YouScience Student Aptitude and Career Discovery:

Connecting to In-Demand Industries in Stark and Tuscarawas Counties

Team NEO Research, August 2024

Introduction

This report explores the results of Stark and Tuscarawas counties student aptitudes and interests testing across career clusters and examines how this data relates to in-demand jobs. The aptitudes and interests data was provided by YouScience, collected in 2024 from students in grades 7 through 12. It represents 4,007 Stark County students and 453 Tuscarawas County students and includes 615 total careers. The basis for this work came from a desire to deepen the understanding of opportunities in workforce development and employer needs in the local region. YouScience data, in relation to current labor market demands, can be used as a tool to bridge student talent with career-connected learning opportunities.

Results for aptitude and interest testing can help inform workforce development initiatives, as it gives potential insight into the strengths and weaknesses of the future supply side of the labor market. YouScience measures the gap between student aptitudes and interests across various sectors. This report examines ways to interpret these scores from a workforce development perspective and asks the question: how can we more strategically mobilize educators and professional organizations to come together in solving the issue of career exposure, discovery, and connecting aptitudes to future skill needs. Informing conversations

between education partners and local business leaders on these topics will add tremendous value to the effort of creating a vibrant and resilient regional economy.

Collaboration towards balancing the supply of learned skills and in-demand jobs starts with identifying where and how employers, educational institutions, and other workforce development organizations can engage together to plug into the data and start on solutions. The aptitude and interest data offer a starting point for this discussion. This prospect resulted in the creation of "Own Your Aptitude" guides that provide insights into regional employment and education opportunities relative to the interest and aptitude data scores of students for 16 career clusters.

Background

"YouScience is used by nearly a million students in thousands of school districts to create hyper-personalized pathways. We use proprietary artificial intelligence to uncover student aptitudes, then connect these aptitudes to careers and educational pathways designed to help students find relevance in school and confidence beyond."[1] YouScience tests for the following aptitudes: Sequential Reasoning, Idea Generation, Work Approach, Interpersonal Style, Timeframe Orientation, Work Approach, Interpersonal Style, Vocabulary, Visual Comparison Speed, Numerical Reasoning, Spatial Visualization, and Inductive Reasoning.

[1] https://www.youscience.com/

YouScience Data

The gap between aptitude and interest has different meaning if the sum of the gap is negative or positive. A negative result indicates more aptitude than interest, signaling an opportunity to expand on student exposure opportunities to various career paths, or an opportunity for industries to increase attraction efforts. A positive result indicates more interest than aptitude, signaling an issue of misalignment between skills needed to be successful and the interest in a particular area. Focusing on skills development, or redirection through skills-based pathways, could result in better alignment with labor market demand.

Gaps in YouScience Aptitude and Interest Scores of Students

Stark and Tuscarawas Counties 2024

Career Clusters	Sum of Aptitude Fits	Sum of Interest Fits	Sum of Gap
Advanced Manufacturing	3,991	1,827	(2,164)
Agriculture & Natural Resources	2,482	1,344	(1,138)
Architecture & Construction	3,004	3,536	532
Arts & Media	3,764	7,482	3,718
Business	2,202	1,694	(508)
Computers & Technology	2,448	1,087	(1,361)
Distribution & Logistics	2,718	2,376	(342)
Engineering	2,945	3,837	892
Finance	1,798	784	(1,014)
Government & Public Admin	1,237	659	(578)
Health Science	11,101	6,031	(5,070)
Hospitality & Tourism	1,145	517	(628)
Human Services	1,614	2,736	1,122
Law & Public Safety	1,394	3,204	1,810
Sales & Marketing	1,572	1,658	86
Teaching	3,378	7,915	4,537
Grand Total	46,793	46,687	(106)

Career Exposure and Discovery

In career clusters where the gap between aptitude and interest was negative, the importance of career exposure becomes critical. Efforts supporting career visibility can help foster organic interest in students to career pathways they otherwise may not have known about. The *YouScience 2024 State of the Future Workforce Report* [2] notes that environmental factors such as lack of representation, poor planning tools, and implicit biases may prevent students from fully exploring potential career paths. Aptitude testing can overcome these barriers and validate student skills, matching them with suitable education and career pathways.

