COLORADO BIOSCIENCE INSTITUTE

COLORADO BIOSCIENCE INSTITUTE
Research Experience for Teachers

2025

Summary Evaluation Report

CONTENTS

INTRODUCTION

Colorado BioScience Institute provides educators in Colorado's rural, urban, and mountain communities to quality STEM programs and hands-on experiences that ***broaden teachers' skills*** *and expand their ability to* ***meaningfully impact students.***

In Colorado BioScience Institute's 2025 **Research Experience for Teachers** (RET) teachers spend approximately 115 hours (4 days a week for 3.5 weeks during the summer) with an innovative Life Sciences company working alongside teams on critical projects. The RET program also includes a hybrid, blended learning professional development course to enhance teachers' content knowledge and skills.

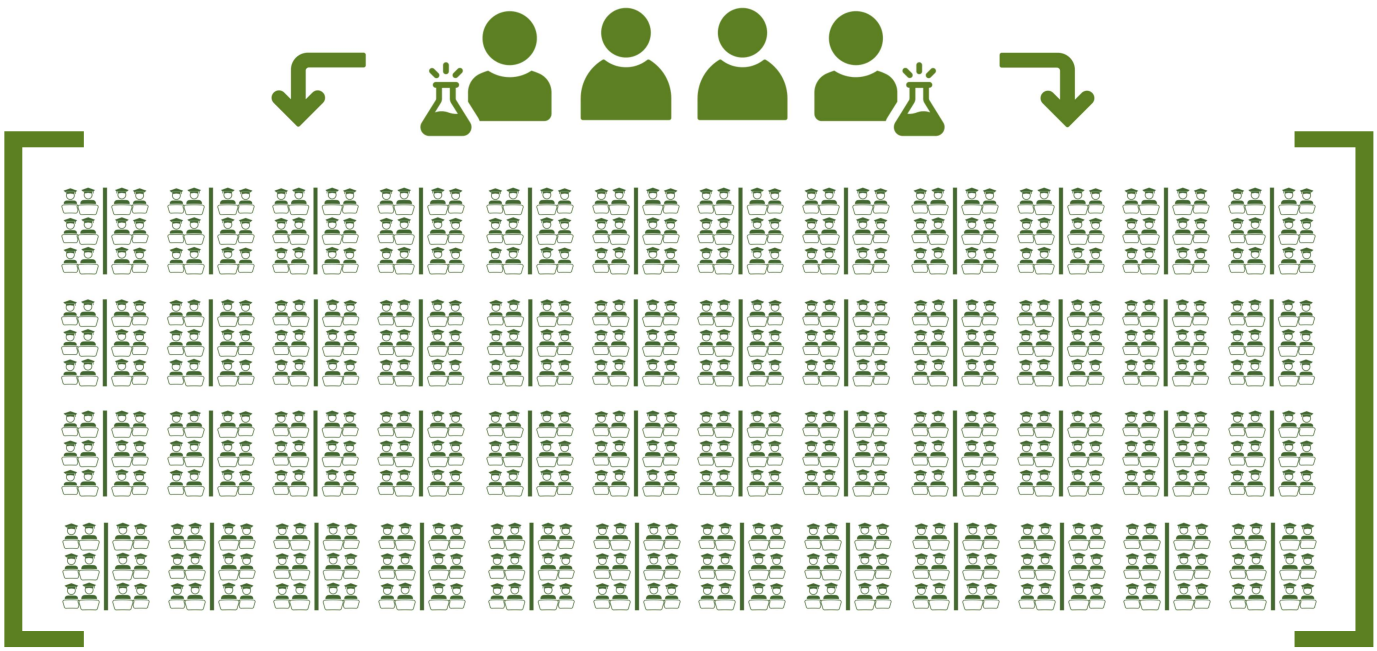
Specific outcomes for the RET program include:

- Build **long-term, collaborative partnerships** between teachers and Colorado's life sciences community.
- Involve teachers in industry-relevant life science projects and help them **increase student engagement** and interest in bioscience topics and careers.
- **Provide experiential learning opportunities** and professional development for teachers.
- Connect classroom learning to **critical skills needed in the workplace.**

To measure the impact of the RET program, the Institute engaged a third-party evaluator to conduct a comprehensive outcome evaluation. This report summarizes the findings of that evaluation and describes the impact of this work on the students and teachers of Colorado in 2025.

