



# Individual Career Mapping

## Career Services @ Your Library

The Nevada Governor's Office of Economic Development is introducing Individual Career Mapping (ICM). The ICM includes the power of Virtual Reality (VR) career content from 3D publisher *Lifelique* to help patrons understand the world of work.



*Lifelique's* 35 VR field trips, 5 job shadowing sims and five 1:1 VR course companions leading to industry credentials in Certified Nursing Assistant, MT1, HVAC, Math for Tech and Dialysis Tech, make up the 3D and virtual reality career collection accessible through the Individual Career Mapping process available from Nevada's public libraries.

Access the Collection Here:

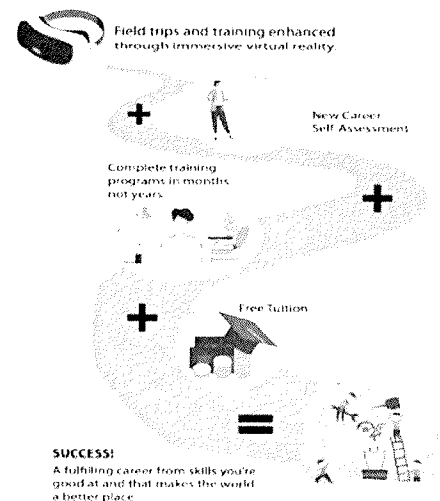


Valid by 09/30/2024

## HOW IT WORKS FROM THE LIBRARY:

- Self-Paced Online Program: Navigate through your career discovery journey at your own pace, with online resources.
- Virtual Reality Field Trips: Step into exciting careers in healthcare, advanced manufacturing, IT, skilled trades, and logistics in a VR headset and online.
- Skill Discovery & Gap Analysis: Innovative assessment tools to discover skills, identify gaps & tailor your learning journey to fit **your** aspirations.
- VR-Enhanced NCRC Prep: Immerse yourself in a virtual reality environment to prepare for the National Career Readiness Exam (NCRC), then take the exam prepared to excel!

## ICM© Increases Labor Market Literacy



For inquiries contact: Mark Andersen E: [mark@lifelique.com](mailto:mark@lifelique.com)  
Tammy Westergard E: [tawestergard@goed.nv.gov](mailto:tawestergard@goed.nv.gov)



808 W Nye Lane, Carson City, NV 89703  
1 State of Nevada Way, 4<sup>th</sup> Floor, Las Vegas, NV, 89119  
775.687.9900  
[WWW.GOED.NV.GOV](http://WWW.GOED.NV.GOV)

**FOR IMMEDIATE RELEASE**

**June 17, 2024**

**Contact: Evan Haddad**

**Public Information Officer**

**[ehaddad@goed.nv.gov](mailto:ehaddad@goed.nv.gov) 775.684.9973**

## **GOED launches ambitious career mapping and training program benefitting underserved populations in rural and urban Nevada**

*Project features first in nation workforce librarian in residence at the agency*

**Carson City, Nev.** – The Nevada Governor's Office of Economic Development (GOED) is proud to announce the launch of the Individual Career Mapping and Training Delivery Model program based on a groundbreaking methodology developed by the agency.

This cutting-edge program aims to close gaps in career navigation and training for underrepresented groups by enhancing access to career exposure, skill assessments, training programs, and employer connections. The funds of \$1,559,500 for the project, as well as the associated contract approved on Tuesday by the Nevada Board of Examiners, come from a 2019 settlement with T-Mobile.

“The money that our settlement with T-Mobile brought into the state included a charitable contribution of \$30 million earmarked for enhancing opportunities for women, minorities, and women and minority-owned businesses,” said Nevada Attorney General Aaron Ford. “With this third GOED-led settlement project, the agency has again demonstrated highly innovative ways to open previously closed doors for underserved communities. These efforts address crucial elements in the state’s workforce development challenges, which will help Nevada businesses access untapped talent and bolster economic growth in the Silver State. I’d like to thank GOED for working with my office on this crucial initiative.”

The two-year program will improve labor market literacy and understanding of job market trends, skill requirements, and opportunities.

“Pathways to economic opportunity are too frequently blocked for minority and women populations, and the overarching goal of this project is to give those individuals agency for informed decision making over their career decisions,” said Karsten Heise, who heads GOED’s Innovation Based Economic Development division, which will oversee the project. “This project is based on a validated methodology developed by the GOED team which at its core is integrating the state’s public libraries while reaching deep into underserved communities comprising minorities, women, veterans, people in homeless shelters, re-entry from incarceration, and at-risk youth between the ages of 16-24.”

Central to this initiative is the deployment of two Senior Workforce Development Professionals (SWDP) through the Strategic Workforce Program-in-Residence Partnership with library partners. The

# INTERNATIONAL ICERI CONFERENCE SPOTLIGHTS NEVADA'S INNOVATIVE CAREER MAPPING RESEARCH

## Seville, Spain provides global platform for GOED developed program

### FOR IMMEDIATE RELEASE

**Contact: Evan Haddad**

**Public Information Officer**

[ehaddad@goed.nv.gov](mailto:ehaddad@goed.nv.gov) 775.684.9973

**Nov. 13, 2024**

**CARSON CITY, Nev.** – A new paper co-authored by Governor's Office of Economic Development (GOED) team members showcases pioneering research into the integration of technology and workforce training in Nevada.

The paper, "Revolutionizing Career Exploration: How Simulation and Immersive Technologies Are Boosting Labor Market Literacy Rates in Nevada's Individual Career Mapping Framework," was published in the 17th Annual International Conference of Education, Research, and Innovation (iCERi) proceedings, contributing to an influential body of research for workforce development and career technical education activities across the globe. It was written by GOED's Karsten Heise and Tammy Westergard; contractors Jahairy Rivera and Michelle Rebaleati; Lifeliqe's Co-Founder Mark Andersen and Michal Mizerak; and Grantcycle's Ansley Fender.