It is key to help students find their "why" and connect their education to matching career pathways and prevent career exposure gaps from potentially preventing in-demand jobs from being filled. Examples of supporting career discovery in students may include job shadowing, career fairs, internships and work-based learning programs, Career and Technical education course offerings, and field trips to local companies.

[2] https://resources.youscience.com/rs/806-BFU539/images/2024_StateoftheFutureWorkforce_Report.pdf?version=1

Data Snapshot: High Aptitude, Low Interest Career Clusters[3]

How can employers in these industries engage with student-focused leaders in education to promote student interest in these growing roles?

Negative Gaps in YouScience Aptitude and Interest Scores of Students[4]

Career Cluster	Sum of Aptitude Fits	Sum of Interest Fits	Sum of Gap
Health Science	11,101	6,031	-5,070
Advanced Manufacturing	3,991	1,827	-2,164
Computers & Technology	2,448	1,087	-1,361
Agriculture & Natural Resources	2,482	1,344	-1,138
Finance	1,798	784	-1,014
Hospitality & Tourism	1,145	517	-628
Government & Public Admin	1,237	659	-578
Business	2,202	1,694	-508
Distribution & Logistics	2,718	2,376	-342

The largest negative career cluster gaps correlate with Stark and Tuscarawas counties in-demand industries: Health Science, Advanced Manufacturing, Computers & Technology. It is critical to bridge the career exposure gap in these industries that offer strong annual job openings, living wages, and opportunities for growth in Stark and Tuscarawas counties.

[3] Source: Lightcast 2023, Stark and Tuscarawas Counties
[4] Source: YouScience Results 2024, Stark and Tuscarawas Counties

Job Postings Analytics for In-Demand Career Clusters[5]

Advanced Manufacturing	Computers & Technology	Health Science
➢ **396** Employers hiring ➢ **4,102** Job Openings in the next 5 years ➢ **$22.46** Average Advertised Wage ➢ **Top Jobs:** Welder, CNC Machinist, Industrial Engineering Technologist, Supervisors of Production Workers	➢ **522** Employers hiring ➢ **810** Job Openings in the next 5 years ➢ **$30.71** Average Advertised Wage ➢ **Top Jobs:** Computer Network Specialists, Software Developers, Computer Systems Analysts, Computer User Support Specialists	➢ **1,116** Employers hiring ➢ **5,222** Job Openings in the next 5 years ➢ **$44.98** Average Advertised Wage ➢ **Top Jobs:** Advanced Practice Psychiatric Nurses/Clinical Nurse Specialists, Medical Assistants, Pharmacy Technicians, Dental Hygienists

There are many career-connectivity organizations in Stark and Tuscarawas County today, including but not limited to:

- Stark Education Partnership
- Stark Tuscarawas Workforce Development Board
- Stark County Educational Service Center
- Junior Achievement of North Central Ohio
- Career and Technical Education (CTE Programs)
- OhioMeansJobs Stark and Tuscarawas Counties
- East Central Ohio Educational Service Center

[5] Source: Lightcast 2023, Stark and Tuscarawas Counties; Career Clusters include jobs specified by YouScience grouping

These programs seek to connect student opportunities through local business partnerships, support student career exploration, and act as a resource for professional development. Employers can also build awareness of their industry opportunity while building a pipeline of talent locally. The partners noted above can assist businesses to create awareness in various ways, one being the YouScience Employer Spotlight platform,[6] in addition to other vehicles supporting connections between interest/aptitude and opportunities for employment.

