

**Information Systems Management
Course 95-822**

Spring 2006

Final Consulting Report

**Community Human Services
Corporation**

Tony Yeh

Community Human Services Corporation

Executive Summary

Student Consultant, Tony Yeh
Community Partner, Paul Mosey

I. Background Information

CHSC is located in South Oakland, Pittsburgh with around 96 employees and 4.6 million dollars budget. Its mission is

Create a vibrant and inclusive South Oakland community in partnership with our neighbors

The services of CHSC are focused on housing assistance and free mental health care. Because CHSC serves many people in the greater Pittsburgh area, in order to manage their huge data, CHSC installed Microsoft Access as its main database. Now the times, CHSC has its own servers for database, file sharing and mail.

II. Consulting Tasks

CHSC has a problem about connecting to a database from a remote site, the trouble procedure and slow speed decrease CHSC staff's efficacy. The main task of this case is to find the way which enables CHSC's other four remote sites in the greater Pittsburgh area to retrieve data without waiting for long time.

After trying different solutions, we decided to adopt a web page to connect to CHSC's database. The main expected outcome is to create a prototype of the final product. After that, the IT department of the organization will be able to create the complete version of the web page to meet their requirements.

III. Outcomes Analysis and Recommendations

The test result of the new web page shows that CHSC can save 3,055 hours on connecting to a database each year, which enables CHSC to have more time to serve more people, moreover, helps CHSC to realize its mission.

The IT department is in charge of maintaining the database and web page, ideally these services could last for a long time. But the risk is the maintenance of the IT environment is not complete enough since there is only one person in the IT department.

There are two recommendations, one is to enhance the web page in order to save more time and offer more function for creating a user-friendly interface, the other is to train other staff to know the basic level of IT knowledge to avoid the stopping of IT operating.

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I. About the Organization

Organization

Mission

Create a vibrant and inclusive South Oakland community in partnership with our neighbors¹.

Services and area²

CHSC is a sprawling tree of an agency, the purpose of CHSC is to provide a wide range of services not only in the South Oakland community, but throughout the greater Pittsburgh area. The scope of the services of CHSC includes the Community development and support, homeless assistance³, mental health residential services, youth programs, health programs. Many residents, especially those in low-income urban areas, lack of the resources of health care and other activities. Community Human Services Corporation provides the services to residents who need help and care, gives them the mental and physical health service and even In-Home Services Program to enhance their living quality.

CHSC programming extends the notion of care and celebration to places where people live and work, rather than operating from one central location. Systems that mix professionals and indigenous persons to provide services reflect a need in the culture to mix informal community rituals with the more formal supports and interventions. Such a system integrates people and helps reestablish community while assisting persons at risk.

Location and employees

CHSC locates at 374 Lawn Street, Pittsburgh, PA. The organization hires 96 full-time employees and 6 volunteers. The overall budget of CHSC reaches 4.6 million dollars per year.

1 CHSC uses the word neighbors in the broad sense of the word to include Oakland, Lawrenceville, the Hill, East Liberty and downtown.

2 Part of content is quoted from CHSC's main page

3 CHSC's homeless assistance program serves persons throughout Allegheny County.

Facilities

CHSC owns two labs with more than twenty PCs for students or residents to use, other PCs are in staffs' office, each employee owns his or her own computer. Besides, CHSC have several copy machines and more than ten laser printers for work purpose. All the computers are managed by one control center with four servers and one desktop, the control center is kind of small and four servers make loud noises.

The security of control center is safe and sound, locates in the main building of CHSC, although there are many employees in the second floor, only CIO has the key to access the control center. Four Dell servers store mails, documents and client database, in order to prevent power outage, control center also owns a UPS system to make sure four servers keeps working all the time. The CIO makes a backup of all the database data everyday. The other four client sites have several computers. Four client sites have to retrieve information from host site, but for some reason, client sites can not connect to the database in host site via internet connection directly.

Staff

The staff of CHSC consists of ninety-six full-time employees and 6 part-time volunteers. The executive director is now an open position. The chief information officer is Mr. Paul Mosey. Mr. Paul is in charge of managing the information technology system of the organization, conducting the technology plan and deciding the budget of both hardware and software.

