The Influence of AI-Guided Virtual Roadtrips on Facets of Students' Career Identity

White Paper from Roadtrip Nation¹ and University of California, Irvine Design & Partnership Lab²

June Ahn², Kristen Peelen¹, Nathan Gebhard¹, Samar Vikas Save², Ziheng Chen², John Lopez²



Introduction

Between rising costs, slowing markets, and artificial intelligence (AI) rendering many once-thought-secure professions obsolete, today's students have a lot to grapple with when thinking about their futures. For generations, educators and counselors have been a primary source of trusted information and guidance as learners reach critical points in planning their education and career paths. But with student-to-counselor ratios averaging 376:1 nationally and reaching up to 750:1 in some cases—far above the recommended maximum of 250:1—students are often left to fend for themselves, leaning on sources that may give them misguided advice, or even misinformation.¹

At home, parents and family members can act as a valuable form of social capital, giving students concrete exposure to career possibilities and paths.² However, family members and friends are often a learner's only window to see what career opportunities may be within their perceived reach, painting an incomplete picture of possible career options in a young person's imagination.

How can invested adults—with their limited resources and time—best reach learners where they're at, answer their questions in a personalized way, expand their idea of what's possible, and guide them toward a career path that's right for them? In 2024, Roadtrip Nation (RTN) undertook a design-experiment to develop a Virtual Roadtrip experience that could meet this need.

The Virtual Roadtrip is an Al-powered experience that takes learners on a "road trip" journey to help them navigate their future careers and educational pathways. The online resource uses the power of Al to ask learners about their personal interests and goals, then utilizes their responses to match them with hyper-personalized real-life stories, advice, educational paths, and careers. Incorporating RTN's 13,600-video library of real-world interviews with professionals from all walks of life, the Virtual Roadtrip aims to humanize careers by showing learners deeply personal insights from people like them. An "Al guide" prompts learners to think creatively about their career goals and aspirations, and then connects them to the stories and conversations that are most relevant to their possible futures.

To evaluate the potential impact of the Virtual Roadtrip, RTN partnered with Dr. June Ahn and the Design & Partnership Lab at the University of California, Irvine (UCI Daplab). Dr. Ahn offered meaningful insight on the initial designs of the Virtual Roadtrip, and developed an exploratory evaluation of what impacts this first experience might have on young people's developing sense of career interests and identity development. In the following white paper, we will share the design of the Virtual Roadtrip, and orient readers to the conjectures we had for how the experience might influence these outcomes.

The target population for the pilot implementation included a wide range of learners across middle school, high school, community college, and university education levels. Many of the middle school and high school students were participants in AVID (Advancement via Individual Determination), which is a college and career readiness program. In total, approximately 2,900 students from 45 schools participated in this pilot of the Virtual Roadtrip. Complete pre- and post-survey datasets were collected from 488 students. In this sample of 488 participants, approximately 16% were in middle school, 55% in high school, 17% in community college, and 12% in university settings. From this dataset, we analyze how this first Virtual Roadtrip experience was related to:

- Improvements on learners' confidence about pursuing possible careers;
- 2. An awareness of **inspirational role models** that go beyond one's own family circles, and;
- The use of the Virtual Roadtrip's Al-enhanced interactions to bring to light the types of **barriers** and obstacles that young people voiced while undertaking the "road trip."

More broadly, we'll highlight how carefully designed virtual experiences can be linked to specific elements of career identity development. This careful integration of design and research then gives us data-informed inspiration for substantially improving the Virtual Roadtrip experience so that it might touch upon other aspects of career identity development in future iterations.

We hope that this initial pilot can serve as a foundation for creating a new vocabulary—one where we can better design career pathway experiences that are tied to a holistic array of young people's needs.



LEARNER QUOTE

After this course, I am aware of possible role models to look for that at some point had the same fears or setbacks I did, but despite this moved forward and accomplished great things.



LEARNER QUOTE

All these different career paths and examples gave me hope for the better.

¹American School Counselor Association. (2025, May 28). School Counselor Roles and Ratios. https://www.schoolcounselor.org/about-school-counseling/school-counselor-roles-ratios_

Design of the Virtual Roadtrip Experience

Our design goals for the Virtual Roadtrip were to meet learners where they are—from middle school through higher education—and to guide their journey through RTN's library of resources in a deeply personalized way.

