



Fab Lab Design

As young designers, students with vast imaginations and curiosities are continuously looking to expand on their creative ideas. In less than a decade, Fabrication Laboratories (Fab Labs) have emerged across the globe to meet these growing needs and work alongside our emerging technology.



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MIT Fab Foundation

Founded on February 9, 2009, the MIT Fab Foundation is a US non-profit (c) 3 organization established to promote and provide access to the technology and resources needed to create and invent new ideas and prototypes. Through access and education, the MIT Fab Foundation strives to *“allow anyone to make (almost) anything, thereby creating opportunities to improve lives and livelihoods around the world.”*

Fab Lab Requirements

Different from a standard laboratory, Fab Labs are defined by meeting the following essential requirements:

- Public access
- Supporting and subscribing to The Fab Charter
- Common set of tools and processes
- Interact globally within the Fab Lab network

Open to the Public

Allowing public access to Fab Labs encourages the merging of digital skill sets between young adults with the inherent knowledge of older generations. Bringing together a community of designers provides not only education, but a means towards creative expression. In the US there are currently 85 Fab Labs, five of which are located in the state of Wisconsin.

STEM Education

Fab Labs bring excitement to the topics of Science, Technology, Engineering, and Mathematics (STEM), and give students exposure to real world applications of these subjects. Students are directed away from the typical classroom and brought into a laboratory full of design opportunity; introducing them to skills necessary for future career endeavors.

Architects To Design Fab Labs

As planning specialists look to establish Fab Labs in their communities, layouts and design come into question. Architects, as innovators and designers, have intrinsic qualities built around understanding how to foster education and group interaction. Having experience with three-dimensional thinking and problem solving, architects are most fit for drafting suitable plans for a community of upcoming innovators.



A Typical Fab Lab

Typical Fab Labs include the necessary tools and processes along with a series of work benches and work stations. The concepts behind the design of a Fab Lab should be collaboration and flexibility. Providing work benches on wheels allows Fab Labs to easily take on many different shapes as projects progress, compete, and grow in size. Students can work separately by brainstorming at their own seat, or they may push the benches together to discuss new findings as a group. Work stations placed along the perimeter of the room provide separation between the design phase and the production phase. As ideas evolve, students and other Fab Lab users can physically make the move from their work bench to the work stations to refine the final product of their design. Placing the 3D printers, vinyl cutters, and laser cutters amongst the computers provides an instant view of the final product as it is being fabricated.

the design and production areas. A projector and projection screen should be the limitation to the technology provided in the instructional area as to keep the students focused on the lecture. Following these guidelines will help to establish a work-friendly and efficient environment for all Fab Lab users.

Resources

Fab Labs are sprouting up across the nation as school board members and city planners are beginning to see the benefits from incorporating such a boundless asset in their neighborhood. Resources on how to start a Fab Lab, the amount of funding required, and where and how to order, ship, and install each machine can be found on the MIT Fab Foundation website (<http://www.fabfoundation.org/>).



Jobs can then have the ability to be quickly aborted if mistakes are detected from inception. When installing the CNC router, it is important to build a separate enclosure to help dampen the noise generated by the machine. Being able to contain the dust and particles produced is another benefit to placing the router in an isolated room. Instruction is an essential aspect of a Fab Lab and should be defined by partitions away from both

In today's society, technology, as an ever-evolving resource, should be welcomed and integrated into the learning and teaching that takes place in schools and in the community. If you are interested in designing a Fab Lab, please feel free to contact me directly. We look forward to helping you!



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Steve is a Partner of the firm and has over 20 years of architectural and project management experience. He has been involved in over 1,000 education projects and has spoken at regional conferences on education topics such as master planning, sustainable design, and building codes.