Program¹

Homeless Services (Families United, Supportive Relocation Program, Homeless Outreach, Emergency Weather Shelter)

Homeless service provides the maximum opportunity for individuals who are homeless to obtain the necessary entitlements, resources, support and life skills needed to achieve and maintain independent living. The outreach team seeks out and initiates contact at various sites (including streets, shelters, treatment facilities, and housing programs) to connect individuals with housing, employment, behavioral health treatment, education, food, clothing, physical health services, supportive counseling and follow-up.

Mental Health Residential Programs (Supported Housing, Domiciliary Care)

The Residential Programs at Community Human Services provide three levels of care for individuals in need of a supervised living arrangement. Services are available for elderly persons and chronically mentally ill adults in homelike settings. The programs are designed to individually support and meet the needs of each person.

Both of the residential sites are located in the South Oakland area and are part of the comprehensive services offered by Community Human Services. Levels of care include residential CRR (Dom Care) and Supported Housing.

¹ This part is quoted from CHSC website, <http://www.chscorp.org/>

Youth Programs (After School Program, Summer Program)

CHSC offers an After School Program and a Summer Camp to the youth of South Oakland and the Lower Hill areas. Programs were created to cultivate and promote youth success by recognizing the unique and special gifts of each K-8th grade participant and providing a variety of fun and educational opportunities for them to explore and develop their individual strengths. Youth Programs provide a safe nurturing environment where children can participate in a variety of structured, supervised activities that are both fun and educational.

CHSC have established the following core program areas for the After School and Summer Programs; academic support and achievement, recreational activities, technological competency, cultural enrichment, healthy lifestyles/nutrition, cultural competency, life skills, social skills, and volunteerism/community service.

Health (Health Station, In-Home Services, Health Outreach)

The purpose of Health Service is to reduce the barriers to health care for the poor and underserved by providing services that enable participants to receive health assessments, diagnosis, and treatment in a non-threatening manner and to provide personal care, instructional, care taker relief, and home help for participants with disabilities to enable them to live in their own homes and delay the need for institutionalization.

Child Care Food Program

The Child Care Food Program (CCFP) ensures that children (infants to 12 years old) in day care homes throughout Western PA receive nutritious meals. The CCFP provides nutrition training, food reimbursements, record keeping materials, and other support to licensed family day care homes, the program works toward creating other networking and support systems. The supports provided by this program help to continue and improve the accessibility of the affordable, quality care provided in licensed family day care homes.

CCFP is part of the National School Lunch Act. The program offers cash reimbursement to child care programs that serve meals to children in their care. Day care homes can serve breakfast, lunch, dinner, and snacks to enrolled children. Homes may be reimbursed for three meals per child, per day, one of which must be a snack. CHSC works with the day care home providers in completing all documentation, creating appropriate menus, and ensuring that homes are reimbursed for eligible meals served to the children in their care. Under certain circumstances, providers can also claim their own children for meals served.

Technical Environment

Network

CHSC is one of the members of Wireless Neighborhoods (WN). By cooperating with WN, CHSC has a super fast internet connection speed to WAN via wireless network connection. Although CHSC get its internet connection ability via a special antenna, CHSC still adapts wire network within the organization instead of conducting 802.11b/g wireless network technique. Part of the reason is the reception within the building is not good enough for all the spaces to use network swimmingly. The other issue is the security problem, as long as the wireless still has security issues; the private data in CHSC's database should not expose via unsafe network. Another reason is the budget imitation; it's very costly to convert the

infrastructure from wire network to wireless one. According to the above reasons, the CHSC now uses wire-network as its intranet and internet infrastructure. CHSC does have some documentation for network operation, but it is still not adequate for staffs to solve the problem themselves.

Labs

One of the labs is only for test usage, those desktops in the lab don't have internet connection ability, and the only task for those computers is for student to do some particular tests. The other lab is for students in after school program or residents to use. With high-speed internet, they are able to use amount of internet resource and software.

Operating System

Most of the computers are use windows XP system and office suite and MS access. The hardware of the computers is strong enough to support high resource-demand operating system like windows XP edition.

Website and e-mail account

CHSC has its own mail server, so all the employees have their e-mail account. The website was designed and constructed by CIO. The content include organization's information and schedule, furthermore, there is a portal for employees to login the VPN of CHSC. The information of the website is updated and checked everyday.

