Title: Michigan Education & Career Pathfinder

Category: Digital Government: Government to Citizen

State: Michigan

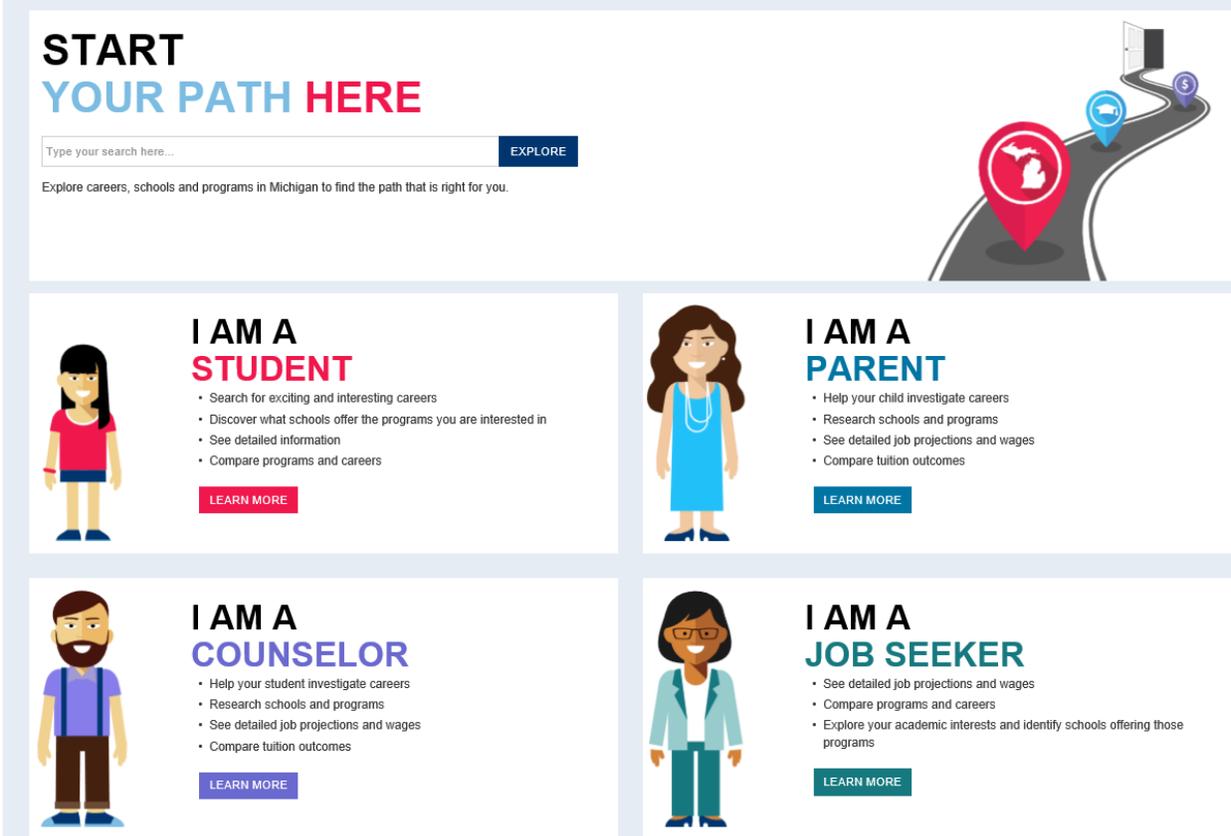**Sponsor:** David DeVries, DTMB Director and State CIO

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pathfinder   https://pathfinder.mitalent.org

Executive Summary

Students and the unemployed of Michigan have had several methods and various web-sites to obtain information that relates to either current jobs available, or college programs, degrees and certifications, or both. Some sites are State of Michigan sites (i.e. Talent Connect), while other sites are private tools. These sites are not linked together and don't easily allow individuals to match college programs by geographic areas to career paths. Furthermore, there is no immediate link to the job market for a specific career; such as job growth and wage rankings, typical education required for a specific job, and actual job openings that are dynamically updated. Additionally, the detailed information on colleges and universities, their programs, fields of study and degrees – is available mostly through elementary and secondary school systems to students – at a significant cost to schools, from a provide vendor.