PROGRAM REACH

In 2025, the RET program included **4 educators** and, through them, will reach **over 565 Colorado students**.



Teachers participating in RET work in Colorado's increasingly diverse communities and serve students facing a wide range of challenges.

Reaching underserved students

100% of 2025 RET teachers serve students of color and students who identify as LGBTQI+. **100%** work with students with physical and/or intellectual disabilities. **100%** of participating teachers serve students from low-income backgrounds and **25%** work in schools serving students living in rural or remote areas.

Meeting students where they are

75% of 2025 RET teachers indicate they work in schools that serve newcomer, immigrant and refugee students. **50%** of teachers report they work with students in foster care and students with incarcerated parents or guardians. **50%** work with students who are English Language Learners.

DATA SNAPSHOT

TEACHER IMPACT

Overall, teachers believe RET provides exceptionally valuable and relevant professional development.

> **The amount of valuable information I will be taking back to my students is stunning**, everything from cutting-edge science practices and technology, to important communication and collaboration skills that occur in industry."
>
> Boulder Valley School District teacher

The average rating (out of 5) for the value of the training was

5.0

★★★★★

n=4

100% of teachers found their experience with RET to be extremely valuable.

All participating teachers selected the **highest rating possible.**

Teachers described the RET program as a **transformative professional experience** that deepened their understanding of industry practices and strengthened their ability to connect classroom content to real-world STEM careers. They highlighted how the program gave them opportunities to build relationships with scientists and industry partners, gain hands-on experience, and bring back both practical materials and renewed energy for teaching. The program also reinforced the importance of fostering critical thinking, problem-solving, and career awareness among students.

> After 20ish years of being in the classroom I didn't realize how much I needed a different perspective. **It has helped me connect more authentically what students to need to know and be able to do.**

Teacher, Adams 12 Five Star Schools

DATA SNAPSHOT

TEACHER IMPACT

Participating in RET **builds teachers' knowledge** and boosts their confidence to support students through **career and industry connections.**

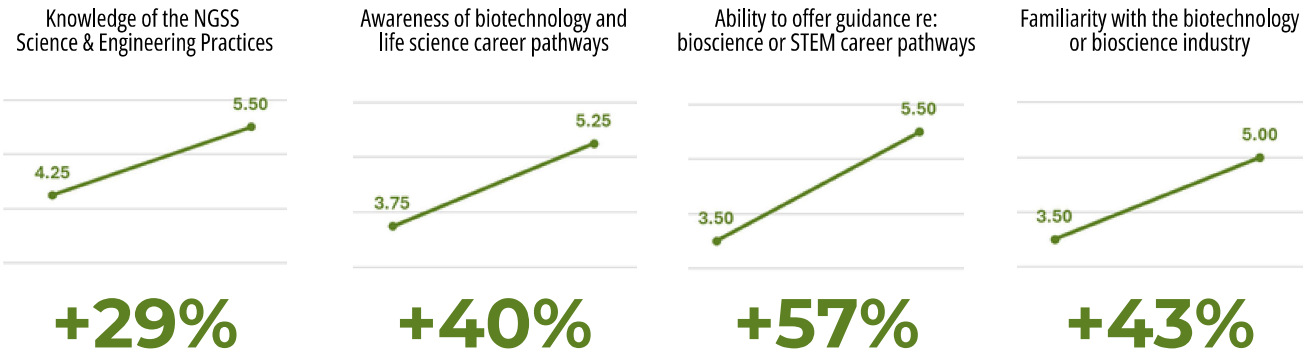
Knowlege gains among teachers

Entering the program, teachers rated their familiarity with the bioscience industry and their ability to offer students guidance in bioscience or STEM career pathways at an average of 3.5 on a 7-point scale, where a score of 3 = *developing* and a score of 4 = *moderate*. Upon completing the program, teachers rated themselves between 5 and 5.5, corresponding to a score of *competent.*

Q: How would you rate your knowledge and skills in the following areas BEFORE and AFTER participating in RET?