Security

The CHSC has a security policy. Every computer in CHSC not only has been installed Symantec Antivirus and updated periodically, but also be protected by firewall. Each of staffs' computers is protected by password.

Control Center and the network

Four servers in control center were installed the .net 2003 operating system. The host site have three buildings which are connected by 10/100 LAN, but due to the building's structure and the budget, the disposition of the wire within three buildings is totally mess up, disorder and crowded. One of the buildings even sometimes loses signals. And the client sites can not access database server in host site directly, so if client sites want to retrieve the data from database, they have to remote control one of host site's computers and enter the database from that remote computer, the process is very slow and troublesome.

Technology Management

Not only the hardware but also the software and data are managed by CIO. Mr. Paul is the only person who knows how to maintain computers and servers. He is in charge of maintaining the website, trouble shooting, constructing the database frame and making technology plan. He also writes standard operating process of specific software for the employees in the organization.

¹ Wireless Neighborhoods uses special standard antenna to transfer signals to its members, so there is less security issues than 802.11 specific wireless networks.

Technology Planning

As a CIO, Mr. Paul Mosey is responsible for planning and budgeting. He decides what to buy within the limited budget. The technology budget of CHSC is handled within each program's budget. There is no overall technology budget, but there is at least \$3,000 dollars to maintain the infrastructure of CHSC. Right now, CHSC do have technology plan, but it is not very detailed. Since technology plan is made by CIO in CHSC and with highly approved by the director, the plan is very possible to be implemented.

Internal & External Communication

External communication

CHSC uses news letter and website as its external communication, with well maintained web-site. Residents and donors are able to check CHSC's schedule and events on-line or contact staffs via e-mail or the information provided by staffs. Employees and directors can log into the VPN from the portal on the home page of CHSC. There are also several hyperlinks on the website which link to the CHSC partner's homepage.

Internal communication

Day-to-day communications within organization are handled largely via phone or email. In each site of the organization, since the working office is not too large, employees can even communicate with each other face-to-face. CHSC has a sound database for client information, it also has share disk for employees to share files on via network. CHSC has five sites in greater Pittsburgh area; all of them connect each other via network (i.e. data exchange and update). But since client sites are not able to access the database in host site, they have to use other method to retrieve necessary information.

Information Management

Most of the information in CHSC is recorded and updated in the database, but there are still some documentations have not been converted into electrical file. Because some of CHSC's services are privacy relative and need residents' signature, so even if customers can download electrical forms from website, they still have to hand in paper documentations. The financial department use financial and accounting programs to deal with the capital issues and accounting information.

II. Scope of Work

Build web access database for the other four client sites

Problem and Impact

The problem of CHSC's daily work is the inefficiency of data retrieving. As long as the CIO had built a strong database for clients, it should be very easy for all of CHSC's employees to connect to the database to get information. However, because of the failure connecting to the database in South Oakland, the employees are not able to get the information from other places. Even in other four sites in greater Pittsburgh, the employees have to log into the VPN via the portal on CHSC's home page first, after that they have to remote the idle computer in South Oakland to access the database, finally they are able to obtain the information they need. The process is not only very time consuming (more than 5 minutes each time) but also inconvenient, moreover, the data transferring¹ speed is very slow for some reason. Although employees of CHSC are able to find the information they want most of time, the protracted process does decline their working efficiency.

With the increasing people who need help both mentally and physically, the CHSC gets more and more work to do. In this situation, only efficient information flow can achieve their mission – to help more people.

Strategy

Gather information

Research the method to make all the employees connect the database in South Oakland directly instead of remote controlling the computer via VPN. There methods include putting replica database in remote site and using package software to create ASP.net for database.

Solution choosing criteria

- Since the organization had just updated Microsoft software last year. So basically the plan is to focus on the applying of Microsoft Access database system.
- The solution should be able to integrate with existing equipments. So that CHSC doesn't have to spend extra cost.
- The solution should be able to be accessed by any computers installed with Microsoft Windows 2000/ XP edition.

Decision making

After trying all the candidate solutions, we found that replica database's connection speed is very slow and most package software can not meet CHSC's particular requirements. Hence we chose the web page for database.

¹ The data transferring here means not only the data of database but also the huge data (i.e. screen shot and other information) which is generated when staff remote control other computers.

