Makerspaces in Libraries

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What is Makerspace

Makerspace is a separate place for collaboration or collaborative work in library or work area for making, learning, exploring, and sharing.

Laura Flemings explains that it is a “metaphor for a unique learning environment that encourages tinkering, play and open ended exploration for all the users of the library” (https://worlds-of-learning.com).

As per John J Bruke, it is the “area in a library where users can use tools and equipment to design, build, and create all sorts of different things. It may be a dedicated room or a multipurpose space in which a collection of raw materials and resources can be utilized as desired. Projects range from prototyping product designs with 3D printers, to programming robots, to creating art out of recycled items”.

Source: makerspaces.com Available at https://www.makerspaces.com/what-is-a-makerspace/
Source: John J Bruke, Makerspaces: A Practical Guide for Librarians. Available at https://rowman.com/ISBN/9781442229686/Makerspaces-A-Practical-Guide-for-Librarians

Making in Makerspaces

- Making is the basic and fundamental in every human being.
- Expressing, Creating and Making gives a inner satisfaction make one feel as unique.
- Benefits of economics through growing arrays of alternative ways.
- Societal factors which includes curiosity, ideology are the necessity of every human being to be part of maker moment.
- Concept of DIY (do-it-yourself) allows one to make extraordinary works.
- So, maker moment constitutes creating knowledge, learning, experiences and prototypes research.

Source: Makerspace for Education. Available at http://www.makerspaceforeducation.com/makerspace.html

History of Makerspaces

- Maker movement” was started with the creation of Make: magazine in 2005, which published information about maker-related projects. It emerged as offshoot of the Do-It-Yourself (DIY) movement.
- With Libraries redesigning their spaces collaborated with the Maker Movement to address the related interest of the users.
- The first public library with a maker space was the Fayetteville Free Library.

Source: Wikipedia available at https://en.wikipedia.org/wiki/Library_makerspace

Makerspaces vs. Hackerspaces

- Makerspace is student centric environment dedicated to craftsmanship and creation.
- Makerspace is a environment where people come together to share materials and learn new skills.
- Hackerspaces allow groups of people to pool resources and create a community of people of varied interests for hacking or similar kind of activities.
- Hackerspaces are widely defined on hackerspaces.org as “community-operated physical places, where people can meet and work on their projects”
- Hackerspace is known to be created in Europe in the mid 1990’s, where computer programmers and software hackers could come together to socialise, pool resources and share skills.

Makerspaces in Libraries

- Makerspaces in Libraries are also known as maker labs and innovation spaces.
- It has been known for rebuilding or retooling the available public spaces in the libraries .
- Libraries are experiencing a shift from providing resources for the passive consumption of knowledge (for example, books and periodicals) to the cultivation of active knowledge creation across various media, both analogue and digital.
- Canino-Fluit in his book *School Library Makerspaces* said that "Makerspaces focus on tinkering, problem posing projects, hands-on learning, and the holistic engagement of the body in learning."
- Libraries are the incubators for new discoveries and innovations that can reach local to global communities and providing the Makerspaces can help them in achieving these.

Source: Janet L. Balas, "Do Makerspaces Add Value to Libraries?" Computers in Libraries 32, 9 (2012): 33.

Goals of Makerspaces in Libraries

- Encourage community outreach
- Enhance learning and literacy
- Promoting the culture of making
- Provide access to expensive machines or tools
- Complement digital repository or digital scholarship projects
- Reaching out community requests or needs

Makerspaces in Libraries for Users

- Creativity skills
- Critical thinking and problem-solving skills
- Applying knowledge to practice problems
- Collaboration with other peers
- Gaining confidence in their abilities
- Empower them to think and lead without needing to look to educators to facilitate the process of learning

Makerspaces Projects in Libraries

- Digital Humanities
- Coding/ Programming
- Digital Fabrication
- 3D Printing/ Modeling
- Digital Photography
- Animation and Graphics Design
- Motion Capture
- Fashion Design Architecture
- Electronics
- Robot Designing/ Robotics
- Circuit Designs/ Electrical Design
- Inventions
- Creating Art out of recycled/ waste materials
- Many more….

Makerspaces

Makerspaces help to think deeper about concepts learned in the classroom, but with real-world application.