Adding to this is the trend of shrinking unemployment numbers in Michigan, and the growing demand for skilled and educated workers. The barriers that exist need to be removed that would allow for students and the unemployed of Michigan to make more informed decisions on educational opportunities and 'in demand' job and career paths. Leveraging technology was needed to provide a 'one-stop' web-site that allows for the students (as young as middle-school), their counselors and/or parents - and unemployed adults to be provided with various search capabilities for colleges and universities using various search criteria, specific degrees and fields of study available and the approximate degree costs, along with related career paths that include growth rates, earning potential, and specific jobs currently posted; all in one website.

Finally, it was part of Governor Snyder's Talent and Jobs priority initiative to increase the number of residents with high-quality certifications or degrees to fill this growing demand in Michigan for workers and skilled trade jobs. The Pathfinder online career-planning tool needed to be interactive, providing all college and university degree and certification information, career paths with projections, outcome measures for selected careers, and currently available jobs – all in one website. This application needed to be accessible by anyone, regardless if elementary or secondary school, college or university, or an individual's personal PC or mobile device.

Therefore, the overall goal was to build a tool for the general public that:

1. Provides programs and associated colleges and universities indicating specific education paths and careers currently offered and available;
2. Include maps for the selected educational institutions that are responsive;
3. Provide Return on Investment (ROI) information that indicates the investment in education and employability data that is available, so that prospective students, parents, veterans and job seekers can make informed career decisions;
4. Provide a training path picture when a career goal is chosen, and assist the student/job seeker in creating high-level plans for a complete career path;
5. Access current job openings that have been uploaded to the state's Talent Connect site;
6. Display the current "Top 50 Hot Careers" in Michigan, and;
7. Utilize "best practices" in designing an easy to use website portal for all users

Concept

In reviewing Michigan's decreasing unemployment numbers, the unemployment rate for the last five years has gone from 8.9% down to the current rate of 4.7% (Source: Bureau of Labor Market Information, Local Area Unemployment Statistics). In the Governor's Marshall Plan for Talent, the following numbers were presented for "High-demand Career Openings through 2024":

- 270,690 in Information Technology /Computer Science
- 109,410 in Manufacturing
- 212,247 in HealthCare
- 56,287 in other Professional Trades
- 162,241 in Business and Other

> **Michigan Career Facts:** There will be 811,055 high-demand career openings through 2024, and $49,094,842,059 in potential earnings.

In the Governor's Marshall Plan for Talent, there is a reference to "Closing the Talent Gap" and leveraging a "Career Navigator" tool (Pathfinder application) designed to address the need to increase the number of Michigan residents with high-quality, in-demand degrees and credentials. Total cost of the project was $1M, which included development of the tool and marketing services.

Decision Process: At the start of the project, the team looked at both developing internally or going outside to a third-party vendor. The decision was made to develop internally due to; a) The large amount of data being required for the application, with most of it coming from within the state; b) More control of the complete design and development process; c) Post-production support and maintenance would be facilitated with in-house staff since they developed the application, and; d) The tight schedule to "launch the application" was given to the project team.

Solution / Architecture: The solution architecture utilized was the Next Generation Digital Infrastructure (NGDI) environment extending the State's private cloud, which allows for complete scalability and growth, maintaining website required response performance. Additionally, the application was designed with mobile responsive design principles and standards.

Efforts to ensure Accessibility and Information Security: During the design and build phase, the goal was to design an easy and ADA complaint navigation flow, as well as allowing for total access of the site's content (with no log-in credentials required). This was especially critical for the youth target audience that would be accessing the site. No Personal Identifiable Information (PII) data would be captured or maintained by the application.