Approach

1. Researching how to use Access to build a web access database. To make a page for all the employees to connect to the database instantly.
2. Design the specific of web page. The guideline is to make webpage layout identical as Microsoft Access database.
3. Creating the prototype of webpage for database.
4. Implement the web page and test it.
5. Write a standard operation process so that everyone is able to help himself or herself to process the connection.

Expected Outcome

An important outcome of this task is that the web page will be built. The database will have a portal now on their home page and all the staff of CHSC will be able to access the database at office, in client's place, at a coffee shop and at home. Ms. Mosey will be able to modify the web page of their database to fit the new demand of their information management.

Feasibility of the work

It may cost few weeks to implement the project. Since the improved process is able to help CHSC in its mission, Mr. Paul Mosey is very motivated to support this project. As for the budget, while CHSC already has the software-Microsoft Access, so it is not necessary to spend much money on this project. Staffs of CHSC will be comfortable to use web-interface database.

III. Outcomes and Recommendations

TASK: Build webpage to access database

To build a prototype web access database which enables CHSC to access the current database from different sites.

Overview

The CP and I have discussed the basic structure of the web access database and the CP understands enough so that he knows how to modify the web page to meet specific requirements. For example, the CP can search particular records and filter them by some criteria on his own. With this basic understanding, my CP Paul can construct a more elaborate web page to access the database.

I made a prototype of web page for CHSC that the CP can take and manipulate on his own. The prototype is the skeleton of the final product. It can access the database from different sites in a very short time. The only difference is that it only has basic features and limited functions.

Before the webpage is established

Before the web access page was created, the database was too large so that the connection speed became very slow if a user wanted to retrieve database information via VPN. It took CHSC more than 15 minutes to connect to the database and was a very troublesome process. The user would have to login to VPN first, remote control the PC in South Oakland, and then access the database. Now they only have to click the link then obtain the data they want.

	Access database by VPN directly	Access database via remote control
Method	Log into VPN and execute Microsoft database system	Link to CHSC's main page then log into Outlook Web Access then remote control computer in South Oakland
Usability	Troublesome	Convenient
Database loading Time	15 minutes	5 minutes

*Connecting time may vary upon the speed of internet

After the webpage is established:

Speed

The connection of the database's speed is increased from 15 minutes to within 5 seconds. However, users must enter correct name to find a particular consumer. If a user misspells a name or does not spell out the entire name, the web page will return an error. If average spelling takes 20 seconds, we consider the total data retrieve time as 25 seconds.

Usability

Updating and retrieving the database is easy; they can access data everywhere as long as there is internet connectivity. Instead of the slow procedure before, now they are able to retrieve data by click the link.

	Connecting via VPN	Connecting via Remote Desktop	Webpage
Connect Time	15min*60 = 900sec	5min.*60 = 300 sec	25 sec
Frequency	5 times/ person	5 times/ person	5 times/ person
Users	4/day	4/day	4/day
Work days	200/year	200/year	200/year
Total time(hr)	10,000 hr	3,333 hr	278 hr

*Data searching time may vary upon the speed of internet and the name entered

Sustained Capacity

The home page of CHSC is built by Mr. Mosey, the CP, himself, he knows IT well. The CP will build webpage himself, so if he knows the method to build web access database, he is able to design and maintain it himself, and then the outcome will sustain in the future.

Risk

If CP doesn't know how to build web access page or he leave CHSC in the future, then the outcome may not be sustainable. For this reason, CP has to train other staff to design or maintain web pages.

Recently, CHSC has devoted one person to database administration. Now, both the CP and the database administrator will be able to make necessary changes in the future.

The security of the database is another issue, CHSC is not using encrypted page, so the data of their consumers which includes the privacy information of them are insecure. They are devoted to ensuring data security, and have pledged to take steps to ensure that the information will stay private.

Expanded capacity

Their mission is "Create a vibrant and inclusive South Oakland community in partnership with our neighbors". The faster way to retrieve data makes CHSC a more efficient organization. In the future, CHSC could use more technology to expand their scope. For example, use network equipment to track patient's health situations or meet them in a virtual environment which allows consumers easier access to services.

Recommendations

Vision

To leverage IT in CHSC by providing easy access to the CHSC database system via an html web page with a user friendly interface.