Andersen joined Westergard, GOED's senior workforce librarian in residence, to present findings at the conference. The paper defined the problem of "low labor market literacy" – recognizing that many people struggle to understand the complexities of the job market, much like they do with other forms of literacy – and introduced the Individual Career Mapping (ICM) process as an innovative solution. This process leverages advanced educational technology, including virtual reality content for immersive career exploration, and a powerful assessment tool that measures individuals' computational thinking capacity, which is essential for today's workforce. By approaching labor market literacy like digital or financial literacy, the ICM provides a clear, step-by-step path to understanding the labor market, a complex problem now made solvable through this innovative model.

"Ultimately, economic growth does to a large extent depend on how efficaciously industry's labor demand is matched with the skills and interests of job seekers and that in turn depends on increasing labor market literacy, which however remains a major gap in today's tech-driven world," said Westergard. "Through Nevada's innovative Individual Career Mapping process, which integrates tools like virtual reality and a

career-readiness, propelling individuals toward their career aspirations for free while equipping them to meet the demands of the 21st-century workforce.”

###

### **About the Governor's Office of Economic Development**

*Created during the 2011 session of the Nevada Legislature, the Governor's Office of Economic Development is the result of a collaborative effort between the Nevada Legislature and the Governor's Office to restructure economic development in the state. GOED's role is to promote a robust, diversified and prosperous economy in Nevada, to stimulate business expansion and retention, encourage entrepreneurial enterprise, attract new businesses and facilitate community development.*

# REVOLUTIONIZING CAREER EXPLORATION: HOW SIMULATION AND IMMERSIVE TECHNOLOGIES ARE BOOSTING LABOR MARKET LITERACY RATES IN NEVADA'S INDIVIDUAL CAREER MAPPING (ICM) FRAMEWORK

M. Andersen<sup>1</sup>, A. Fender<sup>2</sup>, K. Heise<sup>3</sup>, M. Mizerak<sup>4</sup>, M. Rebaleati<sup>3</sup>, J. Rivera<sup>3</sup>, T. Douglass-Westergard<sup>3</sup>

<sup>1</sup>*Lifeliqe (UNITED STATES)*

<sup>2</sup>*Grantcycle (UNITED STATES)*

<sup>3</sup>*Nevada Governor's Office of Economic Development (UNITED STATES)*

<sup>4</sup>*Lifeliqe (CZECH REPUBLIC)*

## Abstract

In today's rapidly changing landscape of automation, robots, and artificial intelligence, navigating careers can feel like flying blind. People often don't understand the role of human work in an age of quickly evolving technology. The Individual Career Mapping Methodology™ (ICM) is a comprehensive career development tool designed to help individuals navigate the complexities of the job market and make informed career decisions. The integration of simulation and immersive technologies in educational contexts offers transformative potential for career exploration and development. This study evaluates the implementation of these technologies within Nevada's SANDI (Supporting and Advancing Nevada's Dislocated Individuals) Framework, focusing on the ICM process. The primary objective is to assess how these immersive simulations enhance user engagement and decision-making in career planning.

The research leverages advanced virtual reality (VR) experiences to provide realistic simulations of various job environments. These tools are integrated into academic, school, and public libraries across Nevada, making the same set of focused career development resources accessible to all, regardless of socioeconomic status. The study employs both quantitative and qualitative methods, including surveys, interviews, usage statistics, and direct observations to collect data on user engagement and satisfaction.

Key findings indicate that simulation and immersive technologies in the ICM process significantly improve career exploration by offering realistic job simulations, thereby supporting more informed career decisions. Leveraging cutting-edge technology, the Individual Career Mapping Methodology™ (ICM) integrates virtual reality career exploration and virtual reality course companions with a Career Readiness Assessment that focuses on individuals' computational thinking capacity to help identify aligned career opportunities. This process is further enhanced with comprehensive preparation for the ACT WorkKeys National Career Readiness Certificate (NCRC) exam, ensuring participants are equipped with the skills and a nationally recognized, employer-driven, work-ready certificate needed to pursue in-demand career paths.

The data reveals an increase in the usage of the ICM process and tools, with a notable rise in user satisfaction and engagement from success taking the Career Readiness Assessment because it correlates to NCRC attainment. The research also highlights the substantial growth in VR field trip participation and the creation of user profiles on the Nevada CareerExplorer platform, a career information database tailored to highlight in-demand and resilient industries in Nevada.

The study concludes that simulation and immersive technologies have the potential to democratize career exploration, breaking down access barriers and providing equitable opportunities for career advancement. These technologies not only enhance user engagement but also align with cognitive principles of active learning, skill development, and continuous adaptation. By addressing the initial challenges such as the cost of technology and the need for regular updates, the research presents a comprehensive strategy for leveraging emerging technologies to meet the evolving demands of the 21st-century job market.

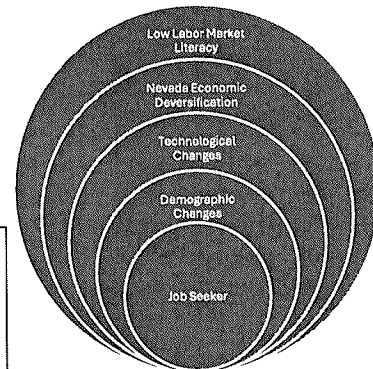
This study contributes to the growing body of evidence supporting the integration of advanced technologies in education, advocating for their broader adoption to enhance career and labor market literacy and development.

