

# MAKERSPACES IN LIBRARIES TO PROMOTE AN ENTREPRENEURSHIP: A CONCEPTUAL STUDY

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## ABSTRACT

Makerspaces are providing new opportunities for entrepreneurial development. The objective of this article is to explore the importance of makerspace in academic libraries, and with a focus on understanding its role on building future entrepreneurs. While many libraries have supported digital humanities and digital scholarship, the emergence of makerspace has led to new approaches to learning and knowledge creation within the library and campus ecosystem. Makerspace has also played a pivotal role in building entrepreneurs. Entrepreneurs and small businesses are widely understood to be engines of economic growth and innovation. Libraries meet the needs of aspiring entrepreneurs of all backgrounds, in every part of our nation. So, the makerspace has a vital role in the upbringing of entrepreneurs. The writers concluded that maker moment attracts students, innovators, emerging entrepreneurs to create innovative object design, and so this they may provide more 'fortuitous entrepreneurs' if users of makerspace find new or innovative way to have a market for their output and it also generates opaque, wide networks, producing novel thoughts as well as advanced assuming about new products. At last maker movement may cause for reduction in cost of prototyping, to get more sales in the initial stage and to get funding in outside.

**Keywords:** *Makerspaces, Entrepreneurship, Libraries*

## INTRODUCTION

Maker is the name recently coined for individuals or groups producing objects as part of a do-it yourself culture. That definition is itself extremely vague, in part, because the maker movement is simultaneously heterogeneous, inchoate, and ubiquitous. A maker can be an individual building a 3D printer from an online guide but can also be someone cooking a family meal or a computer scientist creating a new web service (Anderson, 2012).

The ability to create novel estimates is an important root of economic growth and requires continuous process of innovation and expansion in entrepreneurship. Written reports have demonstrated that in guild to train future young entrepreneurs and communities of entrepreneurship, a powerful backup network as well as an entrepreneurial community which is ready to learn new ideas and innovative skills is critical. So, giving boost to innovation and generation of future entrepreneurs plays an important role in any company or organization. Funding and nurturing a young and talented work force to endure competition in the worldwide economic system is the need of the moment.

## LITERATURE REVIEW

According to (Aldrich, 2014) the culture of do-it-yourself, has the potential to increase access to industrial tools and intensify people's desire and power to apply them has been often depicted by the maker movement. Nevertheless, the issue has not been investigated completely to benefit its members or guild. Maker practice associated inseparably alongside with dissemination of information over the internet and the growing accessibility of real instruments. Making in the sense of type of activities which includes conception of any gadget; in every sphere of the subject. The concept maker space will identify the people who are associated with in that include tinkerer, maker, hacker etc. The founder of a magazine called 'Make magazine', defines the term making as it's a hub of activities such as cooking, knitting, and gardening which are routine activities of human being.

Makerspaces play a pivotal role in maker culture in a community which is rapidly spreading over the world. Hackerspaces, Fab labs and workshop for the community are the various names which are given or called for Makerspaces, where members pay a

membership fee to get into and to access the tools and workspace. Although this concept called in different names, maker space, hackerspace, and fab labs, but roles and functions of all organization will be the same; hence, utilizing the concept maker space according to this report indicated to utilize spaces which is called by those names. In this report author is not arguing that these places are the same, but names may not distinguish their objective or role of the makerspaces.

Plentiful makers groups are active across the cosmos. Makerspaces will accommodate the individuals who are having same opinions, ideas or interests, they bring their ideas together to achieve on individual works or goal, share instruments and gain expertise valuable opinions (Twoney, 2009). The primary motto of the makerspace is that users experiment with sharing tools, equipment and get expertise ideas rather than ending up their work in the garage or basement (Roush, 2009). These sort of workshops or labs are made in an educational or corporate organization such as a university library, public libraries etc. Recently interest to lead initiative to build 'making' concept in museums and libraries is rising.