RTN has developed a wide array of resources over the last 20-plus years, including a library of approximately 13,600 videos of interviews with professionals across a vast array of careers. As such, another initial design aim for the Virtual Roadtrip was to leverage advances in Al to interact with young people and utilize their natural language responses to connect them to the most relevant RTN resources.

With this thoughtful integration of Al, the Virtual Roadtrip offers a journey filled with content that is curated to fit the individual interests of learners, as they explore their career options through interactive tools and conversations that optimize Roadtrip Nation's video archive.

In this pilot version, each learner takes a "virtual roadtrip" to watch video interviews from three professionals who share their life and career stories. An Al guide interacts with the learner throughout the experience, and then—using the learners' natural language responses—curates and connects them to video interviews from RTN's substantial library.

The road trip has three sections, or "stops," at each of which the learner will watch a video interview aligned to their unique responses to the Al guide's prompts. For the first stop on the road trip, the student is connected to an interviewee whose work aligns to their interests. For the second stop, the learner is asked to share any "Noise" (negative feedback or external pressures) that might be influencing their career choices, then choose an interview with someone who has dealt with similar Noise. For the last stop on the student's Virtual Roadtrip, they are asked to share a current challenge they are working to overcome (being a first-generation student, navigating learning differences, etc.), and then the Al guides them to an interviewee who has faced a similar challenge.

Figure 1: A map of the three stops learners will navigate on their Virtual Roadtrip, plus the final stop at their Career Compass.

Figure 2: Sample image of how AI is used to curate a personalized list of recommended interviews. Descriptive copy on the right is being generated via AI to draw a summary of each interview the learner may choose to watch, and explain how they and the interviewee are similar.

Figure 3: Here, Al is used to draft a personalized reflection question that is unique to each learner. Prior to Al, a generic question would have been used. Al allows the ability to scale and personalize the career exploration journey at a level previously unachievable.

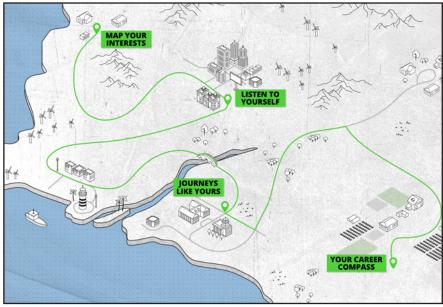


Figure 1

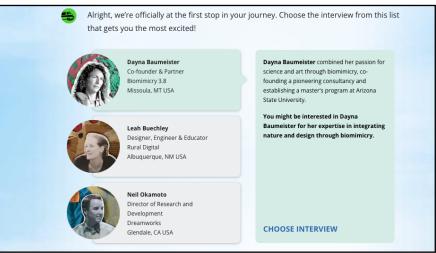


Figure 2.

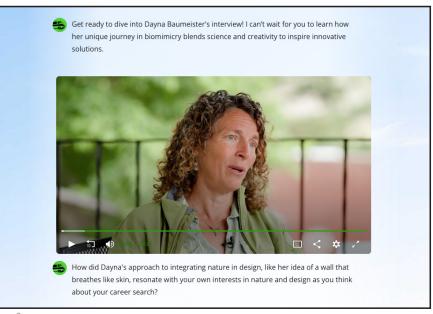


Figure 3.

At the end of each video interview, AI is used to generate a thought-provoking reflection question to help deepen the student's insights and personalize their career exploration journey. AI is able to draft unique reflection questions for each learner by reading the transcript of the video, then combining those insights with what the learner has shared in the open prompts.

It was our hope that in watching these three interviews, the student will feel as if their interests can have a place in their future career. In addition, we hope that learners will realize that they're not alone in struggling with Noise, and will have seen someone like them overcoming a similar challenge. Research has shown that hearing stories of role models who have overcome obstacles and have managed to find success in their careers can increase a learner's confidence and drive to persevere toward achieving their own success.3 These social-emotional components are often left out of existing career exploration tools and assessments, but we believe they show students that challenges like theirs are common, and stand to underscore how hearing similar stories—even from virtual role models—can be a powerful tool in fostering career pathway resilience by opening learners up to a larger and more diverse view of possibilities for their future.

