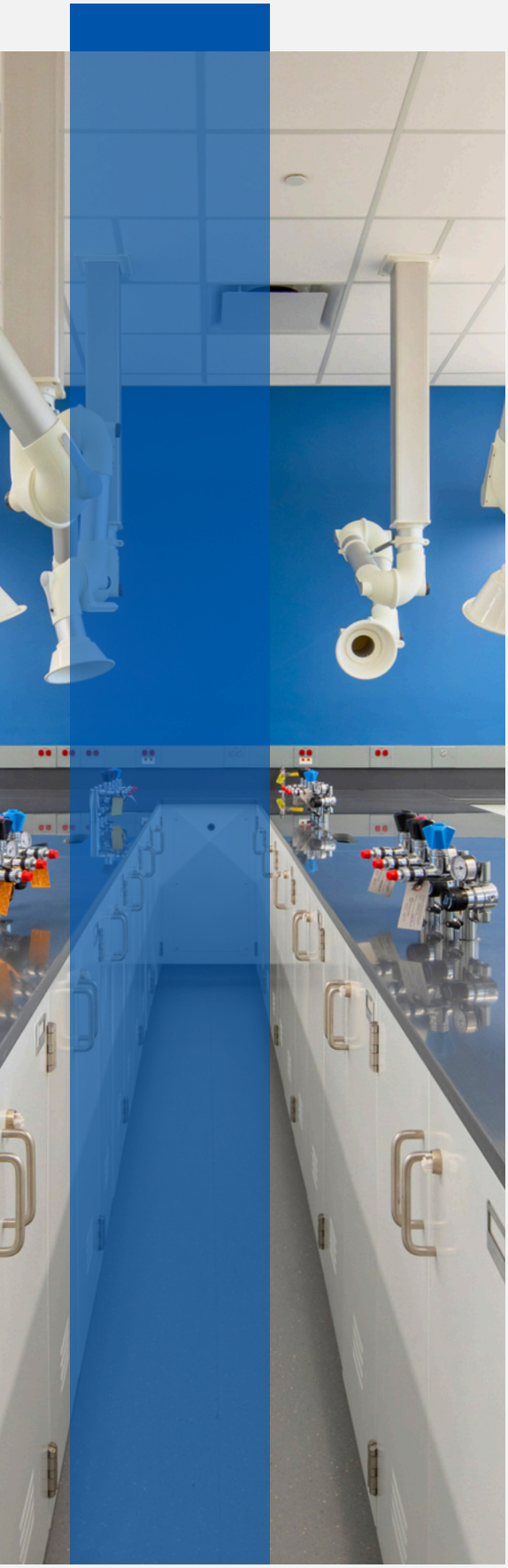
To successfully support a 5S initiative, furniture must meet specific technical criteria:

Feature	5S Benefit
Mobility (Heavy-duty Casters)	Facilitates "Shine" by allowing deep cleaning under and behind units.
Height Adjustability	Enhances ergonomics, reducing fatigue and maintaining the "Sustain" phase.
Integrated Power/Services	Eliminates cable clutter, supporting “Set in Order.”
Modular Uprights	Allows vertical expansion, keeping the primary work surface "Sorted."
Modular Bench Systems	Helps teams standardize on a modular bench system that can be tailored to individual needs and reconfigured or interchanged over time.

CONCLUSION

Integrating 5S into a laboratory is not merely a behavioral change; it is a spatial one. By selecting furniture that prioritizes modularity, cleanability, and organization, facilities can hardwire efficiency into the physical lab environment.[6] This synergy reduces the cognitive load on lab personnel, allowing them to focus on innovation rather than searching for tools.

Key Takeaway: You cannot sustain a lean process in a rigid environment. Invest in furniture that moves, scales, and organizes with your science.



ABOUT THE AUTHOR

Jaison Yoshimura is a Dealer Development Manager at Kewaunee Scientific, where he has spent the past six years partnering closely with dealers to support laboratory projects across higher education, healthcare, and government markets. With more than eight years of experience in the laboratory industry, he brings a strong background in business development and national account strategy to help deliver effective, sustainable lab solutions aligned with project and customer goals.

REFERENCES

[1] Centers for Disease Control and Prevention, & Association of Public Health Laboratories. *Lean laboratory management*. n.d.

[2] Hedge, Alan. *Ergonomic workplace design for health, wellness, and productivity*. CRC Press, 2016.

[3] Hirano, Hiroyuki. *5 pillars of the visual workplace: The sourcebook for 5S implementation.* Productivity Press, 1995.

[4] Occupational Safety and Health Administration. *Laboratory safety ergonomics (Fact Sheet).* U.S. Department of Labor, n.d., https://www.osha.gov.

[5] Scientific Equipment and Furniture Association. *SEFA 8: Recommended practices for laboratory casework*. n.d., https://www.sefalabs.com.

[6] Scientific Equipment and Furniture Association. *SEFA 10: Adaptable casework systems*. n.d., https://www.sefalabs.com

[7] Watch, Daniel. *Building type basics for research laboratories*. John Wiley & Sons, 2008

KEWAUNEE®

Kewaunee Scientific Corporation
2700 West Front Street | Statesville, NC 28677
kewaunee.com