Keywords: Labor market literacy, Simulation technologies, Immersive technologies, Career exploration, Individual Career Mapping Methodology™ (ICM), Nevada Career Explorer platform, SANDI (Supporting and Advancing Nevada's Dislocated Individuals), Workforce development, User engagement, Career Readiness Assessment, Job market, Skill development, Career planning, ACT WorkKeys National Career Readiness Certificate (NCRC), Quantitative and qualitative methods, Educational technology, Cognitive principles, Active learning, Underserved communities, Career advancement.

## 1 INTRODUCTION

Over the past decade, Nevada's labor market has been facing four systemic challenges. The state's continued economic diversification, an increase in technology levels within its key industries, employment seekers' limited or complete lack of comprehension of the labor market, and state-specific demographic trends all synchronously impinge upon the ability of job seekers to effectively navigate for employment and to identify training opportunities. Unemployment rates reached double digit levels as a direct consequence of the 2008 financial crisis and the 2020 COVID-pandemic. Following the financial crises and the establishment of the Nevada Governor's Office of Economic Development (GOED) in 2011/12, Nevada has embarked on a concerted effort **to diversify the state's economy** beyond its traditional focus on hospitality and gaming. Nevada is a low population<sup>1</sup> (3.1 million) but large area<sup>2</sup> (nearly 110k square miles, 7<sup>th</sup> largest state in the Union by area) state with two main urban centers, Reno in the north and Las Vegas in the south. This has led to Nevada exhibiting bi-polar economy characteristics. Economic diversification efforts have progressed more expediently in northern Nevada. This became apparent during the height of the COVID-pandemic when Nevada topped US unemployment during a reversal of fortune when the state went from its lowest historical unemployment rate to its highest<sup>3</sup>. Unemployment in April 2020 hit a high with 34 per cent in Las Vegas<sup>4</sup> and 20.2 per cent in Reno<sup>5</sup>. However, due to its relatively diversified economy, Reno's unemployment rate took four months to return to single digit unemployment and 11 months to full employment compared to Las Vegas which required 11 months to single digit and 43 months to full employment levels<sup>6</sup>. These figures suggest that the ongoing transformation of Nevada's economy post-financial crisis has already proven successful in northern Nevada. The ongoing economic diversification, correlating with **increasingly higher technology levels** across Nevada's

focus industries (see Figure 2), has added another layer of complexity for job seekers, exacerbating an already limited comprehension of the labor market and negatively affecting their employment opportunities. Akin to the UNESCO Institute for Statistics' general definition of *literacy*<sup>7</sup>, we developed a definition of *labor market literacy* based on findings of this study. Adding to the dynamic nature of Nevada's economy is the state's rate of population growth. From 2011 to 2021, Nevada's population grew 16 per cent, the second highest in the nation, while its labor force grew even more quickly at 21 per cent<sup>8</sup>. Annual net migration increased over 150 per cent from 2012 to 2020. Thus, **demographic changes** in the form of inward migration leading to labor force growth exceeding population growth represent the fourth Nevada specific



<sup>1</sup> <https://data.census.gov/profile/Nevada?g=040XX00US32>

<sup>2</sup> Ibid.

<sup>3</sup> <https://www.bls.gov/opub/ted/2020/43-states-at-historically-high-unemployment-rates-in-april-2020.htm>

<sup>4</sup> U.S Bureau of Labor Statistics (<https://www.bls.gov/eag/eag.NV.htm>)

<sup>5</sup> Ibid.

<sup>6</sup> Source: GOED analytics, research division

<sup>7</sup> <https://uis.unesco.org/node/3079547>

<sup>8</sup> GOED 5-Year Comprehensive Economic Development Strategy, December 2023, pp. 10 ff. (<https://goed.nv.gov/wp-content/uploads/2024/02/Statewide-Plan-Water-Health-12.20.2023.pdf>)

systemic change impacting job seekers' effectiveness in navigating the state's labor market and their ability to make informed career decisions. These economic shifts highlighted the need for comprehensive workforce development solutions which informed the state's federal grant application "Project SANDI" (Supporting Advancing Nevada's Dislocated Individuals). In 2020, the Nevada Governor's Office of Economic Development developed a web-based, multiple solutions platform concept to improve informed career decision making and foster engagement with secondary education, training providers, as well as employers. Project SANDI led to an evolutionary process based on feedback loops and applying the principles of incremental innovation during the three-year grant period. This resulted in the development of a testable methodology, the **Individual Career Mapping Methodology™ (ICM)**. Currently, the ICM has entered its scale-up phase under the auspices of a grant from the Nevada Governor's Office of Economic Development<sup>9</sup>. Nevada's evolving labor market exposed to the four systemic challenges emphasizes the shortcomings of traditional job search strategies, which often leave individuals unprepared to navigate complex career paths. This highlights the urgent need for higher labor market literacy to help job seekers understand in-demand skills, industry trends, and effective career planning. As part of the scale-up, the ICM is being integrated into large, federally supported cluster-building opportunities under the CHIPS and Science Act<sup>10</sup>. Furthermore, elements of the methodology are being further tested through Nevada's participation in research projects at Middle Tennessee State University<sup>11</sup> and the University of Nevada, Las Vegas<sup>12</sup>.