Knowledge change before & after RET

Notably, RET teachers made gains in knowledge and awareness in **all the domains** for which data was collected, with the most substantial gains coming in their **ability to offer guidance re: bioscience or STEM career pathways**, where self-ratings increased by 57%.



DATA SNAPSHOT

TEACHER IMPACT

RET Program reignites teacher enthusiasm and prepares them for impact in the classroom.

Teachers feel prepared & confident

RET teachers consistently shared that the program deepened their content knowledge and strengthened their ability to create engaging learning experiences for students. They described **gaining a new appreciation for the value of exploratory, student-led experiments**—even when they're messy or unpredictable—as a way to build critical thinking and problem-solving skills. Several educators reflected on how the experience **reinvigorated their passion for teaching**, helped them reconnect with their creative instincts, and opened up new ways to talk with students about opportunities in local life science industries and real-world career paths.

75%	**strongly agreed**	This training **increased my life science or STEM content knowledge.**
75%		Increased or renewed my **excitement for teaching**.
100%		Provided experiences that **will enrich or improve the way I teach.**
100%		Equipped me to **better support my students** in the classroom.

n=4

> As someone who went directly in to teaching, I had no industry experience prior to this so **it was really valuable to see the industry** and have a better sense of the skills students need and the career paths available to them!
>
> Teacher, Steamboat Springs School District

DATA SNAPSHOT

PROGRAM ELEMENTS

Teachers consider **industry externships** among the most valuable components of the RET program.

100%

of teachers rated their company placement as extremely valuable.

All participating teachers selected the **highest rating possible.** (n=4)

Highlight: Hands-on Experiences

Teachers engaged directly in scientific and technical work (such as microbial validation and gram staining, installing equipment, and running research projects) and noted that being able to "get their hands dirty" was far more impactful than simply observing or shadowing, allowing them to build confidence and deepen their understanding of real-world STEM applications.

"I'm glad I was able to take on projects and be independent while getting my feet wet and hands dirty."

Highlight: Mentorship and Support

Participants consistently described the staff at their host sites - and the broader support from Colorado BioScience Institute - as welcoming, organized, and generous with their time and expertise. Teachers noted that they appreciate one-on-one conversations, facilitated introductions, and the clear effort by company staff to make the experience meaningful.

"Staff at my company placement were extremely busy... but they also made time to talk with me one on one and make sure I got to observe everything I wanted to see!"

Highlight: Classroom Relevance

The externships gave teachers practical tools and new ideas to bring back to their classrooms. Many developed classroom labs using materials or techniques from their placement, and several established lasting partnerships, such as guest speakers or student job shadowing opportunities.

"This year, my students will be doing a unit on natural selection by observing antibiotic resistance... I'm excited to use the techniques I used at AlloSource!"

