

WHAT IS

# STEM TEACHING,

AND IS IT RIGHT FOR YOU?

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# Introduction



Are you obsessed with the latest technology?



Are you curious about finding creative solutions to real-world problems?



Do you enjoy planning and teaching classes that students are actively engaged in?

If you answered yes to any of the above, then you might make a great STEM teacher.

There's never been a better time to pursue a career teaching science, technology, engineering, and mathematics (STEM), as STEM is one of the fastest-growing and most in-demand teaching fields.

# Why Do Today's Students Need STEM?

American students are underperforming in math and science. According to the [Pew Research Center](#), American students ranked 38th in math and 24th in science in the most recent Programme for International Student Assessment testing, which measures math, science, and other key skills among 15-year-olds in 71 countries.

[The New York Times](#) argues that a country's proficiency in STEM is vital to its economic growth, scientific innovation, and good jobs, making the need for a quality STEM education—and good STEM teachers—more important than ever.

The world is getting faster and more dependent on technology. Today's students need STEM skills to get tomorrow's jobs, and schools need STEM teachers to help students develop those skills. Employment in STEM fields grew by 10.5 percent between 2009 and 2015, according to the [U.S. Bureau of Labor Statistics](#), and demand is still growing. The Bureau of Labor Statistics estimates that employment in computer occupations will increase by 12.5 percent by 2024, and that there will be half a million new computer science jobs and more than 65,000 new engineering jobs by 2024. According to the [Education Commission of the States](#), available STEM jobs will grow at a faster rate (13 percent) than non-STEM jobs (9 percent) between 2017 and 2027.

# What Are the Approaches to Teaching STEM?

STEM teaching is built on an interdisciplinary approach. Instead of teaching science, technology, engineering, and math separately, STEM teachers integrate these disciplines and teach students how to apply their concepts to real-world issues.



Education is not the learning of facts, but the training of the mind to think.

Albert Einstein



STEM teaching is all about facilitating a different way of learning by developing students' critical-thinking, problem-solving, and teamwork skills. It's about cultivating students' confidence, creativity, curiosity, and willingness to try—and fail—until they succeed.

In elementary school classrooms that take a STEM approach, groups of students might think up possible solutions to climate change or riverbank erosion by building structures with Legos, creating engineering tools with Play-Doh, or designing robots with craft supplies. These classrooms are busy, active, and engaging, and their lessons relate to students' real-world experiences.

STEM-focused middle and high schools take collaboration and teamwork even further. Students often work in groups on research topics assigned to them— and sometimes topics they've selected themselves. Some classes participate in STEM challenges where students compete against classmates or students from different schools. By combining

# What Are the Approaches to Teaching STEM?



the scientific method, technology, engineering design, and advanced math concepts, STEM-focused secondary classrooms develop new technological ideas and find innovative solutions to social and scientific problems.

STEM teaching methods better align with how students engage and learn. A study conducted in a suburban Illinois elementary school and published in [Defined Learning](#) found that “project-based learning enhances student performance, motivation, student engagement, and teacher/student interaction.” By focusing on the STEM model, teachers helped second graders improve their test scores by 49 percent and fifth graders improve theirs by 39 percent.

Teachers in the study reported that “students didn’t look at it as learning— they were having fun,” which made it an enjoyable experience for everyone.

# What Makes a Teacher Good at Teaching STEM Disciplines?

Teachers never know who might show up in their classrooms, but their passion and dedication always inspire the best in their students—and can maybe change their lives.



The future of the world is in my classroom today.

Ivan Welton Fitzwater

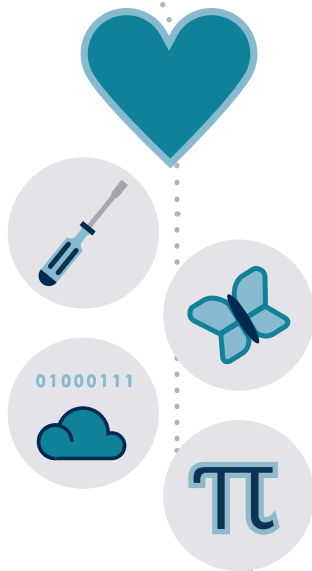


Not every STEM teacher started out with a specialized degree in a science-related field. Teachers with work experience in their specialty and a passion for their field are especially poised to make an impact. Career changers moving into teaching from the corporate world bring with them essential real-world experience and insight. People who make the leap to teaching from industries such as finance, engineering, or IT often enjoy sharing their knowledge with the next generation of science and math enthusiasts. They embody the STEM approach by teaching from experience and using innovative ideas to engage students.