## 1.1 PROBLEM STATEMENT

Nevada's labor market is constantly evolving due to the diversification of its economy<sup>13</sup> from hospitality, tourism and gaming towards higher-end, technology-driven industries such as advanced manufacturing, information technology, natural resources and technologies, as well as transportation and logistics. While progression on career paths typically exhibit a non-linear trajectory, these paths are also distinct for different

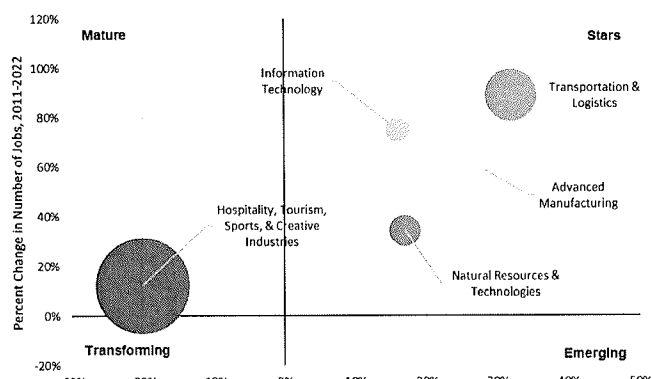


Figure 2: Percentage change in Location Quotient, 2011-2022, Source: GOED Research Division

labor market participants. We classify three archetypes<sup>14</sup>: (a) young people entering the labor market for the first time; (b) adults working in low-wage, low-mobility jobs; and (c) adults re-entering the workforce after a period of absence.

**Institutional Silos:**

Adults particularly depend on support from federal workforce programs such as the Workforce Innovation and Opportunity Act (WIOA), which is a US federal job training program whose design often lacks effectiveness. While in some cases it does enable job seekers to enter living wage jobs<sup>15</sup>, it has often not met expectations of helping workers advance into better-paying, long-term careers. WIOA focuses on placing

<sup>9</sup> The Nevada Attorney General's Office's settlement funds are being utilized for this GOED grant.

<sup>10</sup> Nevada is home to National Science Foundation Engines projects. The inaugural awarded Southwest Sustainability Innovation Engine (SWSIE) and the Development Award and 'full-application in progress' Recharge Nevada – A Coalition for Energy Innovation. In addition, Nevada is a recipient of a Economic Development Agency (EDA) Tech Hub award. Both NSF Engines and EDA Tech Hub are major national initiatives under the US CHIPS and Science Act.

<sup>11</sup> <https://mtsunews.com/mtsu-led-fed-grant-aids-rural-libraries/>

<sup>12</sup> Xue (Cher) Xing, Ph.D., Associate Professor & Program Coordinator, Career-Technical & Postsecondary Ed. Department of Teaching and Learning, University of Nevada, Las Vegas

<sup>13</sup> GOED 5-Year Comprehensive Economic Development Strategy, December 2023 (<https://goed.nv.gov/wp-content/uploads/2024/02/Statewide-Plan-Water-Health-12.20.2023.pdf>)

<sup>14</sup> Joseph B. Fullet et al, Harvard Kennedy School. (2024, June 4), *Career navigation: More than a roadmap*. The People Lab. <https://www.pw.hks.harvard.edu/post/career-navigation>

<sup>15</sup> <https://livingwage.mit.edu/states/32>

people in employment, but these positions frequently offer low pay, poor working conditions, and little opportunity for advancement. Despite the availability of Nevada career development centers, whose mandate includes the provision of WIOA services, such as One-Stop<sup>16</sup> centers, access to online job boards and conventional career information databases, these resources are often fragmented and overwhelming. In addition, career development centers are too widely dispersed leading to inadequate serving of traditionally disadvantaged community members.

#### Labor market literacy:

Platforms offered by these workforce centers can lead to low engagement, an overload of information, and no clear direction to navigate the labor market. Critically, career readiness and skills assessments, even when available, are often inadequate. All these factors contribute to low labor market literacy. We define **labor market literacy** as *"the ability to identify, understand, interpret, and engage with labor market information, including job trends, employment opportunities, required skills, and economic changes. It involves using both qualitative and quantitative data, such as employment statistics and industry forecasts, to make informed decisions about career paths and workforce strategies. This type of literacy is critical for individuals to navigate their career journeys successfully, achieve their professional goals, and adapt to the evolving demands of the workforce. Like traditional literacy, labor market literacy requires continuous learning, skill development, and the ability to adjust strategies based on new information and market shifts."* Labor market literacy, unlike basic literacy, is not universally understood. In most cases, an individual's personal labor market literacy is limited to their own real-world experiences, and not typically addressed throughout an individual's formal education. Knowledge and understanding of the labor market develops over time through a combination of education, career exploration, and experience. Additionally, labor market literacy requires individuals to continually stay informed about ongoing labor market and economic trends. This frequently requires job seekers to connect with service providers within their chosen career field.

#### Fragmentation of resources:

For optimal labor market participation, adequate labor market literacy skills are necessary, but not sufficient. Supplemental and accessible *wrap-around-services* such as childcare, mental health support, and transportation are fragmented and, in some cases, lacking. Challenges with these wrap-around-services have been found to be a barrier to career progression<sup>17</sup>. For example, according to data from the National Survey of Children's Health quoted in American Progress<sup>18</sup>, two million parents were forced to leave or pass on a job opportunity in 2016 due to struggles accessing affordable childcare<sup>19</sup>. McKinsey points out the presence of often-untapped labor pool of highly skilled veterans with deep skill levels acquired and developed during their service<sup>20</sup>. However, unemployed veterans are more likely to experience mental health challenges<sup>21</sup>, making access to suitable mental health support vital for re-entry into the workforce. Employer policies and practices, including automated hiring systems, often marginalize unemployed, including those with criminal histories, and underemployed individuals or "hidden workers,"—even while they actively seek employment.