[6] https://www.youscience.com/employer-spotlight/

Where Interest Outweighs Aptitude: Leveraging Outcome-Based Learning

According to YouScience founder and CEO Edson Barton, "Aptitudes are not the same as interests, personality, or learned skills, which are environmentally dependent and change over time. An aptitude is an individual's natural ability to learn or perform in given areas."[7] They are innate and solidify around the age of 14.[8] While aptitude results can be a helpful guide to help students find their path, the score is not the end-all be all, especially considering the many different test vendors and variables that can affect test results. Certain aptitudes may come more easily to some than others, but if a student has high interest in a field, learning and practicing the right skills is still critically important. The innate strengths of the student revealed during testing can also be leveraged to identify skills-based career pathways that transition to jobs of more interest. Examples of skills-based job pathways across career clusters are in the "Own Your Aptitude" guides.

Data Snapshot: High Interest, Low Aptitude Career Clusters and In-Demand Skills[9]

How can educators approach career clusters where interest is high, but aptitude is low?

Positive Gaps in YouScience Aptitude and Interest Scores of Students[10]

Career Cluster	Sum of Aptitude Fits	Sum of Interest Fits	Sum of Gap
Teaching	3,378	7,915	**4,537**
Arts & Media	3,764	7,482	**3,718**
Law & Public Safety	1,394	3,204	**1,810**
Human Services	1,614	2,736	**1,122**
Engineering	2,945	3,837	**892**
Architecture & Construction	3,004	3,536	**532**
Sales & Marketing	1,572	1,658	**86**

[7] https://www.forbes.com/sites/tomvanderark/2022/08/23/how-youscience-is-closing-the-aptitude-and-interest-gap/
[8] https://www.youscience.com/buy-now/
[9] Source: Lightcast 2023, Stark and Tuscarawas Counties
[10] Source: YouScience Results 2024, Stark and Tuscarawas Counties

The career clusters with the highest gaps in aptitude to interest for Stark and Tuscarawas students are in Teaching, Arts and Media, and Law and Public Safety. Recognizing the skills needed to perform high-interest jobs can equip educators to better support student career interests. Implementing in-demand hard skills into curriculum is one-way educators can help students pursue their career interests, on top of highlighting the importance of comprehensive soft skill development.

Educators can also take advantage of the free resource, Occupational Information Network (O*NET) to learn more about the requirements of different career fields: "The O*NET database includes information on skills, abilities, knowledges, work activities, and interests associated with occupations. This information can be used to facilitate career exploration, vocational counseling, and a variety of human resources functions, such as developing job orders and position descriptions and aligning training with current workplace needs. Information in O*NET is available for over 900 occupations."[11]

The below charts show the top five specialized and soft skills that result from web scraping job postings of the career clusters with the most interest from students.

[11] https://www.onetonline.org/help/online/

Specialized Skills in Demand: Job Postings Analytics For High Interest, Low Aptitude Clusters[12]

What steps can educators and workforce development organizations take to introduce hard skills to student curriculum?

Teaching	Arts and Media	Law and Public Safety
Lesson Planning	Project Management	Code Enforcement
Classroom Management	Marketing	Forensic Psychology
Child Development	Graphic Design	Patrolling
Learning Disabilities	Adobe Creative Suite	Legal Hearings & Lawsuits
Curriculum Development	Social Media	Loss Prevention

Soft Skills in Demand: Job Postings Analytics For High Interest, Low Aptitude Clusters[13]

How can educators approach the development of soft skills in classrooms?

Teaching	Arts and Media	Law and Public Safety
Communication	Communication	Communication
Writing	Customer Service	Investigation
Problem Solving	Writing	Management
Leadership	Detail Oriented	Writing
Planning	Management	Customer Service

[12] Skills sourced from Lightcast 2024, Job Postings Analytics June 2023-2024, specialized and software skills. Jobs searched are from YouScience Career Cluster groupings.

[13] Skills sourced from Lightcast 2024, Job Postings Analytics June 2023-2024, common skills. Jobs searched are from YouScience Career Cluster groupings.