DATA SNAPSHOT

PROGRAM ELEMENTS

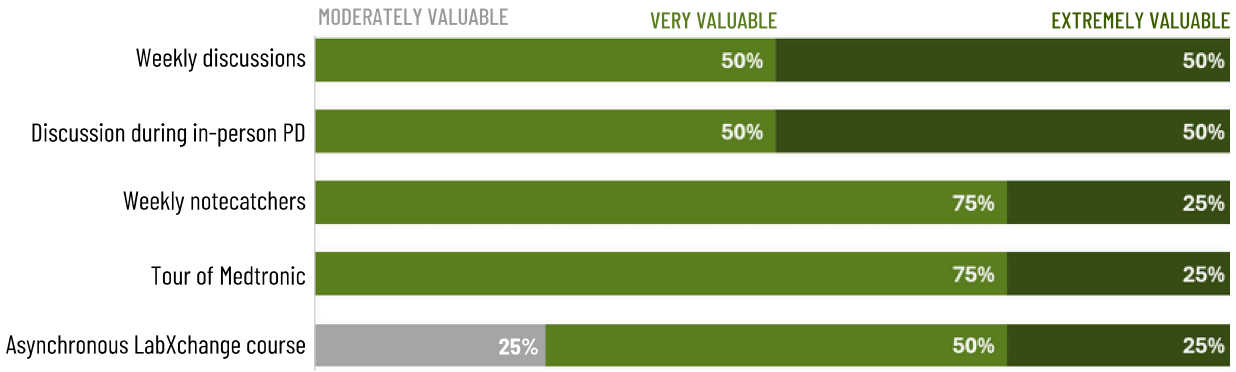
Teachers overwhelmingly found the blended learning structure of the 2025 RET program to be **well-balanced and effective.**

Teachers agreed: the format was just right.

100% of 2025 participants (n=4) indicated the structure of RET's blended learning program offered *"just the right amount"* of:

- **Freedom** to take ownership of learning
- **Structure** to stay on track
- **Flexibility** to work at their own pace
- Opportunities for **community & connection**
- **Instructor support** when needed
- Focused **professional development**

Q: How valuable did you find the professional learning components of RET?



In their own words: what made it work

> I really appreciated being able to **do it on my own time** where I could focus my energy.
>
> Teacher, Boulder Valley Schools

> The **feedback from the others** was helpful. Also appreciated knowing what the others were doing.
>
> Teacher, Adams 12 Five Star Schools

> The **discussions were so valuable** and took less time than if we had weekly meetings.
>
> Teacher, Jeffco Public Schools

> Having **time to peruse the resources on LabXchange** was very relevant.
>
> Teacher, Boulder Valley Schools

DATA SNAPSHOT

CLASSROOM IMPLEMENTATION

100% of participating teachers plan to implement a robust classroom learning experience based on content from RET.

Teacher, Steamboat Springs Schools

"I plan to develop and implement a **quality assurance role for labs.** This can be applied to any lab-based science class and will help students **ask questions, analyze data, and improve their lab and communication skills**."

Teacher, Jeffco Public Schools

"My 8th grade students will work on a project where they choose one type of tea and **analyze the impact that tea has on the growth of one strain of either gram-positive or gram-negative bacteria**. They will then compare their results with other students during a Socratic Seminar."

Teacher, Adams 12 Five Star Schools

"I will guide 10th grade Chemistry students through a IQ/OQ **(Installation Qualification/Operational Qualification) of new electronic scales.** Assess the accuracy and precision of new electronic balances by comparing them to existing ones. Perform a basic operational verification procedure. Use repeatability testing to evaluate instrument reliability. **Apply NGSS-aligned skills including data analysis and systems thinking**."

Teacher, Boulder Valley Schools

"I developed a mini-unit with three lessons for juniors and seniors that will allow them to **explore the drug discovery process, neuromuscular diseases, and biopharmaceutical careers.** They will focus on the biology and pathology of MDM and will analyze and interpret clinical trial data of patients. Guest speakers from Edgewise will be onsite to answer questions and share their scientific journeys."

DATA SNAPSHOT

STUDENT IMPACT

In the 2025-2026 school year, participating teachers will **reach over 565 students** with content and skills gained through RET.

Boosting student engagement

All participating teachers found the program relevant to their classroom teaching and anticipate that the resources and skills gained through RET will **improve the quality of their instruction.**

Additionally, 100% of teachers believe that implementing what they learned in RET will **increase student engagement and learning outcomes.**

Teachers expect to see:

- **Increased student engagement** as a result of hands-on, relevant learning experiences

  "I think student engagement will increase immensely... with the tea project, they will have a chance to practice aseptic and other biotechnology skills."