### 1.1.1 Purpose of study

This study aims to investigate how the lack of labor market literacy substantially inhibits job seekers from making informed career decisions which leads to vital loss of agency and an inability to identify effective career path on-ramps. This project investigates the challenges and key drivers of career navigation,

---

<sup>16</sup> <https://nvworkforceconnections.org/system-partners/one-stop-partner-programs/>

<sup>17</sup> Michelle R. Weise, "Long Life Learning", Wiley, November 2020

<sup>18</sup> American Progress, CAP20, September 13, 2017 (<https://www.americanprogress.org/article/2-million-parents-forced-make-career-sacrifices-due-problems-child>)

<sup>19</sup> Data Resource Center for Child & Adolescent Health

(<https://www.childhealthdata.org/browse/survey/results?q=5121&r=1>)

<sup>20</sup> "From the military to the workforce: How to leverage veterans' skills", McKinsey, November 8, 2023 (<https://www.mckinsey.com/capabilities/people-and-organizational-performance/our-insights/from-the-military-to-the-workforce-how-to-leverage-veterans-skills>)

<sup>21</sup> "Veteran and Military Mental Health Issues", Marlyn J. Moore; Evan Shawler; Christopher H. Jordan; Christopher A. Jackson, (<https://www.ncbi.nlm.nih.gov/books/NBK572092/>)

particularly for individuals from traditionally under-represented communities. The research also aims at identifying barriers individuals face when navigating their career paths, and it proposes strategies to build a more effective and equitable career navigation system. The study incorporates results obtained during a US Department of Education funded grant which led to the development of a unique methodology, the Individual Career Mapping Methodology™ (ICM). The study subsequently acts as a validation of the ICM hypothesis and will enable its scale-up and broadening of its user base, particularly in underserved communities and geographies within the state of Nevada.

### 1.1.2 Significance of study

The study's findings will inform policymakers and educators on how to better align training programs with the evolving job market and ensure that underserved populations are equipped with the necessary skills to compete for upwardly mobile careers. Two main strands of the study highlight individual job seeker agency and more effective, inclusive and equitable workforce development strategies developed by educators, training providers and policy makers. These strands are:

(1) *Ineffectiveness of Traditional Recruitment Methods*: The evidence presented in the study suggests that traditional ways of recruiting students into training programs—such as through outdated assumptions about their understanding of the job market, and the use of conventional communication methods like flyers and career fairs—are no longer effective. These traditional methods increasingly fail to reach underserved and disadvantaged communities. Furthermore, these approaches do not consider the modern dynamics of how individuals seek and process information, especially in an increasingly digital environment. The study's results highlight the success of an alternative approach: Individual Career Mapping Methodology™ (ICM). Individuals develop a sense of agency following the creation of their own career maps based on their improved understanding of labor market conditions and trends, training and further education options, as well as the identification of suitable wrap-around-services. This self-directed approach encourages individuals to take intentional and motivated steps toward their career goals without needing external prodding. One piece of evidence of agency are higher pass rates in training programs and more success stories in launching living-wage careers.

(2) *Sophistication and Accessibility of Educational Technology*: Broadly accessible through public libraries, the ICM deploys curated applications of advanced educational technology such as virtual reality (VR) and personalized tools such as a career readiness assessment, measuring computational thinking capacity. By utilizing such technologies and other interactive platforms, while fully integrating them into a developed methodology that not only leverages these technology tools but adds critically important human-based guidance and support, the foundations of the ICM are defined. The integration of these technologies, particularly to underserved communities, leads to a democratization of career access and development. Furthermore, the study is being tested and its hypotheses validated by portions of the process being incorporated in two active academic research projects<sup>22</sup>.

## 2 METHODOLOGY

### 2.1 Background and developed methodology

The groundwork for the current project described herein was laid out by the Nevada Governor's Office of Economic Development collaborating with the Nevada State Library, Archives and Public Records (NSLAPR). NSLAPR has been applying the workforce development goals of the US Library Services and Technology Act (LSTA) and the Workforce Innovation and Opportunity Act (WIOA).

#### Incremental Innovation Process

Between 2017 and 2020 NSLAPR conducted (via trial projects) expansions of Nevada's workforce development system through three key library-centered phases: (1) Public libraries and One-Stop Centers Collaboration: One-Stop Centers partnered with 15 southern Nevada public libraries to provide access to workforce development resources, the first of its kind in the U.S., offering career services through local libraries. This initiative integrated career exploration services into the community, creating a streamlined point of access for job seekers across diverse demographics. (2) Virtual reality (VR) technology in libraries:

---

<sup>22</sup> Middle Tennessee University and University of Nevada Las Vegas.

Nevada libraries introduced Virtual Reality (VR) technologies, allowing patrons to engage with immersive career exploration tools. Through partnerships with a private company, XRLibraries, and the California Library Consortium (Califa Group), it helped students and adults experience job tasks and Science, Technology Engineering, and Math (STEM) fields in innovative ways. This bridged the gap between theoretical learning and practical application. (3) At the 2018 Nevada Library Association (NLA) Conference, multiple partnerships were announced to support workforce development through the application of technology. Lifelike, a 3D publisher, offers immersive learning via workforce training simulations in VR; NCLab, provides career readiness assessments and training; and Headed2 (now PowerSchool), integrates labor market information into library resources via the Nevada CareerExplorer online platform. Key highlights included libraries supporting practice-based learning opportunities, and helping patrons pursue national industry certifications. In 2015, the Carson City Library offered first-of-its-kind in the nation<sup>23</sup> training through the Manufacturing Skills Institute leading to success for patrons earning the nationally recognized and stackable Manufacturing Technician 1 (MT1) certificate. In 2019, the Nevada State Library Development unit led a Dialysis Patient Care Technician (PCT) program wherein Nevadans could earn a certificate at the College of Southern Nevada (CSN), which ties into Nevada's diagnostic services career pathway. These early achievements formed the foundation and the first phase towards a fully integrated and system-based career navigation approach. This in turn strengthened a successful joint federal grant application to the U.S. Department of Education, Career Technical Education (CTE) Office.