After learners have completed all three stops on their Virtual Roadtrip, the experience ends with a summary of their road trip—a feature called the Career Compass—showcasing the three professionals they "met" via watching video interviews, the insights they gained, and the route they traveled. Al is used to summarize key insights gained from each interview, and highlights a unique quote pulled from the video interview with the professional who seems most relevant to the learner and their personal career journey.



Figure 4: The individualized summary of a learner's Career Compass, showcasing where they traveled, the interviews they watched, and the insights they gained.

Pilot Implementation

Students who participated in the pilot study attended inperson instruction, and the Virtual Roadtrip was presented as a classroom lesson within an existing course. Educators received an overview of the Virtual Roadtrip from a member of the RTN team, along with access to continued support as needed throughout implementation. The pilot iteration required an estimated 60 minutes or less to complete, which included time for learners to create their accounts, respond to a pre-survey before engaging in their Virtual Roadtrip, and complete a post-survey afterward.

An optional implementation recommendation suggested educators split the pilot across two days, leaving time for troubleshooting if necessary. On the first day, educators were encouraged to set aside 20 minutes to allow students to create their accounts and complete the pre-survey prior to beginning the Virtual Roadtrip activity. During the next class meeting, students completed their Virtual Roadtrip, including each of the three sections, as well as the post-survey.

Findings

1. Students gain a sense of confidence around career exploration

In the first area of analysis, we collected data on nine impact statements that gauged students' perceptions about future careers. The impact statements were derived from prior evaluations RTN had done of their existing career exploration programs. Impact statements were chosen based on their alignment with RTN's Theory of Change, and their mission of helping learners of all ages define their own road in life. Using these impact statements also allows RTN to compare results from the pilot Virtual Roadtrip with other products and experiences from the organization.

Students answered how much they agreed with the following statements on a five-point Likert scale, ranging from Strongly Disagree, Disagree, Neutral, Agree, to Strongly Agree.

Impact Questions

- 1. I believe there are many career options available to me.
- 2. I feel confident I will reach my career goals.
- I can identify people "like me" (share similar interests, overcome similar challenges, etc.) who are working in a career I might like to do someday.
- 4. When faced with challenges, I am able to continue working towards my career goals.
- I am capable of making things happen for myself.
- 6. I feel excited about my future.
- 7. I feel motivated to pursue a career that aligns with my interests.
- 8. I am confident in exploring new opportunities along my career path.
- I understand the importance of talking with professionals in a career in which I am interested.

Students completed these questions both before (pre) and after (post) they engaged with the Virtual Roadtrip. In Table 1 (below), we highlight the percentage of students who chose to agree or strongly agree with the statements, and order them by the percentage change from pre-to-post.

We saw the most growth—pre-to-post—in students feeling a sense of expanded career options, confidence in being able to reach career goals, and identifying "people like me." These items seem very well-aligned with the design goals of our initial pilot experience.

In general, we interpret these responses as promising evidence that students feel an increased sense of confidence and interest in career exploration after engaging with this initial Virtual Roadtrip experience. Understanding that the Virtual Roadtrip pilot was short (students engaged with the AI and RTN videos for 30–40 minutes on average), these findings are very promising.



LEARNER QUOTE

The Virtual Roadtrip experience has been eye-opening for me. It's shown me the value of connecting with others' stories and experiences, especially those who have overcome challenges to pursue their passions.



LEARNER QUOTE

Hearing about different paths to success has helped me embrace my own journey with more confidence, reminding me that it's okay to take non-linear steps toward my goals. It's also motivated me to seek support when needed and stay true to my vision in aesthetics despite any external pressures.