Goal 1: The integrated user friendly customized webpage

CHSC now has a web access database system which enables it to retrieve data from its major database server in South Oakland. However, this system does not completely satisfy their daily work process need as the functionality of the web page created by Microsoft Access is limited. For example, when staff tries to search the database via the webpage, they have to enter the correct name exactly, otherwise the web page will return an error. Ideally, the function should be the same as in the Access database which enable users to enter the first few letters of a name and finds the first consumer that meets that criteria. The best solution is to outsource their database webpage to make a customized web page to fit CHSC's requirements. Many programs like ASP.net, PHP and JSP are able to embed more functions than the features available in Access. The users would benefit from a consistent interface regardless of whether they are connecting through the database or through the web page.

Strategy

Although there are several software options that can convert a database system to a webpage, most of them do not meet CHSC's requirement because they only show the whole table on the web page or have limited functions. By outsourcing the CHSC web page to a professional network firm, CHSC can decide what functions they needed. The major expected functions are shown below:

Business aspect

- The IT team must talk to other departments to meet their needs
- Users must be authenticated to log into the web database
- There should not be any limitation of the number of users
- The response time should less than 5 seconds
- The new webpage should increase the staff ability to be more productive and efficient
- All of the users should be able to access the web page with windows 2000/XP installed.

Functional Aspect

Customized web page

There should be a main page that has the most important information of a particular consumer (i.e. personal information, case manager information and in which program) and all the links to other relative information linked by a foreign key, there, sub pages should have a back button to the main page.

Navigation bar

This bar has four major functions which are “next”, “previous,” “add record,” and “delete record.” The bar enables users to move from one record to the next one. There should be a main navigation bar for the page to change records based on the primary key.

Search button

The Search button is used for searching for a particular record. The database of CHSC is large, it’s very time consuming for staff to find a particular consumer by scrolling through each record one by one. The search button enables users to enter the name of the consumer, and then the record will jump to that consumer instantly.

Auto-complete

When a user selects the search function, the search field will auto-complete the name to find a matching consumer. For example, if the user types L in the last name search dialog, it will show a list of all of consumers whose last name start with L. And if the user types Lu in the last name search dialog, it will show a list of all of consumers whose last name start with Lu.

Cost aspect

Cost of deployment

The existing server and operating system should be able to work without upgrading. The new system should be able to integrate with Microsoft Access. There could be no cost for the deployment if hire unpaid intern from school.

Cost of maintenance

Since the web page will be designed through outsourcing, it’s logical that the web page will be maintained in the same way. Fortunately, there is no need for CHSC to maintain the web page once the web page has been built unless CHSC wants to modify data structure or add more functions. Even if problems arise with the database, or CHSC wants to add new functions, CHSC can ask the network firm for technology support.

Expected outcomes

The staff of CHSC will be able to have a more user friendly web page for their database. It will help CHSC save 166 hours and so that the staff is able to have more time to serve their clients.

Roughly estimated ROI

	Webpage generated by Microsoft Access	Customized Webpage
Time for search consumer	20 sec	5 sec
Frequency	5 times/person	5 times/person
Number of users	4/day	4/day
Work days per year	200/year	200/year
Total time (seconds)	80,000	20,000
Total time (hours)	222	56

* The data is estimated in the assumption of average time include spelling wrong and right, it may vary in different situations

Resources

Internal resource

People

MIS staff has to talk with staff that uses the system and to decide what function they need.

Servers

Servers are used for storing database and webpage.

Computers

Computers are used for connecting to the internet to retrieve data via web page.

External resources

Software Company

There are many software and/or IT consulting firms for non profits organization, and the price are much less than regular, CHSC can use these resource for its IT deployment.

School

Hire paid/unpaid internship to code for webpage. For example, CMU and UPitt, many programs require students to do summer intern.

Firewall

Since CHSC want to use web page to access database, so the security issue is very important, the software firewall might or might not able to defend the database. So firewall is used for blocking attacks from internet.

Budget

Task	Labor	Total (Est)
MIS talk to staff to understand the need of CHSC	10 hr	N/A
MIS find the good and cheap software company or paid/unpaid internship from university	20 hr	N/A
Implementation	30 hr	1,200
Testing and modifying	5 hr	200
Total	65 hr	1,400

1. Hour wage is estimated as \$40/hr.

2. Software cost is free.

Goal 2: Training existing staff to know IT

There is now only one person, the chief information officer Paul, in CHSC IT department. It will be a mess without Paul in office. There will be no one for trouble shooting, and the database will be hanged on if it crashed. Moreover, the local network and mail server may stop operation without maintaining. Hence CHSC should train staff to know the basic IT knowledge in order to ensure that there are some employees have a basic level of IT understanding to avoid the stopping of IT department if Paul leaves CHSC. By doing so, the IT could be sustained as long as the IT infrastructure and data exist.