During the three-year grant period Project SANDI surfaced three specific workforce development challenges which represented the impetus for the development of the Individual Career Mapping Methodology™ (ICM): (1) *Institutional Silos*: In workforce development, this issue can be attributed to the complex expectations placed on large institutional actors—such as libraries, workforce centers, and educational institutions—resulting from the fact that each have different funding streams and operational priorities. These entities often serve overlapping populations but are constrained by their funding flows, reporting requirements and goal alignments. The different ways these organizations measure success, driven by their unique mandates and financial resources, contribute to a silo-effect where coordination and integration become extremely difficult. (2) *Labor market literacy*: Labor market literacy emerged as a key challenge that GOED identified. Workforce development literature on this topic is sparse. The realization of this gap came as GOED attempted to deliver on SANDI's primary goals—connecting dislocated workers to high-demand careers through a community of practice that was rigidly fragmented. (3) *Digital Divide*: Immersive technologies like VR headsets, distributed across libraries, offer a unique solution to bridging access gaps for training and career exploration. One of the major barriers faced by individuals with limited access to technology is not only the initial inaccessibility, but also the rapid pace at which technology evolves. Providing access to cutting-edge tools like VR for job and career exploration advances the development of digital competence. By immersing individuals directly into VR-driven learning experiences, users can bypass the typical need for extensive prior technical skills. This approach allows them to engage with career exploration in a way that traditional methods cannot match. VR technology can present job tasks and career environments in intuitive, hands-on ways that make understanding and learning about careers more accessible. In essence, VR technology becomes a powerful tool to overcome both the digital divide and the knowledge gap in career exploration.

These three barriers were so pronounced during the post-functionality development of the platform that they necessitated the application of an iterative innovation process, which led to the delivery of solutions to overcome them. Through this iterative innovation process the project evolved into a testable methodology comprising both technology tools as well as critical human support elements. This process combined: *Learning from Early Implementation* with the subsequent development of *Virtual Reality Tools and Career Exposure*. (1) *Learning from Early Implementation*: GOED's strategy evolved through on-the-ground learning. The challenge of coordination among large bureaucratic workforce development entities led GOED to adopt a grassroots approach and it formed a community of practice including career navigators at key Nevada workforce development institutions. However, it became apparent that dealing exclusively with individual institutions, even if those involve workforce training providers, not only led to too many degrees of separation from job seekers, but also identified a critical shortcoming of the services offered that are vital to career decision-making. Thus, additional tools such as the Career Readiness Assessment

---

<sup>23</sup> <https://publiclibrariesonline.org/2015/07/carson-city-library-to-offer-manufacturing-certification/>

developed by Nevada startup NCLab, the Math for Tech VR simulation offered by private workforce technology company Lifelike, and the National Career Readiness Certificate were integrated into the developing methodology.

(2) *Virtual Reality Tools and Career Exposure*: The strategic deployment of immersive Virtual Reality (VR) tools and 3D digital content allowed participants to experience job tasks virtually and gain exposure to career paths through VR field trips. This experiential learning approach fostered career interest in STEM fields and provided essential exposure to careers in Nevada's in-demand industries, including advanced manufacturing, healthcare, IT, skilled trades and logistics. A total of 1,018 headsets were distributed across the state. These headsets were strategically placed to ensure wide access for students and community members, offering flexibility in how they are used across various library branches based on population needs and program demand. The key components of creating Virtual Reality (VR) field trips for career exploration are based on a structured framework that ensured educational value, immersion, and alignment with real-world job settings.

### **3 RESULTS, CHALLENGES AND LIMITATIONS**

#### **3.1 Key results and program outputs**

Project partner Lifelike delivered 68 3D objects, 35 VR field trips, and five job shadowing experiences for in-demand career exploration. The virtual reality assets were integrated into public libraries and workforce development centers, providing accessible labor market information and expanded training through bootcamp programs. Lifelike also delivered five virtual reality course companions leading to industry recognized credentials.

##### Successful Implementation<sup>24</sup>

(1) *Resource Setup and Orientation*. Community of practice participants set up accounts and introduce participants ("Explorers") to the key tools. Participants create accounts in the Nevada CareerExplorer, ACT WorkKeys, and Lifelike platforms to connect with career navigators and access study resources. VR headsets and other equipment are introduced during this stage to familiarize participants with immersive technology.

(2) *ICM Assessments*: Participants engage with key assessments through the Nevada CareerExplorer, including the Interest Profiler, Budget Your Life, and Skills Decoder to help participants better understand their career interests, financial goals, and core competencies. The NCLab Career Readiness Assessment is introduced, providing insights into participants' suitability for automation-driven industries through game-based learning.

(3) *VR Integration and Hands-On Engagement*: Integration of VR into the learning process, with career explorers using VR headsets to take virtual field trips and engage in VR job shadowing experiences. Simultaneous introduction of the Math for Tech VR course companion helped individuals develop key math skills in preparation for the National Career Readiness Certificate (NCRC) exam.

(4) *NCRC Preparation and Short-Term Training*: Preparation for the NCRC also includes accessing and studying the ACT WorkKeys curriculum building foundational skills in areas like applied math, graphic literacy, and workplace documents. ACT curriculum completers begin exploring short-term training opportunities that lead to certifications in Nevada's high-demand industries.

(5) *Career Planning and Long-Term Development*: Participants focus on career-specific training programs. Career navigators guide them toward short-term training opportunities that align with their career goals, ensuring that participants gain the skills necessary to succeed in in-demand STEM-based fields.