- Development of **practical STEM and biotechnology skills**

  "They will know how to use electronic scales and what it takes for a company which offers a product to ensure that the product is verified and correct in its components."

- Deeper understanding of **career and industry pathways**

  "I expect to see a higher level of engagement and interest in biotechnology and hearing a lot of questions from students about research labs, pharmacology, and necessary soft skills."

> "From this externship not only do I have a wealth of knowledge to bring back to the classroom, but I now have an industry partner in Edgewise where they will be guest speakers and **my students will be able to job shadow as part of their work-based learning experience!"**

Teacher, Boulder Valley Schools

“This was the BEST PROFESSIONAL DEVELOPMENT I have participated in during my 16-year teaching career.

Teacher participant | Boulder Valley Schools
Research Experience for Teachers 2025

CONCLUSIONS

The 2025 RET program has made a meaningful impact on participating teachers – and by extension, 500+ students. The program continues to advance its core goals: strengthening collaboration between educators and Colorado's bioscience industry and sparking student engagement in STEM learning and career exploration.

Building Partnerships

The RET program continues to connect educators with Colorado's bioscience industry and university researchers. Teachers gained firsthand experience in lab and manufacturing settings, deepening their understanding of industry practices and building relationships that will support opportunities for job shadowing and future classroom collaborations.

Connecting Students to Careers

Teachers believe that what they learned in RET will help their students make a connection between classroom science and real-world careers. Teachers plan to integrate biotech tools, career-focused content, and industry insights into their classrooms.

Boosting Student Engagement

Teachers reported that RET renewed their enthusiasm for teaching and gave them tools to make science more engaging. Hands-on labs and real-world examples have sparked curiosity, critical thinking, and a stronger sense of ownership among students.

Expanding access to STEM

All 2025 RET teachers serve students from historically underserved groups. By equipping these educators with industry exposure, classroom-ready materials, and career-connected learning strategies, RET helps ensure more students have access to high-quality STEM education and opportunities.

EVALUATION METHODS

This evaluation used surveys and participant reflection to assess the impact of the 2025 RET program on participating educators and their students. The evaluation was conducted by an external evaluation consultant to support objectivity and rigor in data collection and analysis.

Data Collection

The evaluation relied on a digital survey administered to the participating teachers:

- *Post-Program Survey* – Administered immediately following the conclusion of the RET program, this survey gathered baseline data on teachers' experiences, knowledge gains, perceived value of the program, and anticipated classroom implementation.

This survey included a combination of quantitative and qualitative items designed to capture both progress toward objectives and deeper insights into teachers' experiences and instructional practices.

Data Analysis

Quantitative Data: Responses were analyzed using descriptive statistics, including measures of central tendency (e.g., means, medians) and frequency distributions. Given the small sample size, results are presented as percentages and raw counts to accurately reflect patterns in the data.

Qualitative Data: Open-ended responses were analyzed using inductive coding, allowing themes to emerge directly from the data. Responses were systematically reviewed to identify common patterns, key takeaways, and areas of divergence. Qualitative responses provided deeper insights into teachers' implementation strategies, student engagement, and programmatic impact, complementing the numerical findings.

While the small sample size (four teachers) limits the generalizability of findings, the evaluation provides a highly detailed and context-rich account of RET's effectiveness.

ACKNOWLEDGEMENTS

Sincere thanks to

TriSalus LIFE SCIENCES

Edgewise THERAPEUTICS

S·T·A·Q PHARMA

Safety | Transparency | Availability | Quality

AlloSource® LIFE SCIENCES

Medtronic

Thank you for your continued support of the Colorado BioScience Institute.

REPORT PREPARED BY

Sarah Brenkert, M.S. Ed.

Sarah Brenkert Evaluation
brenkertevaluation@gmail.com