	Statements	Pre Top2 %	Post Top2 %	Top2 Change% ▼
1.	I believe there are many career options available to me.	67.08%	79.71%	12.6%
2.	I feel confident I will reach my career goals.	65.01%	77.23%	12.2%
3.	I can identify people "like me" (share similar interests, have faced similar challenges, etc.) who are working in a career I might like to do someday.	63.98%	71.84%	7.9%
4.	When faced with challenges, I am able to continue working towards my career goals.	65.84%	73.5%	7.7%
5.	I am capable of making things happen for myself.	70.6%	75.78%	5.2%

2. Students mention a wider variety of interests after exploring the Virtual Roadtrip

In our pre- and post-surveys, we also collected openended responses from students on a variety of topics. An initial question we asked students to talk about was their interest around future careers, phrased as: "What interests or careers do you find appealing?" Students were able to either write a free response (by typing on their computers) or to audio record their responses. We used generative Al tools to automatically transcribe audio responses and also conduct an initial, qualitative analysis of the types of interests that students mentioned.

We utilized OpenAl GPT4o to analyze the students' free responses. The first step focused on pulling out specific career titles and general interests from each student's open response. The large language model (LLM) was given a detailed prompt that included "Career Validation Rules" that we designed. These rules helped the model understand that certain career names were actual job titles (e.g., "neurosurgeon" or "UI designer"). We also prompted the model to avoid classifying statements like general phrases, broad industry names (e.g., "the media field"), or skill descriptions (e.g., "helping people") as careers. The same prompt instructed the LLM to identify general areas of activity, work preferences, or wider industry sectors, and categorize these statements as "interests." It also specified that unclear or non-specific mentions of careers should be categorized as interests. For organized data collection, the LLM was required to provide its output in a strict JSON format.

In the second step, the careers and interests identified earlier were matched to wider, relevant industries. For this process, a different LLM prompt was used. This prompt gave the model the list of careers or interests from a student and instructed it to provide the industries that best represent the provided list of interests or careers. An example list of common industries was included as a guide, but the model could also name an industry not on the list if it was a better match. A key rule was that if there were 'n' careers or interests, the model could provide 'n' different industries or 'n-1' industries. This allowed related careers or interests to be grouped under one main industry (for example, both "data analyst" and "cybersecurity specialist" could be linked to "information technology"). This rule also prevented a single career or interest from being assigned to several different industries.

The resulting data analysis was visualized in two bar charts, each comparing pre- and post-survey industry frequencies for a paired sample of participants (i.e., only those who provided data at both time points).

The following bar charts show:

- Industry keywords derived solely from the interests that students talked about, and;
- Industry keywords derived solely from specific careers that they mentioned.

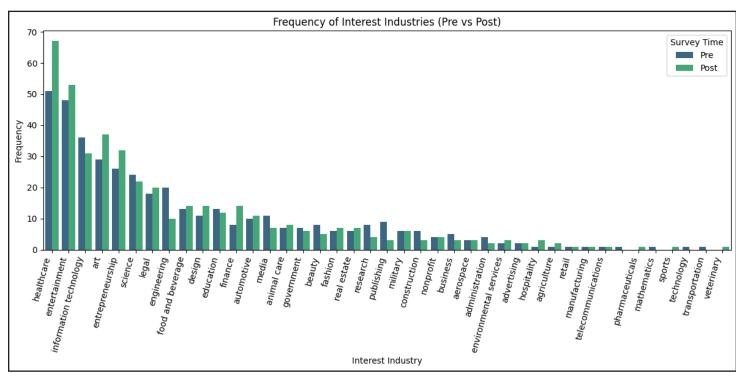


Table 2: Number of students who mentioned an industry (from the interests that they shared) before and after the Virtual Roadtrip.

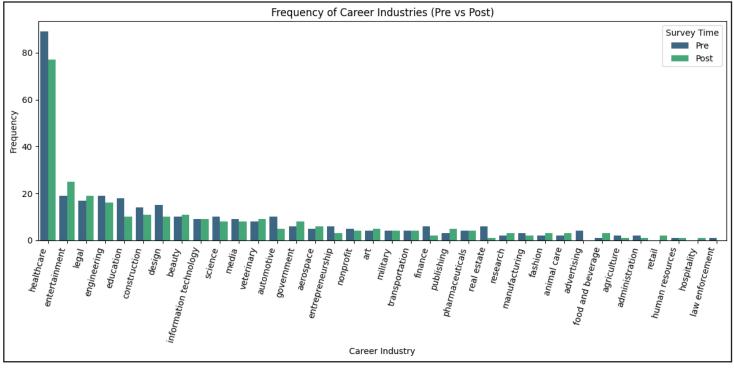


Table 3: Number of students who mentioned an industry (from the specific career names they mentioned) before and after the Virtual Roadtrip.