Strategy

To create training plan which include different sections of skills to teach employees to use existing IT infrastructure to maintain the operating of CHSC. The training plan is the guideline of what employee should learn and other detail information.

Business aspect

- Trained staff should be able to take the job over if IT manager has to leave.
- Basic functions should be continuous.
- Advanced functions should be covered no longer than two weeks.
- The taking over period should less than 1 month.

Functional aspect

- Familiar with managing servers which are installed with Microsoft Windows Small Business Server 2003 operating system.
- Ability to use Microsoft Access database system. The trained staff has to know how to create, modify and update the database.
- Knowledge to setup network for CHSC. The scope includes the internet connection, intranet structure, VPN setup, email and file sharing.
- Basic knowledge of trouble shooting and software upgrading.
- The ability to upgrade hardware of infrastructure.
- Maintain internet security by using anti-virus software, spy ware software and firewall.
- Maintaining the main page of CHSC for employee and consumers.
- Documentation of operating steps as SOP (standard operating procedure) for further use.

Cost aspect

- Employees who will be trained are picked up from existing staff.
- The training class may be held by CIO, other company or other resource.
- CHSC may hire free consultant from other NPO.
- CHSC may hire more employee for IT department if necessary.

Expected outcomes

Having other employees know the basic level of IT knowledge in office would make CHS more stable. Staff may help Paul deal with problems, maintain the IT environment, give advice and realize the potential capacity of information technology.

Resources

Internal resource

People

MIS staff has to create training plan and transfer knowledge to the employees in other departments.

Servers

To train employees to be familiar with server's operating system.

Computers

To train employees to be familiar with computer in both hardware and software sides.

External resource

IT training company

To offer classes for employees to learn skills of IT.

School

Hire paid/unpaid internship as instructor to teach IT knowledge. Offer free IT classes for employee.

Other NPO

Some NPO offer resource for IT education.

Budget

Task	Labor (hr)	Total (Est)
IT classes provided by IT training firm	20	\$ 2,000
Free IT classes provided by CIO or NPO	50	free
Consultant from NPO or school	30	free
Operating and testing	5	free
Total	105 hr	\$ 2,000

*Training cost is estimated as \$100/hr

*Although free training resource do exist, but somehow they may not be free.

Resource Lists

<http://www.npower.org/>

NPower provides high quality, affordable assistance to nonprofits of all sizes, enabling them to strategically use technology that supports their mission. In addition, the collective knowledge of the NPower Network brings the best thinking and solutions to our nonprofit customers more quickly and cost effectively.

*Source: <http://www.npower.org/>

<http://www.techsoup.com/>

TechSoup is a trusted technology resource that offers a variety of information and services for the benefit of the nonprofit sector.

*Source: <http://www.techsoup.com/>

<http://www.idealists.org>

A database of NPO resource includes thousands of organizations, volunteer and other resources.

<http://www.compasspoint.org/askgenie/index.php>

CompassPoint Nonprofit Services is a consulting, research, and training organization providing nonprofits with management tools, strategies, and resources to lead change in their communities. With offices in San Francisco and Silicon Valley, we work with community-based nonprofits in executive transition, planning, boards of directors, finance systems and business planning, fundraising, and technology.

*Source: <http://www.compasspoint.org/>

<http://www.networkforgood.org/>

Network for Good is the Internet's leading charitable resource—an e-philanthropy site where individuals can donate, volunteer and get involved with the issues they care about. The organization's goal is to connect people to charities via the Internet—using the virtual world to deliver real resources to nonprofits and communities.

*Source: <http://www.networkforgood.org/>

<http://urbantech.org/>

A not-for-profit corporation helps underserved communities to fully participate in an information age. Through partnerships with community-based organizations, we have created a nationwide network of computer training centers (CTCs) and ground-breaking curriculum that empower job seekers and inspire youth achievement.

*Source: <http://urbantech.org/>