GOED developed training programs for career navigators and a six-week bootcamp. Early success recorded nine students from the rural Nevada Elko County School District who completed the Individual Career Mapping Methodology™ (ICM), leading to a 100 per cent pass rate on the NCRC exams. Seven students from rural Nevada Jackpot High School and two from Elko High School achieved this milestone in advancing labor market literacy and enhancing students' career readiness, a major challenge in rural areas. Partnerships with local libraries, schools, and GOED's leadership in promoting work-based learning opportunities led to these positive outcomes. GOED emphasized data collection and evaluation, tracking metrics like the number of job seekers completing career plans and participating in career readiness

---

<sup>24</sup> <https://sandi.libguides.com/c.php?g=1196033&p=10355305>

assessments to refine and improve the program. Each interaction during the ICM was recorded via a survey created by private startup company Grantcycle. This survey captured data on the ICM participants, their ICM stage both before and after the interaction, and the type<sup>25</sup>, length, and location<sup>26</sup> of the interaction. This data enabled understanding about which types of interactions were effective in advancing labor market literacy, job training, and career readiness. As a result, the scope of interactions can be reduced to increase the program's efficiency. These early successes representing anecdotal validation of the ICM has led to the next phase of statewide expansion, backed by a \$1.56 million GOED grant from Nevada Attorney General's settlement funds, with GOED actively engaging with partners through site visits and communication.

The statewide expansion is designed to close career navigation and training gaps for underrepresented groups<sup>27</sup> by providing access to career exploration, skills assessments, and employer connections. It is being enabled by the concept of a Senior Workforce Librarian-in-Residence program, the first of its kind in the United States. The Workforce Librarian-in-Residence program, with residencies at the Carson City Library and North Las Vegas Library District is invaluable in creating transformational, long-term change by linking state-level resources with local workforce needs and providing hands-on ICM support for underserved communities. Results from this expansion phase is tracked by a series of key metrics: (1) *Trainer Preparedness*: Measured by the percentage of trainers successfully completing the program and scores on program content comprehension. (2) *Participant Satisfaction*: Surveys and feedback forms assess satisfaction, specifically targeting the relevance and effectiveness of the training. (3) *Learning Outcomes*: Knowledge improvement is measured through pre- and post-assessment scores, and observations track the application of skills in practice. (4) *Program Impact*: Number of post-launch training sessions and the percentage of participants who completed additional training. (5) *Feedback and Adaptations*: Feedback from trainers and participants informs changes to the training program, ensuring continuous improvement. (6) *Resource Utilization and Long-term Impact*: The program's cost-effectiveness and budget adherence are tracked, while long-term impact is measured by participants' application of training skills in real-world career services.

### 3.1.2 Challenges and Solutions

The Individual Career Mapping Methodology™ addresses the fundamental challenge of systemic disconnection between disadvantaged populations and training providers. Despite available courses and tuition reimbursement programs, many individuals face difficulties engaging with educational and training institutions due to a lack of awareness or the complexity of accessing these programs. The ICM overcomes these barriers by utilizing Nevada's public and academic library system as the primary network for outreach. This approach replaces the previous fragmented efforts with a more structured and accessible network for career exploration and educational engagement. The program is de facto taking career navigation directly to underserved communities enabling job seekers to "test drive" careers in a risk-free, immersive environment. Nevada's public libraries play a central role in this model, with community partnerships involving workforce professionals, public librarians, and educational institutions. These partnerships streamline the process of career exploration, training enrollment, and credentialing for participants creating community-driven support system. Going forward, the ICM will focus on expanding its community of practice, especially in underserved rural and urban areas, integrating VR more deeply into training programs, and securing additional federal support to ensure long-term sustainability.

## 4 CONCLUSIONS

The Individual Career Mapping Methodology™ (ICM) demonstrates significant potential in reshaping career navigation and workforce development, especially for underserved and underrepresented communities. By integrating immersive technologies like virtual reality (VR) and personalized career assessments while utilizing human support structures and overlaying with a network effect achieved by the utilization of public and academic libraries, the ICM offers an innovative, user-focused approach that helps individual learners and job seekers better understand employment roles, industry and economic trends, employer demands,

---

<sup>25</sup> VR field trip, 1:1 career coaching, enrolling in SANDI training program, etc.

<sup>26</sup> Library, community college, high school, etc.

<sup>27</sup> Joseph B. Fullet et al, Harvard Kennedy School. (2024, June 4), *Career navigation: More than a roadmap*. The People Lab. <https://www.pw.hks.harvard.edu/post/career-navigation>

and training or education opportunities. The application of technology tools allows job seekers and learners through simulations such as virtual job shadowing and industry field trips to gain a deeper understanding of specific occupations and work environments. Thus, it empowers learners and job seekers to create tailored career pathways aligned with high demand occupations in focus industries, which will ultimately enhance their abilities to make informed decisions and create agency. The study highlights the role of the Nevada CareerExplorer platform in centralizing labor market data and career information, further democratizing access to these resources regardless of socioeconomic status. The findings show an increase in user engagement and satisfaction, driven by the Individual Career Mapping Methodology™ (ICM) and the ACT WorkKeys National Career Readiness Certificate (NCRC). This demonstrates the ICM's capacity to boost career readiness through comprehensive tools such as computational thinking assessments and VR career exploration. Overall, the ICM's impact on policy and workforce development suggests a shift in how workforce readiness should be approached in a 21st century environment of rapid technological and industrial change. By addressing the fragmentation of resources, institutional silos, and the digital divide, this methodology presents a comprehensive strategy to labor market practitioners and policy makers for overcoming barriers to career exploration. It calls for a more inclusive and integrated system, utilizing advanced technologies to create equitable opportunities for career development across diverse populations.

#### **4.1 Recommendations for future research:**

Further research is needed on the following areas to expand the understanding and effectiveness of the Individual Career Mapping Methodology™ (ICM):

**Long-term Impact on Career Progression:** Future studies should explore how the ICM process affects job seekers' long-term career outcomes, including wage growth, job stability, and upward mobility in their chosen fields. Tracking participants over an extended period would provide insights into the lasting benefits of career mapping and immersive technologies on career trajectories.