Any differences between the two analyses (categorizing interests vs. career mentions) are likely due to variation in how we prompted the models to assess the dataset. However, we present both to showcase a general trend.

First, students reveal many more potential industries that might match them when they spoke generally about their interests, but fewer potential industries when asked to name specific careers they were interested in.

In Table 2, we can see that there is some diversity in the industries that were linked to student interests, with many mentions of "healthcare," "entertainment," "information technology," "art," "entrepreneurship," "science," "legal," and "engineering." However, in Table 3, we see that "healthcare" dominates when students are asked to name a specific career interest.

To illustrate our observation, one can imagine asking a young person what job they might be interested in. A doctor or nurse may come to mind easily. However, when we ask the same young person what interests them in life, their diverse interests may open up a wider array of potential fields that they might not be aware of.

This finding underscores the design-intent of the Virtual Roadtrip: to use AI to interact with students and encourage them to share more naturally about their interests, to then open up possibilities of new career pathways they might not otherwise be aware of.

Our second observation highlights a "long-tail" of industries that students mention after the Virtual Roadtrip experience. Looking at Tables 2 and 3, one can see that many more industries are mentioned after the Virtual Roadtrip experience. Of course there is variation, with some industries mentioned less in the post-survey. However, for many of the industries, we see small increases in mentions (1–5 more mentions) across more diverse industries. This pattern is more apparent when pulling out potential industries from students' interests (Table 2) versus when asking them to name specific careers (Table 3), but the general long-tail pattern holds in general.

Our findings offer promising evidence that this initial, quick Virtual Roadtrip experience may help young people become aware of a wider, diverse range of potential career pathways as they explore the rich library of RTN interviews. These results are also promising given that the students were only exposed to three different professionals: If they gained more exposure with such a lightweight experience, we feel there is a lot of opportunity to increase this metric by adding new features in future iterations.



LEARNER QUOTE

It showed me that there are actually careers that are directly related to my interests and I don't have to work in a field that doesn't suit me.

3. Students started to shift away from mentioning family members as their main role models, to identifying inspirational role models

Another of the open-ended questions we posed to students asked them to talk about the role models that were prominent in their lives. The question was phrased as: "Are you aware of any role models or mentors that could help you in this career? Can you describe who they are and how they are a good role model for you?" Students again were able to type their answers or use an audio feature to speak freely, which was then automatically transcribed.

We created a set of prompts to utilize the GPT40 model to develop an initial, qualitative analysis. This analysis investigates how students' perceptions of role models evolved before and after participating in the Virtual Roadtrip experience. After data cleaning (e.g., dealing with punctuation, missing values etc.), we prompted GPT to extract "role-model types" and assigned a category such as "Family," "Teacher," or "Mentor" from their natural responses. A running list of role-model types was used to keep track of already assigned categories for GPT to choose from when assigning role-model types to student responses. New categories were added only if there were no matching categories in the list. Then we analyzed the counts of how many times students added or removed mentions of a certain role-model type in their postsurveys (e.g., they did not mention family in the presurvey, but mentioned them in the post-survey).

The primary trend that we observed was that students mentioned family members as primary role models that come to mind in their responses (Table 4), followed by inspirational role models, teachers, then mentors. Most interestingly, after the Virtual Roadtrip experience, we observed that family members were removed as mentioned as role models at the highest rate (orange bar in Table 5), while inspirational role models were added at the highest level.

These patterns were small in number, but were intriguing to our team. This first iteration of the Virtual Roadtrip experience was short (less than an hour) and so finding small improvements makes sense in hindsight. In addition, we pay attention to the design of the experience, where young people watch a series of RTN interviews with individuals (professionals they do not know) who shed light on the deeper aspects of their life and career journeys. Our hypothesis is that this specific experience may influence a small, but substantial portion of young people to think about other inspirational role models. We discuss other implications in our conclusion section as well, but this area—fostering role models—is an intriguing place for future design and research.