Soft Skills Remain a Critical Need

Soft skills continue to top the list of employer hiring priorities, especially with the rise of AI and automation. In 2023, Team NEO's Future of Work Report surveyed 201 respondents representing several industries in Stark and Tuscarawas counties on the current state of skills needs in the workforce, and every time soft skills were ranked as the number one concern. Soft skills were ranked as most needed for the future and the most concerning skill gap, with the top most important soft skills for entry level candidates being communication, attention to detail, critical thinking, customer service, and multitasking. Globally, according to LinkedIn's 2019 Global Talent Trends report, 89 percent of recruiters say when a hire doesn't work out, it usually comes down to a lack of soft skills.[14]

Harnessing YouScience Results to Address the Teacher Shortage

The largest misalignment in interest to aptitude is in the Teaching career cluster, with 3,389 Aptitude Fits and 7,915 Interest Fits. It is a notable gap; however, the Teaching cluster is ranked as the top cluster for interest, and 4th highest when it comes to aptitude overall, meaning many Stark and Tuscarawas students have interest and also the innate skills to pursue this career. These results are illuminating and highlight the critical need for career-connected learning, as well as talent attraction efforts, especially considering the current teacher shortage that Ohio and the nation is facing. According to the Ohio Department of Education[15]:

[14] https://news.linkedin.com/2019/January/linkedin-releases-2019-global-talent-trends-report
[15] https://education.ohio.gov/Topics/Research-Evaluation-and-Advanced-Analytics/Data-Insights/Ohio-s-Teacher-Workforce

i. "The statewide **teacher attrition rate** (those not returning as a teacher) was slightly elevated in 2021-2022 compared to the previous six years for all teachers, as well as for the subset of teachers early in their careers.

ii. The number of **newly credentialed teachers** steadily declined statewide from 2013-2014 to 2018-2019, then stabilized through 2020-2021 before declining again in 2021-2022."

From 2018-2023, Stark and Tuscarawas counties have seen a net loss of 799 teaching jobs, or an -8% decrease. The largest job losses have been in Postsecondary Teachers, Substitute Teachers, Preschool, Middle School, and Secondary School Teachers.

Similar to the teaching shortage, there is a historical misalignment of credentials to job openings in key sectors of Northeast Ohio: health care, manufacturing, and IT. Team NEO's *Aligning Opportunities*[16] report continues to report on these gaps annually. Taking the time to balance interest and aptitudes through a hands-on, skills-based learning approach can reduce the teaching shortage gap, among other in-demand industries.

[16] https://northeastohioregion.com/2022-aligning-opportunities-report/

Data Snapshot: Stark and Tuscarawas County Jobs Change in Teaching Positions, 2018-2023[17]

Occupation	2018 Jobs	2023 Jobs	2023 Turnover Rate	2018 - 2023 Change	2018 - 2023 % Change
Postsecondary Teachers	1,770	1,441	45%	(328)	(19%)
Substitute Teachers, Short-Term	465	323	64%	(141)	(30%)
Preschool Teachers, Except Special Education	678	545	53%	(133)	(20%)
Middle School Teachers, Except Special and Career/Technical Education	1,148	1,035	25%	(113)	(10%)
Secondary School Teachers, Except Special and Career/Technical Education	2,254	2,146	26%	(108)	(5%)
Adult Basic Education, Adult Secondary Education, and English as a Second Language Instructors	162	66	50%	(97)	(60%)
Career/Technical Education Teachers, Secondary School	154	104	27%	(50)	(32%)
Special Education Teachers, Secondary School	329	285	25%	(45)	(14%)
Kindergarten Teachers, Except Special Education	96	64	39%	(32)	(34%)
Special Education Teachers, Preschool	81	57	29%	(24)	(30%)
Teachers and Instructors, All Other	148	125	46%	(23)	(15%)
Career/Technical Education Teachers, Middle School	16	16	Insf. Data	(0)	(3%)
Elementary School Teachers, Except Special Education	1,899	1,944	26%	44	2%
Special Education Teachers, All Other	17	61	24%	45	268%
Self-Enrichment Teachers	316	363	46%	47	15%
Special Education Teachers, Kindergarten and Elementary School	230	281	25%	51	22%
Special Education Teachers, Middle School	94	203	26%	109	116%
	9,858	9,059	33%	(799)	(8%)

[17] Source: Lightcast 2023, Stark and Tuscarawas Counties

Are Today's Students Prepared for Future Job Market Demands?

