



Empowering students to Xplore careers

By helping all educators and learners to access quality STEM resources, Harvard Online's **LabXchange** aims to empower students to make informed decisions about their futures. Its **CareerXplorer** platform enables just that, providing interactive career simulations that show students what STEM roles actually involve – and where young people's interests could take them. **Christopher Burnett**, LabXchange's Digital Content Specialist, tells us about this unique tool – and the fun students can have exploring it!

What is LabXchange's mission?

To paraphrase Dr Robert Lue, LabXchange's founder, we believe that everyone, everywhere, should have an equal opportunity to succeed in science. For us, that has meant curating a catalogue of high-quality learning and teaching resources that educators and learners of all ages can access for free, regardless of their physical location, personal connections or background.

Why has LabXchange established CareerXplorer?

We want every student to know that there is a place in science for them. Too many learners are exposed only to traditional career paths in science, and if they feel

that they do not fit neatly into one of these roles, they abandon a future in science altogether. We want to empower students to make fully informed decisions about their futures!

CareerXplorer facilitates the discovery and exploration of a diverse range of careers in science, technology, engineering, mathematics and medicine (STEMM), bridging the gap between school curricula and career skills. In an interactive and engaging way, students are able to learn about unique science careers and directly connect their abilities and interests to relevant career skills. This, in turn, helps them chart an actionable path toward achieving their target career.

How was CareerXplorer developed?

Career exploration has existed as a natural extension of STEM learning since LabXchange launched. As we set out to build a library of science resources, we made sure to include videos featuring researchers in their labs, biographical narratives from a range of scientists, and content spanning topics from cellular biology to data science. Now, with CareerXplorer, we take it a step further and connect these resources directly to the corresponding career skills.

From the start, close collaboration with STEM professionals has been crucial to the development of CareerXplorer. To really be useful to learners, the tool needed to be robust, informative, trustworthy and accurate. The only way we could reach that high standard was by working directly with industry experts, who review and validate every career profile. Our career simulations are similarly developed with the guidance and real-world expertise of industry professionals to ensure authenticity and accuracy.

Equally important, of course, has been working with learners and educators, who have provided feedback at every



stage of CareerXplorer's development. We have interviewed career counsellors to understand common challenges and questions, worked with educators to co-develop teaching resources that align with common curricula and educational standards, such as the US's Next Generation Science Standards (NGSS), and we have consulted with students to learn what it is they really want to get out of a career exploration tool.

Why is it important that CareerXplorer is interactive and exploratory?

Our goal with CareerXplorer was to make a tool that students would actually enjoy using! When learners only read about a career, they get a surface-level understanding of it – a basic description, a salary range, a sterile list of duties. But reading that a biological technician “supports lab research” does not actually help the learner understand whether they would personally enjoy culturing cells, running data analyses or managing a lab. Rather than presenting learners with broad generalisations about careers, CareerXplorer relies on interactive career simulations to allow learners to evaluate their genuine interest in a career by

exploring what someone in that role actually does on a day-to-day basis. Another key principle of CareerXplorer – which echoes LabXchange's broader mission – is that a hands-on approach allows learners to explore a career without requiring prior experience, special technical equipment or professional connections. For learners in underserved communities who may not have access

to real-world internships or a network of STEM professionals, this is especially beneficial.

What insights do the CareerXplorer career simulations provide?

LabXchange has been building virtual lab simulations and interactives for over six years, and the CareerXplorer team →



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has worked hard to ensure that the career simulations build on our extensive experience and learnings.

These simulations place learners directly into realistic, relatable workplace scenarios, where they engage with the same equipment, tasks and decisions that STEMM professionals encounter in real life. In the biological technician simulation, for example, learners are tasked with conducting an experiment to identify a coral reef-friendly sunscreen. Through the simulation, they learn about culturing

cells, collecting data and interpreting their results. These are all things that a real biological technician might do in their work.

