INTRODUCTION

Market Data Retrieval (MDR) is pleased to share findings from its new research initiative, which provides insight into the needs and opportunities for capacity-building in schools’ Science, Technology, Engineering, and Math (STEM) offerings to students.

Through a research survey completed by more than 800 K-12 teachers across the U.S., MDR has learned:

• Students are heavily influenced by their school experience as to whether or not they pursue STEM careers
• Teachers have a clear idea of what they need in order to foster STEM engagement
• Schools have been unable to close the gap between what teachers think is highly effective for STEM education and what is currently available to use in the classroom
• Industry providers, professional associations, and foundations supporting STEM growth have an immediate opportunity to support and expand their commitment to education

KEY RESEARCH FINDINGS

Career Success: STEM’s Critical Role

More than 90% of teachers in this survey feel that STEM education is important for career success. With the growing demand for a skilled workforce at all levels of STEM professions, this finding serves as a reminder that teachers are an influential group that has shown unwavering support in setting students up for success.
The attitudes exhibited by teachers should be an encouraging sign for stakeholders in STEM industries. A high degree of support from teachers will be instrumental in fostering student interest in STEM. So, too, will students’ aptitude in these fields.

**STEM Courses Influence Career Decisions**

Eight out of ten teachers in K-12 feel that a student’s aptitude in one or more STEM subjects is important (or very important) in helping identify a clear career goal. Success in core STEM subjects opens up the potential for success in the workforce, which perhaps is why teachers place such a premium on the importance of education in these areas. And nine out of ten believe competency in at least one STEM subject results in a student choosing a career in a STEM-related profession.
That said, however, setting up students for success in STEM does not preclude the need for a well-rounded education. In fact, teachers indicated that a wide range of subject matter mastery comes into play when preparing students for a STEM-related career. Based on survey responses, the top five subjects in order of importance are:

1. Math
2. Science
3. Technology/Computer Science
4. English/Language Arts
5. Pre-Engineering

While it comes as no surprise that subjects comprising “STEM” emerged as key foundations for success, it is worth noting that Art and Social Studies play important roles in student success, with 63% and 56% of teachers, respectively, stating those courses were important in preparing students for a STEM-related career. A myopic focus on STEM, therefore, is not the answer. Instead, stakeholders in the future of STEM workforce readiness would do well to take cues from teachers who believe non-STEM courses, including those in music, physical education, and communication, are important to develop problem-solving skills in students.

**Career Decisions: Students Should Start Early**

It is during their well-rounded education that students start to hone in on career opportunities. Almost a quarter of teachers surveyed indicated that students are most likely to make a career decision after high school graduation. Interestingly, more than 50% of teachers indicated that students are likely to make career decisions before they reach their senior year, with 11th grade most frequently cited.

This leads to the question: Should STEM career options be introduced to students during the high school years? The resounding answer was “no”; nearly one-half of survey respondents recommended doing so during the sixth- to eighth-grade span, and another one-third (32%) thought Grades K-5 was optimal for introducing STEM careers.

When factoring in the attitude of teachers toward STEM education and its influence on career selection, along with the aptitude of students in those fields, it is clear that organizations counting on STEM workforce readiness should see K-12 education as a critically important segment to engage.
STEM Materials and Activities: What Educators Need

While teachers indicate a high degree of value should be placed on education and its role in supporting the future of STEM, they do not place a high value on the materials currently on hand to support students.

In fact, when asked how effective are the resources they currently have available to teach STEM subjects, teachers indicated that our overall education system could do more to provide them what they need.

And not only do most teachers feel their materials are only somewhat effective (or ineffective), a majority are not confident they can find what they need. When asked whether they can locate the most innovative resources with which to teach STEM courses, only four in ten indicated they are confident they can. Though this study did not examine the specific factors contributing to the gap between what teachers feel they need and what’s available, what is clear is that stakeholders surrounding STEM education have an opportunity to contribute and make a difference.

What’s also clear is the specific ways in which organizations can contribute, be they foundations, employers, or professional associations. When asked just what resources they feel are most effective for teaching STEM courses, teachers in this survey made it clear that hands-on curriculum, complemented by lab equipment (needed for hands on experiments) and projects involving real-world applications, was seen as the most effective when teaching STEM courses.
New Research Underscores Opportunity to Build STEM Capacity in America’s Schools

Effective Resources to Teach STEM Courses

<table>
<thead>
<tr>
<th>Resource</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hands-on curriculum</td>
<td>92%</td>
</tr>
<tr>
<td>Projects involving real-world applications</td>
<td>88%</td>
</tr>
<tr>
<td>Lab equipment and supplies</td>
<td>83%</td>
</tr>
<tr>
<td>Field trips (in-person or virtual)</td>
<td>75%</td>
</tr>
<tr>
<td>Outside resources (collaboration with STEM professionals, etc.)</td>
<td>70%</td>
</tr>
<tr>
<td>Supplemental instructional materials (digital)</td>
<td>60%</td>
</tr>
<tr>
<td>Supplemental instructional materials (print)</td>
<td>36%</td>
</tr>
<tr>
<td>Textbooks (print)</td>
<td>33%</td>
</tr>
<tr>
<td>Textbooks (digital)</td>
<td>32%</td>
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</tbody>
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Perhaps this is reflective of the current state of resources in today’s STEM classrooms, or maybe it has to do with what teachers feel will best support interest in STEM careers.

Along with these resources and activities, teachers indicated that a deeper level of engagement through simulations and virtual field trips would benefit students.

Activities That Best Support Student Interest in STEM Careers

Many teachers indicated a desire for field trips, guest-speaking engagements, and greater interaction with STEM professionals. In this way, teachers will be able to address the need for hands-on education, and professionals will reinforce the need for aptitude in STEM subjects (and others) as a key driver of future success.
IMPLICATIONS FOR STAKEHOLDERS

In order to meaningfully support workforce readiness that is required due to growth in STEM fields, stakeholder organizations must engage in ongoing, thoughtful inquiry into teachers’ needs—as exemplified by this study.

Through this survey, teachers across all grade ranges have not only given a clear indicator of their needs—from hands-on curriculum and activities to more engagement with professionals in the field—they have also reinforced their role as advocates for students (future members of STEM professions).

Knowing the importance of education in STEM success, however, is not enough. Stakeholder organizations need to effectively partner with administrators and teachers and provide professional-caliber content, engagement, and resources that will advance students’ mastery of STEM subjects and increase their understanding of STEM-related careers. In this way, employers, foundations, and associations will serve the critical near-term needs of educators while also furthering our nation’s progress toward a shared goal of a prepared and prosperous STEM workforce.

About MDR

Since 1969, MDR has pioneered development of a rich, comprehensive database of educator and institutional information across K-12, higher ed, public libraries, and early childhood. Today, we not only help you define which educators to connect to but how best to connect with them. That’s a critical distinction when you need a partner with the skill to strategize, create, and deliver multi-channel campaigns and the know-how to engage with teachers, parents, and students where they live and where they learn.

Through our EdNET suite of products, industry leaders can gain insight and opportunity through comprehensive market intelligence and analytical reports, custom research services, high-profile networking opportunities, and professional events.

MDR also publishes a variety of research reports, including State of the K-12 Market, Digital Marketing Trends in the Education Market, the Enrollment Comparison Report, and Public School Expenditures.

MDR, a D&B Company, is headquartered in Shelton, Connecticut.