The YouScience data provides a window of opportunity to see the alignment of student aptitudes for projected in-demand jobs, and the scores also reveal what industries could benefit from leaning into talent attraction efforts. Though the job openings and aptitude scores are not a one-to-one comparison (job openings are over five years of data, and students can have aptitude scores spanning multiple career clusters) we can still get a directional pulse on where opportunities exist to strengthen aptitudes to better align talent with future job openings.

In Stark and Tuscarawas counties, the data shows a high need to increase student aptitude in the Business, Sales & Marketing, and Finance career clusters. There are just over 13,000 job openings projected in these clusters in the next five years, with aptitude scores falling in the bottom half of the 16 clusters. Greater support for students interested in these career clusters, via outcome-based learning and a focus on in-demand skills, could better prepare students for future job market prospects and potentially influence the balance of the labor market in Stark and Tuscarawas.

The data also shows that companies in Health Science, Distribution and Logistics, and Advanced Manufacturing would benefit from investing more effort into talent attraction and career exposure efforts – these clusters show high projected openings and aptitude scores, but a lack of interest from students.

Student Aptitudes and Projected Job Openings by Career Cluster[18]

Sorted by projected job openings high to low. Lower half of aptitude scores are in red.

Do current student aptitudes align with projected job demand?

Career Cluster	Sum of 2023 - 2028 Openings	Aptitude Fits	Aptitude & Interest Gap
Business	7,687	2,202	(508)
Health Science	5,133	11,101	(5,070)
Distribution & Logistics	5,022	2,718	(342)
Teaching	4,699	3,378	4,537
Architecture & Construction	4,241	3,004	532
Sales & Marketing	3,382	1,572	86
Advanced Manufacturing	2,950	3,991	(2,164)
Finance	1,993	1,798	(1,014)
Human Services	1,580	1,614	1,122
Law & Public Safety	1,070	1,394	1,810
Computers & Technology	909	2,448	(1,361)
Arts & Media	839	3,764	3,718
Engineering	784	2,945	892
Government & Public Admin	628	1,237	(578)
Hospitality & Tourism	536	1,145	(628)
Agriculture & Natural Resources	375	2,482	(1,138)

[18] Source: Lightcast 2023, Stark and Tuscarawas Counties; YouScience Results 2024 Stark and Tuscarawas Counties

Specialized Skills in Demand: Job Postings Analytics For High Job Openings, Low Aptitude Clusters[19]

Business	Sales & Marketing	Finance
Microsoft Suite Products	Marketing	Accounting
Accounting	Selling Techniques	Finance
Auditing	Microsoft Suite Products	Auditing
Finance	Sales Prospecting	Microsoft Suite Products
Data Entry	Retail Operations	Financial Analysis

[19] Skills sourced from Lightcast 2024, Job Postings Analytics June 2023-2024, specialized and software skills

Summary

With YouScience data, Stark and Tuscarawas counties have a unique opportunity to measure student readiness against projected labor market demands. The aptitude and interest scores can be interpreted in various meaningful ways: highlighting the importance of career exposure opportunities in school, enhancing curriculum with in-demand hard and soft skills, and knowing which career clusters may need an extra push of skill development and talent attraction to help bolster the supply side of the labor market. Workforce development professionals, talent attraction teams, and teachers can leverage these insights to address the mismatch of talent and labor market demand.

Key Takeaways

1) There is an overall gap in aptitudes to interests in career clusters for Stark and Tuscarawas students, especially in Health Science, Advanced Manufacturing, and Computers & Technology career clusters. It is critical for companies and educators to bridge the career exposure gap as the data reveals high in-demand jobs with strong aptitude scores, but little interest from students.
2) Soft skills can be the difference that makes a person successful in their job and should be a major focus in curriculum, as soft skills demand spans across all careers. Soft skills are the most sought-after talent issue by companies in Stark and Tuscarawas.
3) Outcome-based learning and skills-based career pathways can support students with high interest in certain careers, but low aptitude. Educators can take advantage of the free resource O*NET to learn about the hard skill requirements of different careers, as well as related occupations.