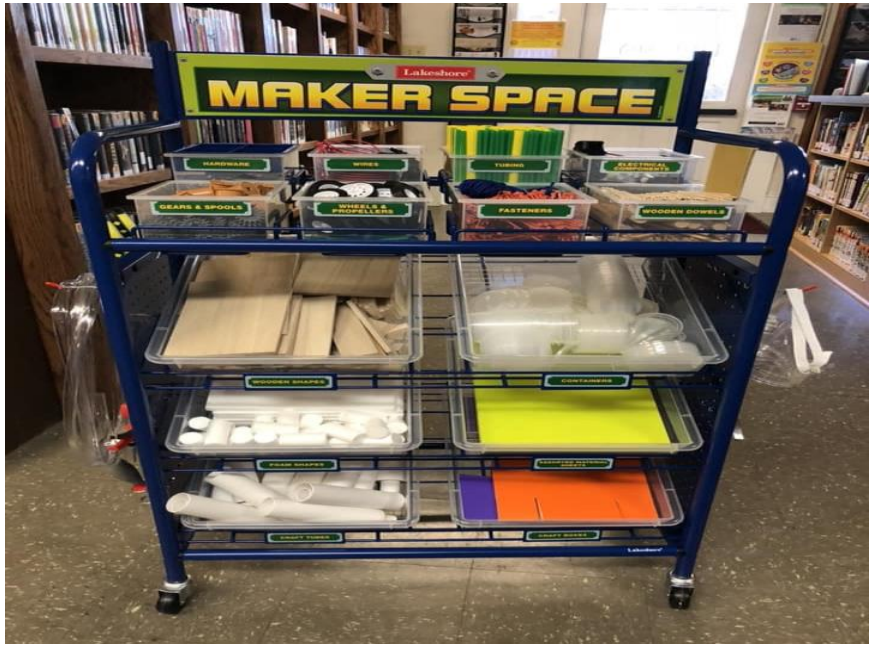


Image source: https://www.digit.in/features/general/the-rise-of-the-maker-movement-in-india-and-how-you-can-start-using-makerspaces-29055.html

Makerspace Places

- Within Library
  - Robotics and Coding Room
  - Engineering Room
  - Audio Visual Room/ Studio
  - Design/ Thinking Room
- Invention Labs
- Classroom Integration
- Steam Labs
- Fab Labs

STEAM Labs

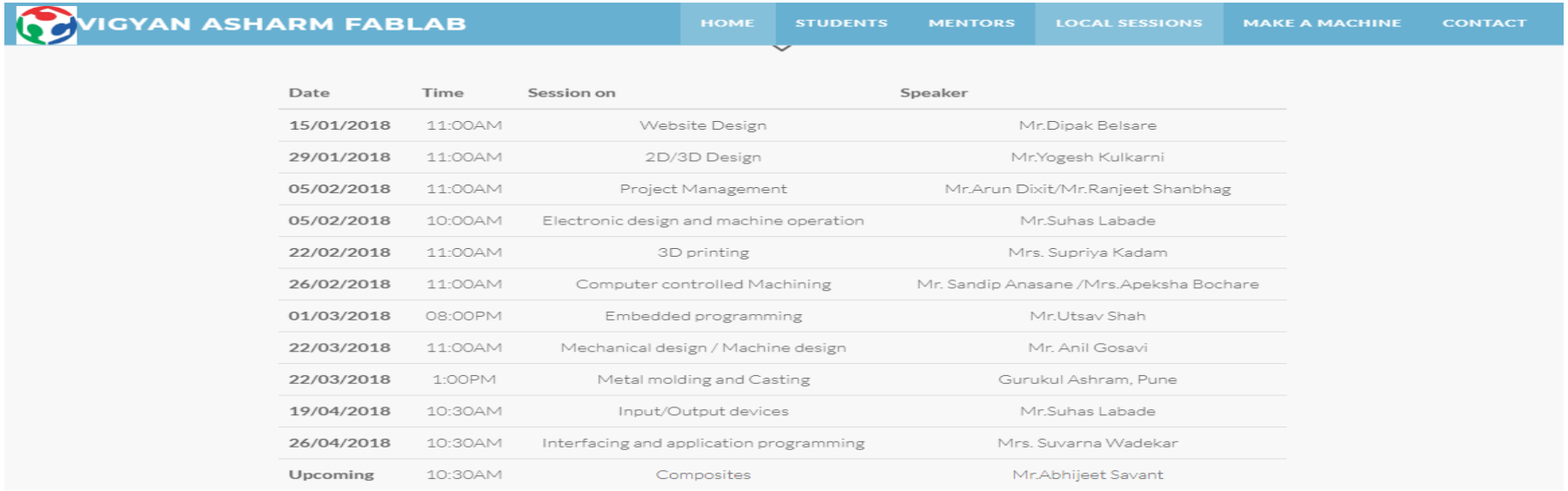
- STEAM Lab is a Makerspace with community driven place where people from different walks of life with similar interest come together to create things that matter to them.
- STEAM Labs covers making of drone avionics to robotics and rapid prototyping.