Best Practices: Several methods were used in designing the application;

- ✓ Current industry standards for programming practices and design patterns
- ✓ A review of similar tools from other state sites were reviewed and evaluated
- ✓ Responsive design for use on any desktop or mobile device
- ✓ Accessibility standards used per the Americans with Disabilities Act (ADA)
- ✓ Application optimized to load quickly, especially on slower internet connections

Project Structure: The Agile project management approach was utilized for this project, and the schedule was divided into five major development releases / sprints. At the end of these releases, Focus Groups were conducted with the following groups; A) Middle school students and parents, B) High school students, C) GED students, and D) Counselors. Feedback and constructive recommendations from the above Focus Groups was documented, reviewed, discussed, and used. This iterative 'feed-back loop' process was extremely valuable in helping to create useful changes to the actual application for the end-user, based on actual comments and feedback from the use of the tool.

Data: Leveraging Labor Market Statistics: With the need to show not only typical trade school, college and university tuition costs, there also was a need to show and display 'outcome data' for selected careers, including future job growth. This 'outcome data' includes:

- Wage rank, job openings and job growth rankings
- Projected annual openings and projected 10-year growth
- Typical education required
- Wage range (graphic slide bar)
- Link to current and available job openings from the Michigan Talent connect site (with the number of openings displayed)

This data was made available and an extensive effort was undertaken to match individual completed certifications and degrees to actual quarterly wages – providing meaningful numbers to the user to determine a reasonable "Return on Investment" for a given career path.

Regarding the college and university data, the team also worked directly with the colleges and universities, scheduling several sessions to demo the tool so they could see the value of the data they gather and report – and that will be used by this application.

Also included for comparisons are simple graphs that clearly indicate "earnings" and "unemployment" by educational attainment for reference.

Communication plan to educate user groups and promote awareness: A comprehensive communication plan was developed and executed, in order to address the needs of internal and external stakeholders to the project. When the application was rolled out to the public, several directions were taken; a) The state utilized a third-party marketing vendor to assist in designing an advertising campaign for the general public; b) The application was presented in conferences in which school counselors were allowed to see and use the tool for use back in the schools they represent; c) Presentations by Michigan's Governor, and finally; d) A general communication was sent to all State of Michigan employees. Additionally, Pathfinder marketing toolkits were delivered to over 2,500 superintendents, principals and counselors to help students take advantage of state resources designed to help them navigate Michigan's expansive career opportunities and see the potential return on investments for the education and training needed for those careers.

Significance

Application Entry Points/Target Audience: The Home Screen not only contained a main menu for starting from, but contained icons for the following selectable users (target audience):

- Students (middle school, high school, GED adults)
- Parents
- Counselors
- Job Seekers (Adults/Veterans)

The user can also simply select (off the main menu) the following selections/entry points, with the same 'type-ahead' capability entry boxes:

- Choose an Occupation
- Choose a Field of Study
- Choose a School
- Choose a Location
- View the Top 50 Hot Careers
- View the Top 25 Professional Trades

The application allows for choosing a school for a specific 'Field of Study'. Included in the search results for schools, the following filters are available to the user:

- Community College
- Public University
- Independent University
- Proprietary School/Continuing Education Provider
- Community Based Organization
- Adult Education/Public K-12
- Special School
- Career Technical Education

When a school is selected, not only is the location of the school provided, a link to that school and a graphical map for the location is displayed, including school contact information. The graphical map is responsive that allows for zoom and pan controls. The option to list these results side-by-side for multiple schools is also provided for comparisons. Further filtering allows schools to be searched within a 5, 25 or 50-mile radius of a given location in case distance is a major concern.

An initial significant government improvement was the consolidation of several websites into one, with frequent updates to that data included in the ongoing operation and maintenance of this one site. Data used and made available in the application is updated as frequently as the source is updated. This is crucial to keep the outcome data up-to-date and meaningful to the users.

In addition to several state agencies involved in this project (Talent and Economic Development, Talent Investment Agency, Workforce Development, Labor Market Statistic and Information), the following stakeholders were actively involved in monthly meetings during design and development; Michigan Career Pathway Alliance, Jackson College, Center for Educational Performance and Information, Central Michigan University, Henry Ford Community College, Kirtland Community College, Lake Michigan College, Lansing Community College, LMISI, Macomb Community College, MDE Office of Career and Technical Education, Michigan Association of State Universities, Michigan Center for Student Success, Michigan Community College Association, Michigan State University, Michigan Technological University, Montcalm Community College, Oakland University, Saginaw Valley State University, UM Flint, University of Michigan, Washtenaw Community College, Wayne County Community College District, and Workforce Intelligence Network.