**Effectiveness Across Different Demographics:** Investigating how the ICM impacts various demographic groups, particularly underrepresented populations (e.g., rural residents, marginalized individuals, veterans, people with disabilities), would help refine the methodology to address specific needs and barriers. Understanding how different communities engage with and benefit from the ICM could lead to more targeted support and interventions.

**Cost-effectiveness and Scalability:** Further exploration is needed to assess the cost-effectiveness of implementing the ICM process on a larger scale. Research should evaluate the financial resources required for widespread adoption, particularly in resource-constrained regions, and identify best practices for scaling the ICM in other states or sectors.

**Integration with Emerging Technologies:** As technology continues to evolve, future research should investigate how new innovations, such as augmented reality (AR), artificial intelligence (AI), and machine learning, can be integrated into the ICM process to enhance career exploration and decision-making even further.

**Impact on Employers and Industry Needs:** Understanding how the ICM can be further aligned with employers' evolving needs in industries like advanced manufacturing, healthcare, and IT would bridge the gap between job seekers and employers. Research should explore how companies can directly engage with the ICM to influence training programs and hiring practices.

## **REFERENCES**

- [1] U.S. Census Bureau, Nevada, Profile, 2024. Retrieved September 14, 2024, from <https://data.census.gov/profile/Nevada?g=040XX00US32>
- [2] Ibid.
- [3] U.S. Bureau of Labor Statistics TED: The Economics Daily, 2024. Retrieved September 10, 2024 from <https://www.bls.gov/opub/ted/2020/43-states-at-historically-high-unemployment-rates-in-april-2020.htm>
- [4] U. S Bureau of Labor Statistics Economy at a Glance, 2024. Retrieved September 10 from <https://www.bls.gov/eag/eag.NV.htm>

- [5] Ibid.
- [6] Source: GOED analytics, research division
- [7] UNESCO Institute for Statistics. Glossary, 2024 Retrieved September 16, 2024, from <https://uis.unesco.org/node/3079547>
- [8] Nevada Governor's Office of Economic Development 2023 5-Year Comprehensive Economic Development Strategy, December 2023, pp. 10 ff. Retrieved from <https://goed.nv.gov/wp-content/uploads/2024/02/Statewide-Plan-Water-Health-12.20.2023.pdf>
- [9] Nevada Office of the Attorney General T-Mobile US, Inc. Settlement Grant, 2019.
- [10] Southwest Sustainability Innovation Engine (SWSIE) and the Development Award, 2024. Retrieved September 3 from <https://www.unr.edu/nsf-engines-battery>
- [11] Weiler, R. MTSU-led \$550K federal grant funds rural libraries' virtual reality training to help patrons express career possibilities. Retrieved September 17 from <https://mtsunews.com/mtsu-led-fed-grant-aids-rural-libraries/>
- [12] Xue (Cher) Xing, Ph.D., Associate Professor & Program Coordinator, Career-Technical & Postsecondary Ed.
- [13] Nevada Governor's Office of Economic Development 2023 5-Year Comprehensive Economic Development Strategy, December 2023, pp. 10 ff. Retrieved from <https://goed.nv.gov/wp-content/uploads/2024/02/Statewide-Plan-Water-Health-12.20.2023.pdf>
- [14] Joseph B. Fullet et al, Harvard Kennedy School. (2024, June 4), Career navigation: More than a roadmap. The People Lab. <https://www.pw.hks.harvard.edu/post/career-navigation>
- [15] Massachusetts Institute of Technology Living Wage Calculator, 2024. Retrieved September 6, 2024 from <https://livingwage.mit.edu/states/32>
- [16] Nevada Workforce Connections, One Stop Partner Programs, 2024. Retrieved September 10, 2024 from <https://nvworkforceconnections.org/system-partners/one-stop-partner-programs/>
- [17] Weise, M. "Long Life Learning: Preparing for jobs that don't even exist yet", 2022. Wiley,
- [18] Center for American Progress, CAP20, September 13, 2017. Retrieved September 10, 2024 from <https://www.americanprogress.org/article/2-million-parents-forced-make-career-sacrifices-due-problems-child>
- [19] Data Resource Center for Child & Adolescent Health, 2024, CAHMI. Retrieved September 6, 2024 from <https://www.childhealthdata.org/browse/survey/results?q=5121&r=1>
- [20] "From the military to the workforce: How to leverage veterans' skills", McKinsey, November 8, 2023. Retrieved August 23, 2024, from <https://www.mckinsey.com/capabilities/people-and-organizational-performance/our-insights/from-the-military-to-the-workforce-how-to-leverage-veterans-skills>
- [21] "Veteran and Military Mental Health Issues", Marlyn J. Moore; Evan Shawler; Christopher H. Jordan; Christopher A. Jackson, retrieved September 2, 2024, from <https://www.ncbi.nlm.nih.gov/books/NBK572092/>
- [22] Middle Tennessee University and University of Nevada Las Vegas
- [23] Public Libraries: A Community's Connection for Career Services, John J. Heldrick Center for Workforce Development, Rutgers, Edward J. Bloustein School of Planning and Public Policy
- [24] Nevada XR Libraries Report 2018 – 2019 Nevada State Library, Archives and Public Records
- [25] Colegrove, P.T., Westergard, T. From workforce development to recovery: bringing together distance learning, career exploration and virtual reality learning tools, and the public library to deliver experimental learning and impact. INTED Proc. 2024; 2 – 7.
- [26] Public Libraries Online, 2015. Retrieved September 5, 2024, from <https://publiclibrariesonline.org/2015/07/carson-city-library-to-offer-manufacturing-certification/>
- [27] Nevada Governor's Office of Economic Development, Individual Career Mapping. 2024, Retrieved September 7, 2024, from <https://sandi.libguides.com/c.php?g=1196033&p=10355305>