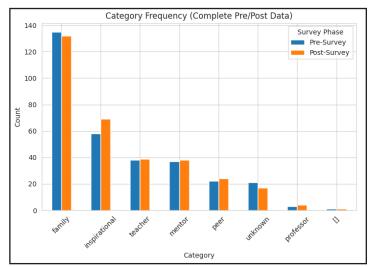


Table 4: Frequency of role model mentions in pre- and post-survey responses.

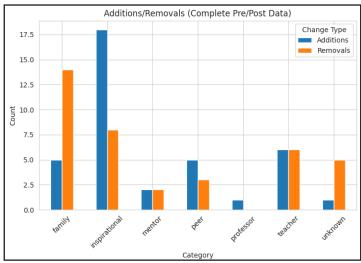


Table 5: Frequency of role model type additions or subtractions from pre- to post-Virtual Roadtrip experience.



ROLE MODELS IDENTIFIED BY LEARNER, PRE-VIRTUAL ROADTRIP

My sister and my cousin.

ROLE MODELS IDENTIFIED BY LEARNER, POST-VIRTUAL ROADTRIP

I have a role model in the beauty industry—[influencer] De'arra Taylor... Her focus on educating others and creating a positive impact in the beauty world is something I aspire to emulate in my own journey.

4. Students mention complex and diverse obstacles

Finally, we highlight the data collected from the Al interactions that students had in the Virtual Roadtrip, and their usefulness in understanding students' personal needs more deeply. In one module of the experience, the Al guide asks students to share the "Noise" that they experience in their lives and the hurdles that are top of mind for them. The Al guide prompted students with the following (also see Figure 5):

"Let's switch gears for your second interview. Many people we've interviewed felt pressured to pick a certain path. It could be because of their family, society, or their own internal doubts. We call all this the Noise. So what Noise are you experiencing? You can choose from some of these common responses if that's helpful, or type whatever comes to mind. The more you share, the better recommendation I can make for your next interview!"



Figure 5: Screenshot of Al guide's prompt for students to share the Noise they experience. Students could respond in an open-ended way or choose with examples that prompted their thinking.

Students gave open-ended responses to the Al guide. We examined this dataset of responses, and utilized GTP4o to first cluster the responses into distinct groups, with each group representing a specific type of Noise mentioned by students. We prompted the LLM to create expressive, short titles for these groups (e.g., "fear of failure" and "parental pressure") and to use as few groups as necessary while still capturing the key thematic differences.

Next, the remaining student responses were processed individually. For each new response, the LLM was given the text of that single response along with the list of group names already created in the first step. The LLM's task was to either classify the new response into one of the existing groups or, if the response represented a genuinely new type of hurdle not yet covered, to create a new group

with an appropriate descriptive name. This iterative process allowed all student responses to be categorized. Once all responses were grouped, each group was then summarized for inspection.

We found a complex tapestry of pressures and hurdles from students. For example, our analysis identified 43 unique pressures that students voiced in their responses.

The top four areas of Noise included:

- Receiving discouragement about a career's income potential or viability
- Receiving discouragement about following one's passion into a low-income career
- Feelings of self-doubt or failure
- Pressure to choose "respectable" and "stable" careers

Negative feedback and overall discouragement were common themes, with nuanced elements that were a part of the 43 different groupings that we identified.

Overall, we found that students shared multifaceted struggles that encompassed internal conflicts, external pressures, and broader societal expectations. Students often face significant pressure to conform to stable, respectable, and financially viable career paths, spurred by parental expectations and societal norms, while simultaneously contending with their passions and interests. Financial concerns, job market volatility, and fears of irreversibility (of their choices) add layers to their decision-making process. Internal doubts and fear of failure exacerbate these challenges, causing hesitance and self-censorship, despite some showing resilience and determination.

Personal attributes, such as physical characteristics and disabilities, further complicate choices due to external criticism and stigmatization. The impact of modern technology, media consumption, and the internet introduces additional distractions and misconceptions, threatening the authenticity of students' passions and aspirations. At times, familial expectations can either support or hinder career exploration, based on their pressure for conformity or acceptance. Overall, students navigate a labyrinth of pressures that test their selfmotivation, resilience, and clarity in discerning genuine passion and career viability.