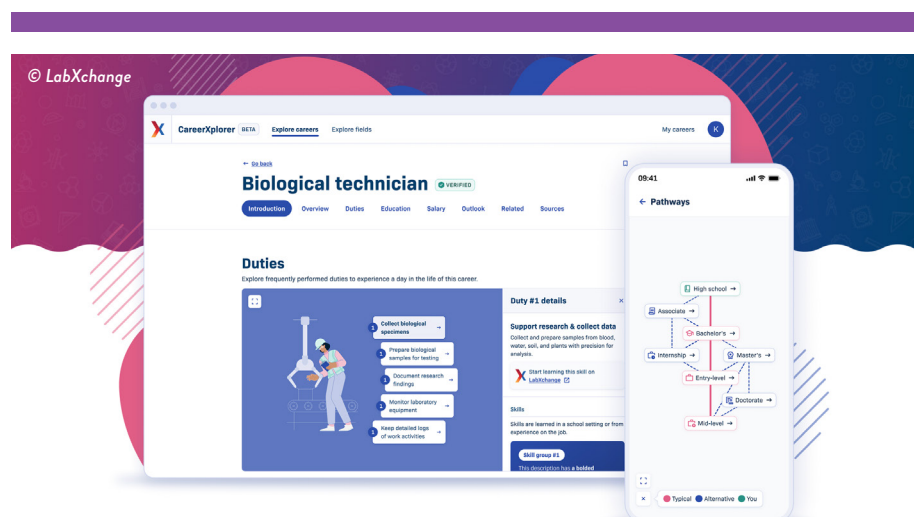
Empowering students to test drive a role gives them valuable insight into what the career really looks like and how much (or how little!) they may enjoy engaging with the day-to-day tasks. Most importantly, the beginner-friendly and risk-free environment of a simulation encourages students to really explore careers for their own benefit and curiosity, rather than for a grade or another external pressure.

What role do STEMM professionals play in CareerXplorer?

STEMM professionals have played a massive role in ensuring the authenticity of CareerXplorer's career profiles and simulations. CareerXplorer is designed to reflect the reality of what STEMM professionals encounter in their daily work, and input from experts allows us to highlight the skills that are the most important for learners to focus on developing. Alongside their direct feedback, STEMM professionals have also shared their personal stories in the form of interviews, which go into more detail about their unique educational journeys and provide insight to learners interested in pursuing that career.

How is CareerXplorer helping teachers to support their students?

CareerXplorer's career profiles put all the relevant information in one place, allowing educators to direct curious learners to explore careers that pique their interest. At the same time, each of our simulations comes with a standards-aligned teaching guide offering detailed suggestions for classroom use, including timing, discussion prompts and project-based activities



that connect the simulation to relevant subject content. Each guide also includes a customisable learner-facing worksheet.

Apart from testing out the career simulations, we would encourage readers to simply spend some time exploring the career profiles, especially the interactive duties guide and education pathways elements.

The duties and skills guide identifies the five most frequently performed duties by someone in the role, with each duty broken down into specific skills. The skills are linked to relevant learning resources on LabXchange, so students can learn more about a skill – or even directly practise it.

The education pathways feature allows students to visualise the most common educational paths taken to reach a career. Different careers have different educational requirements, yet there are often many ways to get from Point A to Point B. This is all laid out in an interactive interface in which learners can see degree and experience requirements, relevant subjects, recommended extracurricular activities and internships, and courses that are important for pursuing the career.

What has CareerXplorer achieved, so far?

CareerXplorer is still in its beta phase, and we are actively gathering feedback on all aspects of the tool. The comments that we have received from educators, career counsellors, learners and industry professionals so far have been overwhelmingly positive and incredibly helpful to us as we continue to improve CareerXplorer. Educators value having all

Duties

Explore frequently performed duties to experience a day in the life of this career.

① We collaborated with 10 industry experts to get this information.

the information in one place, which makes it easy to share with their students, and learners appreciate the authentic insights into real careers.

Building these interactive career simulations involves extensive collaboration between many different people – instructional designers, educators, graphic designers and STEM professionals, to name just a few – to ensure that the simulations are accurate to the career, pedagogically sound, mentally engaging and simply fun!

What does the year ahead look like for CareerXplorer?

In the year ahead, we will be focused on releasing new career profiles to flesh out our catalogue. With over 18 profiles currently available and more than 20 in the works, we are excited to continue expanding the range of careers represented on CareerXplorer.

Because every profile is reviewed and validated by career experts in their respective field, it is not a quick process – but a very important one to conduct thoroughly. Additionally, we aim to create more robust connections between career skills and relevant learning resources on LabXchange. If a learner is interested in becoming a biological technician, we want them to be able to practise micropipetting or using a microscope, which are skills that are already available in simulations on LabXchange.

Finally, we want to gather more feedback. Educators, learners, career counsellors, STEM professionals and others interested in science career development are encouraged to try out CareerXplorer for themselves and reach out to us with their thoughts.



About LabXchange

LabXchange is an initiative of Harvard University's Vice Provost for Advances in Learning. It is a free online learning platform home to over 34,000 digital learning and teaching resources in subjects spanning science, technology, engineering, mathematics, and medicine (STEMM). Launched in 2020 with support from the Amgen Foundation, LabXchange develops digital educational content, including virtual lab simulations and interactive animations, and collaborates with more than 200 science education organisations to curate a catalogue of high-quality resources that are entirely free to use for learners and educators across the globe.

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