Maker Media (2013) defines the term makerspace as something which creates rich learning environment, makerspaces serve as hub for people or community of new and skillful makers, tinkers, innovators who connect to work in order to bring out new products to the market as well as individual valuable projects, guided by helpful instructor and experts in particular subject field, implementing new technologies and conventional materials. These laboratories display various legal structures, distinctive published projects & instruments, and different instruction programs. The areas of a maker space are defined by its members and need of information or tools required for their creative thinking. Makerspace is an ultimate place to follow the creative need of members with the help of collaborative environment. The classes and demonstration from expertise will create numerous learning opportunities in makerspaces (Kalish, 2010). In some instances, members hold jobs at daytime in somewhere else, but choose to unite with these sorts of workshops or laboratories to find a platform for their creative needs. Some of the members represent as an independent, small commercial enterprises.

### **Makerspaces and Entrepreneurship:**

We have seen what web's model of democratized

innovation has done to spur entrepreneurship and economic growth like that thousands of entrepreneurs emerging today from the maker movement who are industrializing the Do-It-Yourself (DIY) spirit (Holm, 2014). Maker spaces results in contributing to the growth of young and future entrepreneurs and their innovations. Engaging themselves with conventional instruments, members own contents to customize the products which they own and oftentimes seem to live up to their individual needs. Makerspaces contribute in generating entrepreneurs, creative environment and prototyping and for the people who do not hesitate into a raw output, makerspaces provide a useful space for community to invent and think creatively. Makerspaces offers an environment which is flexible, inventive surroundings to boost user-led innovation and to back as member's convert output against idea to reality.

Makerspaces have systematic methods such as self-discipline and ambiguity tolerance, obtaining creativity-relevant processes; gain various techniques in a cooperative environment which helps members to survive in an innovative world. Innovation will take long time to get fully advanced (Johnson, 2010). To bring out product into the market prototyping plays an important role. According to Hatch (2014), through Makerspaces members can discover design issues early over the advancement of the output as its first users and create alteration accordingly. Along with that, the process of prototyping to bring out valuable product to the market the members of makerspace have been taking advantage of getting helpful inputs from other members, with the help of the feedback member's one can achieve potential to improve their plan. These are the advantages which entrepreneurs get through this workshop to create a prototype that they will not get in professional firms. The process of makerspace making members represents a better operation, best models to fund to set up their business.

**Makerspace and libraries:** Sharing knowledge between the user communities of maker space is a primary objective of this concept. Libraries like School libraries, Public libraries, and many Universities are planning to develop this concept in their academic set up. In common working spaces provided by library participants like makers, innovators or tinkers can create digital and physical items using shared equipment and imaginations. The necessary maker space components of manufacturing businesses, instruments, space, and valuable opinions from

expertise are frequently connected by exploring new ideas and discovering creative actions in the life of people. For example, Libraries try to promote invention, collaboration and learning along with assisting with children to cultivate interest to learn, gain more knowledge in academic subjects (Britton, 2012). Library makes use of skillful people in electronics or programming by tapping them into teaching hands-on workshops. Makerspace in libraries create an environment which boost young innovators, makers to discover, create and introduce new products.

Makerspaces existed in several phases and needs tools and equipment to work in different places. The beginning of 'Make Magazine' and its advancement of creative projects and various drawing methods in around 2005 has put foundation for the concept of 'makerspace'. Libraries began to host drawing activities in their programming options and establish dedicated makerspaces. Librarians which began to remodel some of the creative activities and devices already present in their buildings as making activities, such as TV and audio capture, large format printing, graphics-related shops, music recording spaces, and thus onward. With an international network of makers already present and sharing their projects, techniques, and engineering sciences, library staff members could establish on their initial aspirations and develop larger maker space programs.

Libraries provide a neutral space for researchers of all different stripes to use and tinker with the equipment freely. This is especially important for disciplines with limited resources, including external funding, because it allows the students and researchers to engage in technologies that would otherwise be cost prohibitive. The library has supported student innovation through hosting events and assisted student entrepreneurs by providing business research instruction and a place to consult with business experts.