LEARNER QUOTE

This experience reminded me the challenges I've faced, such as family expectations, mental health, and self-doubt, are not obstacles—they are part of my journey to becoming stronger and more resilient.

Conclusions and Future Directions

Overall, our team was delighted with the experience of this first pilot of the Virtual Roadtrip. An exciting element of the project was seeing the design and development of an Al guide that could better align career resources (in this case, interviews with professionals) that match with the personal, emotional, social or cultural experiences of a young person. We observed that prompting students to interact naturally through chat—with an Al guide helped us to better understand these aspects of a young person, and we were pleasantly surprised to see that young people readily share rich aspects of themselves while interacting with the Al. For example, the "Noise" dataset of learner responses was rich and nuanced—offering 43 unique pressures that they mentioned—which could help us better cater personalized support for future learners, rather than grouping everything into broad categories such as "financial pressure" or "negative stereotypes," etc.

In addition, the research partnership between RTN and the UCI Daplab helps us be more intentional about linking the design of an experience with learner impacts. This careful connection aids in being more specific about the impacts of different programs and innovations, and also gives us a clearer roadmap for future iterations of the project. For example, we have evidence that connecting young people to unique RTN interviews is related to students reporting a boost in career confidence. These early findings reinforce the potential of personalized storytelling to foster engagement and motivation. We see an opportunity to continue improving how we match learners with relevant interviews—deepening the alignment between their interests, backgrounds, and the stories they encounter.

We see that the experience is also related to a small increase in the diversity of career interests that young people mention. As learners engage with the RTN interviews, the Virtual Roadtrip perhaps widens the aperture of career awareness in small ways, across a wider range of careers (a "long tail"). When you add up the small increases across the long tail, the aggregate impact could be substantial. We want to continue helping learners move beyond the most commonly named careers—like "doctor," "lawyer," or "accountant"—and toward identifying more granular, diverse career paths that feel authentic to them. In future iterations, we wonder if we could design experiences that amp up this trend even further, leading to exciting impacts for young people to imagine more broadly.

The design of this Virtual Roadtrip also seemed to prime young people to think about inspirational role models. This trend has some face validity, as the experience revolves around inspirational interviews that are matched to the personal experiences of the learner. We observed a shift from family members to more inspirational figures as the role

models students named. Future iterations could also focus on strengthening skills around relationship building and developing social capital, building from the inspirational imagining that occurred in this pilot experience. For example, this finding encourages us to bring in the content and functionality of our project-based learning curriculum—used by over 150,000 students last year—to support "live career conversations." These conversations allow learners to interview professionals tied to their interests, further reinforcing meaningful connections to career pathways.

Finally, we were encouraged to see how generative Al could be leveraged to have more natural interactions with learners. We found that young people readily shared their deeper interests, hopes, fears, obstacles, and challenges when afforded the opportunity to chat about them in their own words. And in turn, we were able to analyze this data to develop a more nuanced understanding of each student. This understanding could be used to better match resources (e.g., RTN interviews) to each young person, but also helps us identify more nuanced intersectional experiences that matter to each learner. Students shared a wide range of nuanced challenges, or "Noise," that shaped their career thinking. Our analysis helped us group these responses in ways that reveal shared barriers and mindsets. Going forward, we will focus on improving how we align a learner's expressed Noise to professionals who've voiced similar experiences—allowing learners to see not just the destination, but the obstacles others have overcome to get there.

We hope that this example of marrying careful design, the deep programmatic mission of an organization like RTN, and research can provide an example of continuous improvement strategies. The design of a given experience may improve certain aspects of a young person's career development, and not touch as strongly on others. But capturing evidence and information at each design iteration will help us hone in on future design ideas that engage with a wider range of learners' needs, and create a holistic set of supports over time that combine to make big impacts.



LEARNER QUOTE

The Virtual Roadtrip helped me grow and take my anxiety away a bit. I feel more confident in myself because watching other people going through the same struggles has helped me realize anything is possible.

Acknowledgements

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EDUCATION FOUNDATION



LEARNER QUOTE

The Virtual Roadtrip taught me that I won't be perfect, but that I am capable of being excellent in whatever career I choose. Roadtrip Nation helped me understand more about careers and it made me feel better about myself.