This project aligned with the Governor's priorities (Marshall Plan for Talent), policies and strategies for Talent Development and Job Growth as stated in the most recent "State of the State" address to the Michigan House and Senate on January 23, 2018. In his address, he called out "Careers Pathway Alliance" and his number one priority – Talent.

NASCIO 2018 priorities supported by Pathfinder include:
- ✓ Fortifying security and lowering risk through the use of Michigan's Next Generation Digital Infrastructure (NGDI) secure cloud services
- ✓ Strengthening the role of centralized data
- ✓ Using internet/cloud technologies to provide scalable capabilities as a service
- ✓ Centralizing, consolidating, and optimizing services, operations, and business processes
- ✓ Cross-agency collaboration and shared services
- ✓ Introducing statewide connectivity using internet and mobile-accessible technology
- ✓ Data management and analytics through data architecture restructuring improving efficiency and access
- ✓ Facilitating strategy and business intelligence through greatly-improved reporting
- ✓ Improving partnering and inter-jurisdictional collaboration among all stakeholders at levels ranging from local advisory groups and governments, to state agencies
- ✓ Using Agile and incremental software delivery to provide iterative designs and solutions, allow for flexible and responsive modifications, and incorporate business-owner feedback as an ongoing and integral part of the development process

Impact

Single-point-of-contact: A major benefit to the citizens of Michigan is a one-stop shopping location that is free to use, that provides detailed information on colleges, programs and degrees offered, locations of these schools; and career information such as what education level is required – if needed, potential growth of specific jobs, earnings potential for jobs, and lists of specific job openings currently available; with all of this linking together to determine a career road-map and return-on-investment information. With this information, multiple selections of colleges and/or careers can be displayed in a side-by-side view for comparisons. Additionally, this

site is up and available on a 24-hour basis. With this one-stop application, a database of over 63,000 occupations are stored and can be searched utilizing various filters. For ease-of-use, the typeahead entry system begins to list results before the complete text is entered in the 'occupation entry box'. This list of occupations continues to be updated.

Groups that will benefit from this application are: a) Young people that are in middle-school, high-school, college, or in process of obtaining a GED; b) Unemployed adults; c) Returning veterans; d) Secondary school and college counselors. Finally, Michigan employers will benefit with a larger number of Michigan residents with educational credentials, targeted to employer's needs. This ultimately benefits the Michigan economy with an increased workforce that has higher education or certifications, working for Michigan businesses and industries.

Actual/Initial Audience Analytics and Metrics: Below are numbers from Google Analytics for the period of October 1, 2017 – April 16, 2018:

- Users = 29,030 – All users/current/new sessions/unique
- New Users = 28,812 – First-time users
- Sessions = 38,770; number of sessions per User = 1.34
- Pageviews = 190,279; Pages/Session = 4.91
- Bounce Rate = 18.64% (This rate indicates that 81.36% went past the 'Home Page' to look at career, school, programs and outcomes)

Project Financial Impact/Budget: The project was completed within the project budget ($1M) and did not exceed the Grant Funds that were made available for this project, including marketing.

Security: The topic of security for this tool was evaluated, and because of the main target audience - middle school students, no log-in credentials were implemented. A session can be saved, and an e-mail is sent to the user that provides the URL to call back the previous session; but no Personal Identification Information for any type of log-in is needed or captured.

Project Roll-out: As the project was ending and the final tool rolled out into a Production mode in August 2017, the project team continued to discuss the features and additional functionality that should be considered in the near future. This tool will continue to be improved and enhanced, from feedback from users, schools, management and the development team, along with data that will be available using Google Analytics, which will indicate actual hits and usage of the site, along with any possible common exit locations that may indicate a problem that needs to be addressed. The tool will only continue to get better, which per the original goal, ***benefits not only the students and unemployed of Michigan, but the businesses and industries within the state.***

The Pathfinder Project also received the "Excellence in Technology Award" at the October 2017 Michigan Digital Government Summit.