#### **Makerspace Programs in academic Libraries around the world:**

- The Fayetteville Free Library, which is in United States, created makerspace program. This is the first public library to take initiative of makerspace concept in the world, which is named as the 'Fab Lab' (Fabulous Laboratory) (McCue, 2011). This Fab lab provides free access to the technologies such as: Makerbot Thing-O-Matic 3D printers, Bits from

Bytes 3D Touch 3D printer etc. during library working hours.

- California State University Created a Library's learning commons named 'Creative Media Studio' to provide space which offer tools, software, assistance from expertise, and hands on workshop to all students for the maturation of creative media projects.
- Carnegie Mellon University took initiative to start a makerspace called 'IDeATE' in the Hunt Library to assist students to do innovative project, including a digital fabrication shop, a physical computing lab, and an interactive media black box.
- University of applied sciences installed the term makerspace named as 'Library lab' where they implemented 3D visualization technologies and other creatures to make useful for scholars at HTW Chur in Switzerland.
- Kenan Science Library of UNC Chapel Hill, University Libraries' created library with providing access to emerging technologies, and to foster a creative community with 3D printers, Arduino and Raspberry Pi kits etc. for pupils, staff, and faculty of the university.

#### **Advantages of Makerspace:**

Beyond the impact of makerspaces on learning, in that respect are some advantages as follows:

- Makerspaces helps to get together of makers in one space as well as share resources between individual makers.
- Members of makerspace can get useful skills from experienced makers and guidance to become emerging makers.
- Makerspace set aside a platform for the makers to share ideas and designs, not only limited within the makerspace, but outer ward to the bigger world of manufacturing business.
- The concept makerspace enables people to collaborate with members on tasks and take multiple perspectives and gain various skills together.
- Assist communities to experiment with their own products and discover new things with the help of technologies.

**Rationale for an academic library makerspace:** A compelling reasoning can be constructed for adding a makerspace to an academic library. The maker space can provide chances for:

- Hands-on learning: Building objects and both find out and do creative skills with diverse technologies and media.
- Co-working: Work collaboratively with peers and with more experienced makers to create works together, learning valuable group participation skills and profiting from the input and insights of others.
- Self-guided learning: Makerspace provide fabrics to make use of that as well as to follow up on questions or explore and review concepts at one's own pace.
- Prototyping: Create product models that are planned and then rapidly test, change, and enhance the prototypes using the puppets in the maker space.
- Tinkering: Explore how devices or objects work and delve into troubleshooting them or producing new mutations.
- Open culture: Go through designs which are openly available and experience sharing environment in the maker space.

## CONCLUSION

It is found that socio-technological resources of the maker space supported the transparency and social support beneficial for entrepreneurial skill and self-efficacy development. Drawing from cognitive apprenticeship and social cognitive theory, we explain about how entrepreneurs develop their skill with the help of makerspace, like utilizing technologies available in the makerspace to set up and bring out fresh products to the market, and self-efficacy development, like having self-confidence to build new ventures.

Each maker space is incomparable and the type of facilities and environment it gives to community is based on its founders as well as members of the makerspace. A few makerspaces focus particularly on entrepreneurial skill development and provide services like setup or Spaces to work together with other members with the help of various additional valuable instruments. In preference, some spaces focus on providing open access to conventional materials and implementing new skills and ideas to community projects. Numerous makerspaces come under those two extremes. Many other spaces fall somewhere off that spectrum as well. This discussion is not what defines that every makerspace is created to nurture entrepreneurs in the future, but instead to gain knowledge, skills and

novel information as well as many other facets which can contribute to build new ventures. The goal of this is to gather under same name to discover a certain organization's motive.

The initial form of outcome which is created in makerspace can be used – led inventions, of the more sustaining rather than disruptive sort, though, all innovation is progressive. The fact that components of a community of people that would never come up with good output layout without the implementation of makerspaces which has large helpful implications for the future advancement of technology. Yet makerspaces have not given primary impact to contribution to the entrepreneurship, but it also has capabilities to provide contribution to the growth of entrepreneurial community, academic students, and sustainability.

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