



Delivering Technology for Education to Disadvantaged Communities with LifeBox



Overview

LifeBox is a cost-effective classroom solution that can be placed in remote locations. It is constructed from recycled shipping containers so it does not require local building materials. Its design includes solar panels for the generation of electricity. It can also become a Wi-Fi hotspot for connecting to the Internet through a wireless network or satellite. Once there is access to the Internet, an entirely new paradigm can be introduced for education in these areas.

Broadband and Cloud Computing

Cloud computing is a disruptive force that has changed how computing is done. Computing power and data storage functions are performed in remote data centers, or the cloud. Data then travels from the cloud to the end-user via a broadband connection. Since data is stored in the cloud, it can be accessed by inexpensive devices that don't have local computing power. Costs are dramatically reduced because expensive servers and data centers are not required in the disadvantaged community. Costs for applications and data storage are steadily decreasing, and in many cases are free.

The best example of the power of cloud computing is Facebook. Users can post photos, videos and messages. That data is stored on Facebook's servers in the cloud. The user can access the same data from a laptop, smartphone or tablet. Another example of software delivered via the cloud is Google Apps. Google Apps allows a user to perform essentially all of the same functions as Microsoft Office including word processing, spreadsheets and presentations. Both Facebook and Google apps are advertising-based so they are free.

The cloud and its many benefits rely upon broadband conductivity. In disadvantaged areas there are typically no wireline broadband connections like you would expect to see in United States and Europe. In many parts of the world wireless is a better option because expensive cables do not need to be laid. Mobile carriers continue to expand their footprint so that more and more remote areas are becoming connected to the Internet. Even in the most remote areas, satellite broadband is an option.

Today, just 16% of Africa's 1 billion people have Internet access. However, it is likely that much of the world's population will be connected to the Internet in the next several years. Google is researching technologies for delivering free broadband to remote areas. Blimps, drones and super cheap satellites are being tested to deliver service to sub-Saharan Africa and Southeast Asia with the goal of connecting 1 billion people in underserved areas to the Internet.

Hardware

Computers are expensive devices that are very fragile so they are not well suited to disadvantaged communities. While desktop and laptop computers will remain necessary for heavy-duty computing tasks, many tasks such as education and communication can be handled on much less expensive devices utilizing the cloud.

In the last several years tablets such as the iPad have become extremely popular. These devices are incredibly powerful when connected to the Internet. Applications, known as apps, are downloaded to the device and the data is typically stored in the cloud. These apps do not need to be continuously connected to the Internet to be useful. For example, a magazine or newspaper app can download articles while connected to the Internet. These articles are then stored on the device and can be read later at another location such as an airplane where there is no Internet connection.

Google has developed the Android operating system that it gives away to hardware manufacturers free of charge. This has opened the door for low-cost tablets. A Chinese company, Allwinner, is manufacturing cheap chipsets for tablets with good quality. Sales of tablets that retail for less than \$150 is expected to rise 36% in 2014. Costs will continue to fall, and there are some tablets available to the Chinese market today for as low as \$50. This makes it possible for more and more disadvantaged communities to gain access to the Internet.

Tablets are durable. There are no moving parts. They can be equipped with covers that keep out dust, are waterproof, and protect the device if it is dropped. Even with the protective cover, the device is fully functional. This makes them useful outdoors in harsh climates.

LifeBox

The LifeBox Education Module is uniquely suited to take advantage of the convergence of cloud computing technology and inexpensive tablets. The LifeBox is low-cost and made of recycled shipping containers. It can be deployed in remote areas and locations where building materials are in short supply.

The LifeBox is equipped with solar panels that generate electricity. It does not have to be connected to the electrical grid, and is not dependent upon generators or car batteries. Tablet computers can be charged and securely stored within the LifeBox. Once charged, tablets can have a battery life from 8 to 10 hours.

The LifeBox is also equipped with gear to receive the appropriate broadband signal in the area to be served. The LifeBox then becomes a Wi-Fi hotspot. Any authorized device within several hundred feet can get access to the Internet.

Education

Once a student has a tablet and access to the Internet, the education paradigm is shifted. Instead of being tethered to a classroom, learning can occur at any time of the day and in any location. Curriculum and instructors can come from anywhere in the world.

For example, a child that is required to herd cattle to help support his family does not have the luxury of attending classes during the day. However, the same child could carry a tablet loaded with video lectures and homework assignments. He could study during breaks or in the evening.

Technology Hub

LifeBox can evolve from a classroom to a technology hub for the entire community. Authorized members of the community can access the Internet for learning, commerce or communication.

Once Internet access is available, there are increased opportunities for economic activity. The community can find a market for its goods and sell them throughout the world. Once students are educated, they can apply their skills to compete for contract work. Others can get access to world's knowledge with a simple Google search. Still others can use Skype and other apps to communicate with others throughout the world. With initiative, communities would have the tools necessary to lift themselves out of poverty with limited amounts of assistance.

Conclusion

The LifeBox Education Module is ideally suited for a classroom in disadvantaged areas. The addition of solar energy and broadband connectivity allow the LifeBox to become a technology hub. Tablet computers can be stored and charged during the evening. Tablets may be used by students for classroom instruction, or they may be used for self-paced study for children that cannot otherwise attend in a classroom setting. Tablets can be protected from dust, water and drops so they can be taken with the student anywhere she needs to go. Learning can occur at any hour of the day. Authorized members of the community could also utilize LifeBox's technology for commerce and communication.