Because a STEM-focused approach to teaching takes collaboration, engagement, and interaction to new heights, its educators need a specific skill set, and they also need passion for and dedication to their discipline, whether it's algebra, physics, or biology.

Here are some common characteristics all STEM teachers share, whether they're in a kindergarten or a high school classroom.

# What Makes a Teacher Good at Teaching STEM Disciplines?



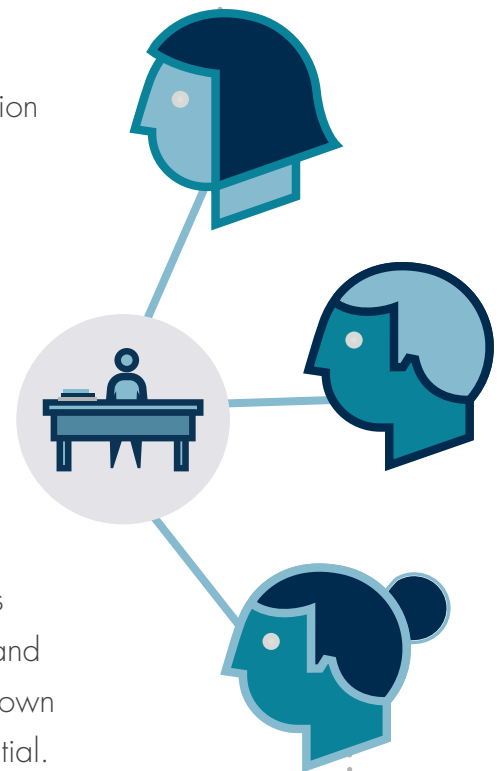
## 1. They Love Their Discipline

Were you that kid in high school who loved science and math? Did you hate sitting still, and did you prefer classes that let you move around or work with your hands? Or did you have a teacher who inspired you to dig into a STEM subject? Many of the best teachers who teach STEM subjects are life-long lovers of math, science, or technology. They keep up with the latest technology trends, and they enjoy sharing their passion with their students. Their love of their field is contagious, and helping their students discover their own STEM interests is one of their greatest rewards.

## 2. They Build Relationships with Their Students

Because STEM teaching involves more interaction and collaboration than a typical classroom does, STEM teachers must be able to develop relationships with their students quickly. A study in the [International Journal of STEM Education](#) found that effective STEM teachers were critically aware of their students' needs and advocated for equity and inclusion in their classrooms. These practices helped students feel more connected to their teachers and the learning material.

In a survey conducted by [Pearson](#), students between the ages of 15 and 19 said that the teachers who developed relationships with them were their best educators. On a typical day, teachers and students spend more time with each other than they do with their own families, so creating a supportive and caring relationship is essential.





# What Makes a Teacher Good at Teaching STEM Disciplines?

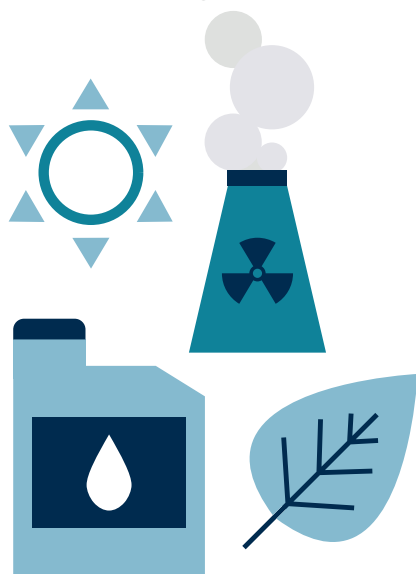
## 3. They Find Creative Ways to Engage Students

While teachers in traditional classrooms often consider smartphones and video games as distractions, STEM teachers embrace technology and often use these devices to teach and challenge students. The STEM approach uses hands-on, project-based experiences to engage students and make learning fun and relevant to the real world. These teachers might challenge students to create their own app or develop a new video game, for example, to turn even the most reluctant or disengaged students into motivated learners.