Fab Labs

- Fab Lab began as a collaboration between the Grassroots Invention Group and the Center for Bits and Atoms at the Media Lab in the Massachusetts Institute of Technology with a grant from the National Science Foundation, Washington, D.C. in 2001.
- The Fab Lab movement is closely aligned with the DIY movement, open-source hardware, maker culture, and the free and open-source movement, and shares philosophy as well as technology with them.
- The Fab Lab program was initiated to broadly explore how the content of information relates to its physical representation and how an under-served community can be powered by technology at the grassroots level.
- Vigyan Ashram in India was the first Fab Lab to be set up outside MIT. It is established in 2002 and received capital equipment by NSF-USA and IITK.

Source: Wikipedia, https://en.wikipedia.org/wiki/Fab_lab

Example of Fab Lab



Date	Time	Session on	Speaker
15/01/2018	11:00AM	Website Design	Mr.Dipak Belsare
29/01/2018	11:00AM	2D/3D Design	Mr.Yogesh Kulkarni
05/02/2018	11:00AM	Project Management	Mr.Arun Dixit/Mr.Ranjeet Shanbhag
05/02/2018	10:00AM	Electronic design and machine operation	Mr.Suhas Labade
22/02/2018	11:00AM	3D printing	Mrs. Supriya Kadam
26/02/2018	11:00AM	Computer controlled Machining	Mr. Sandip Anasane /Mrs.Apeksha Bochare
01/03/2018	08:00PM	Embedded programming	Mr.Utsav Shah
22/03/2018	11:00AM	Mechanical design / Machine design	Mr. Anil Gosavi
22/03/2018	1:00PM	Metal molding and Casting	Gurukul Ashram, Pune
19/04/2018	10:30AM	Input/Output devices	Mr.Suhas Labade
26/04/2018	10:30AM	Interfacing and application programming	Mrs. Suvarna Wadekar
Upcoming	10:30AM	Composites	Mr.Abhijeet Savant

Here is an example of Fab Lab known as Vigyan Ashram Fablab which is started by **Vigyan Ashram,** Pabal, District Pune, Maharashtra, India that shows the schedule of sessions and speakers who are local instructors and specialised in their fields from Agricultural Engineering to Genetics. They are sharing their expertise on website design, 2D/3D design, 3D printing, interfacing and application programming.

Source: Vigyan Ashram Fab Lab available at http://fab.academany.org/2018/labs/fablabvigyanasharm/#intro

Benefits

- Helps in making people meet, interact and converse with the individuals who are sharing unique passions or ideas.
- Provides experience of live working performances, and demonstrations.
- Helps in engaging in hands on workshops and activities, resulting in some learning.
- Exposed to wide interdisciplinary subjects and motivating innovations.
- Makerspaces are designed to make students work through a problem from start to finish. When students are working on a project, they get to see the success and failure of their ideas. Best of all, students can learn far more through the process of experimenting.

Source: NYSSBA, 98 Annual Convocation & Education Expo, 2017. Available at http://www.hollandcsd.org/cms/lib/NY19000531/Centricity/Domain/1/NYSSBA_2017_Convention_Presentation_Holland-%20Makerspace101.ppt

Conclusion…

- Makerspaces in Libraries are emerging with a aspiration to share and create spontaneous communities of knowledge and foster a cooperative ethos of making.
- Makerspaces in libraries is a place for library users where they can deeply practice their critical thinking and problem solving skills they need to master the skill of problem scoping.
- Makerspaces need to be part of present libraries as librarians facilitate knowledge and have always at the forefront of innovations and technology adoption.
- Cross-disciplinary collaborations and the cultivation of a community of learners are two major benefits of Markeraces in Libraries.

Source: Blakemore, Megan. “Problem Scoping Design Thinking and Close Reading: Makerspaces in the School Library.” *Knowledge Quest*, vol. 46, no. 4, Jan. 2018, pp. 66–69. *EBSCOhost*, search.ebscohost.com/login.aspx?direct=true&db=eric&AN=EJ1171732&site=eds-live&scope=site.

Conclusion

- Libraries are a repository of knowledge created formally and informally, and recent literature suggests they are becoming living laboratories as well. Making maker communities of practice fits into any library's vision and practice.
- The goal of a makerspace is to allow users to learn through direct experimentation through collaboration and sharing with each other.
- By bringing makerspaces into libraries, we can provide opportunities for new types of rich cross-disciplinary interaction to occur.

THANK YOU