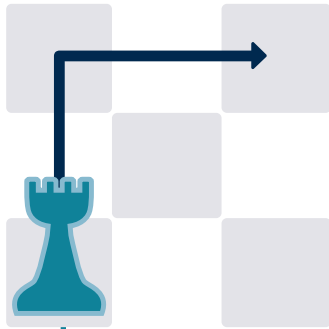


## 4. They Solve Problems

Solving problems is the backbone of STEM, so flexibility, patience, and creativity are essential traits for successful STEM teachers. STEM teachers model problem-solving for their students and teach them to view problems as challenges with multiple solutions. Students in classrooms that take a STEM approach are tackling some of the world's biggest problems, such as climate change, pollution, and sustainability, by designing solar ovens, cleaning oil spills, and designing eco-friendly cars. These students use the latest technologies to solve real-world issues, and they often present their findings and solutions at conferences to collaborate and share ideas.



# What Makes a Teacher Good at Teaching STEM Disciplines?

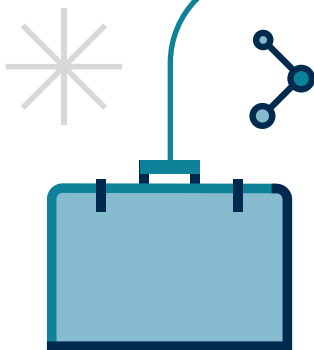


## 5. They Manage Classrooms Skillfully

Managing a classroom takes skill; managing a classroom that uses a STEM approach takes flair. STEM teachers don't control a room of students seated at desks; they teach in a room made up of many moving parts. They're organized, but they're also flexible. They command and offer respect, but they also know when to let students take the lead.

## 6. They Love Learning

STEM teachers live on technology's cutting edge, and they're passionate about bringing new information and challenges to their students. According to [STEM by Design](#), good STEM teachers "convince kids to accept failure as normal and a necessary part of the process of learning." In the fast-paced world of science and technology, STEM teachers are constantly learning and growing, staying up to date on the latest trends and continually refreshing their content to keep it exciting.



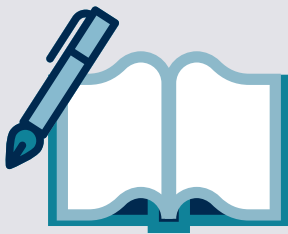
## 7. They Shape the Future

According to a [2016 World Economic Forum report](#), 65 percent of children entering elementary school today will work in jobs that don't yet exist. As our world and our workforce evolve, teachers are the key to ensuring students are prepared to succeed, and STEM teachers are leading the way into the future.

If these characteristics resonate with your skills and background,  
**STEM teaching might be right for you.**

# What Does the Future Look Like for Teaching STEM?

Teachers are in short supply in the United States. A [2016 Learning Policy Institute report](#) predicts that there will be a demand for 300,000 new teachers a year by 2020.



Let us remember:  
One book, one  
pen, one child, and  
one teacher can  
change the world.

Malala Yousafzai



By 2025, that number will increase to 316,000 teachers. The need for teachers in math and science is especially large, the institute says: during the 2015–16 school year, 42 states and the District of Columbia reported a shortage of math teachers, and 40 states and the District of Columbia reported a lack of science teachers. Students in low-income schools are most affected by the teacher shortage and most likely to be taught—and taught ineffectively—by inexperienced teachers.

Efforts are underway to recruit and train a new generation of STEM teachers to ensure that every student has the opportunity to learn from passionate, highly qualified teachers. One such initiative is the [100Kin10](#) program, a collaboration of more than 200 of the nation’s top academic institutions, nonprofits, foundations, companies, and government agencies committed to offering training, resources, and support to place 100,000 new STEM teachers into classrooms by 2021. With initiatives such as these working hard to prioritize STEM, the future of the field is promising.

# Preparing for the Classroom

**P**ursuing a teaching degree is a life-changing decision. It requires hard work and dedication, but it also offers a uniquely rewarding experience.



STEM teachers are in especially high demand, and many schools are looking for strong teachers that can instill in their students the skills they need to succeed in a tech-focused future.

If engaging students and teaching them about real-world issues through hands-on interaction sounds like an exciting career, pursuing a teaching degree might be perfect for you. Western Governors University offers convenient and affordable online programs in many disciplines and the flexibility to complete them at your own pace. While the average college degree takes five years to complete, the average WGU student graduates in just two and a half years. There's no maximum course load at WGU, so motivated students can move through the program quickly, saving time and money.



WGU takes a competency-based approach to academics, allowing students to move quickly through classes by demonstrating mastery. Each student is also assigned a program mentor who instructs, advises, and assists them on their journey.

To learn more about becoming a STEM teacher through WGU's cost-effective online degree programs, explore the

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Start now. Your students are waiting for you.

