

**2010**  
**Science Buddies Annual Report**

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# Executive Summary

## **Organization**

Science Buddies is a software and content developer that builds online communities, resources, and tools for K-12 science, technology, engineering, and mathematics (STEM) education. Our flagship product, an award-winning website ([www.sciencebuddies.org](http://www.sciencebuddies.org)) with unique tools and superior content, has become one of the most popular science websites on the Internet. The site serves a diverse audience of approximately ten million students, teachers, and parents each year, a number equal to 18% of the entire U.S. K-12 student population. The American Library Association, the Parents' Choice Foundation, and the SciLinks program of the National Science Teachers Association all recommend Science Buddies.

## **Purpose**

A 501(c)(3) public non-profit, Science Buddies' mission is to help students from all walks of life build their literacy in science and technology so that they can become productive and engaged citizens in the 21st century. We have created personalized learning tools, over 15,000 pages of scientist-developed resources (including science Project Ideas based on the latest academic research), and an online community of science professionals who volunteer to advise students. We also provide resources to support teachers and parents as they guide students in hands-on science inquiry.

## **Description of Programs**

All Science Buddies programs are designed to identify specific student needs and create solutions that actively engage students and scientific professionals. In particular, our programs focus on:

- Recruiting science and technology professionals to interact with students, making science real.
- Leading students to projects that are more challenging and have a higher science content than projects they might choose on their own.
- Saving students time and frustration. Students *want* to use our tools; our tools save students time and make science research more fun.

A sample of our resources is as follows:

1) The **Science Fair Project Guide** is a comprehensive online guide to science research and science fair projects. It includes step-by-step guidance, actual sample assignments, photos of science fair projects, tips for success, and self-grading guides for students. The Teacher Resources section includes a planning guide and printable copies of the how-to information.

2) The **Topic Selection Wizard (TSW)** is an immensely popular interactive tool that helps students to explore different topic areas for their science fair project. First, the tool leads students through a series of questions to determine their needs and interests. Then, the tool analyzes student responses to provide a custom-tailored selection of **Project Ideas** to visit.

3) **Interest Areas** cover major fields in science and engineering, offer background information (e.g. vocabulary, important concepts, equations, and safety information), and a large selection of **Project Ideas**.

4) **Project Ideas** are detailed outlines that guide students through the process of creating challenging and innovative science projects. Each Project Idea includes the following: a description of the subject matter; bibliographic references; locations of Internet-based public domain tools and/or real-time scientific data; and suggested experimental procedures. Each of our Project Ideas is authored either by our staff scientists or by volunteers who are science or technical professionals.

5) **Ask an Expert (AAE)** is an online message board-style forum staffed by science and engineering professionals and talented science students who volunteer to help students with their project questions. AAE is a great way for students to get help when they don't have a parent, teacher, or other adult with the knowledge, time, or ability to help them. When students have guidance, they have more fun doing their science fair project, undertake more challenging experiments, learn more, and generally develop a more positive attitude about science. AAE also offers a searchable database of past questions and answers so that other students may benefit from past discussions.

6) A library of multimedia **Science Careers** that provide information about science and technology careers, including job duties, education requirements, salary ranges, and links to interviews with professionals.

## Highlights of 2010

Science Buddies was pleased to continue its growth in site usage in 2010, setting organizational traffic records for the fifth year in a row. We created and expanded site utilization features that enhance our visitors' experience, and created new ways for volunteers to give back to students. We designed and posted new resources and tools based on user feedback. We also continued to produce and post popular content to the website.

Key accomplishments:

- In calendar year 2010, our site readership increased 21.5% over calendar year 2009.
- Our science content development team published 56 new Project Ideas. Our directory of Project Ideas now contains over 1,000 scientist-vetted Project Ideas for K-12 students.
- We enhanced our Science Careers section to reach our target of 105 STEM-related careers. These profiles allow students who enjoyed a particular project to find out how to translate their interest into a real-world career path.
- We held an annual professional development webinar for teachers in September.
- Our Vice President, Courtney Corda, returned to the popular San Francisco television show *View from the Bay* as "Science Mom," demonstrating Science Buddies' Project Ideas and giving parents tips for making science an everyday part of their children's lives. Some of those clips aired in syndication in other markets.
- Despite the worldwide economic downturn, we successfully raised our operating budget. Our organization continues to operate at a much lower cost per student served than other prominent mentoring and education organizations.

In the following sections, we provide a detailed overview of our 2010 progress.

## Results of 2010 Programs

### ***Overall Website Traffic***

Our visitors reach Science Buddies in a variety of ways: search engine organic results, search engine ads, and links from referring sites, such as science fairs, teachers' pages, and educational organizations. Our increased social media efforts are also helping spread awareness about Science Buddies and driving new users to our website. We also rely on word-of-mouth and press coverage. Highlights of our website traffic this program year include:

- Nearly 800,000 users registered on our website using the Topic Selection Wizard.
- 14.1 million visitors used the website—a new all time high. We reached a count of 9.8 million unique visitors.

**Figure 1. Science Buddies Website Traffic Summary**

Website Traffic	2007	2008	2009	2010
	Calendar Year	Calendar Year	Calendar Year	Calendar Year
Total Visitors to Website	7,204,538	9,287,343	11,629,645	14,173,185
Unique Visitors	5,039,659	6,554,456	8,109,980	9,803,731
Pages Viewed per Visitor	6.47	7.66	7.40	6.26
Avg Session Length (Min:Sec)	06:33	05:48	05:32	04:49
International Traffic (approx. percentage of total)	16%	22%	21%	19%

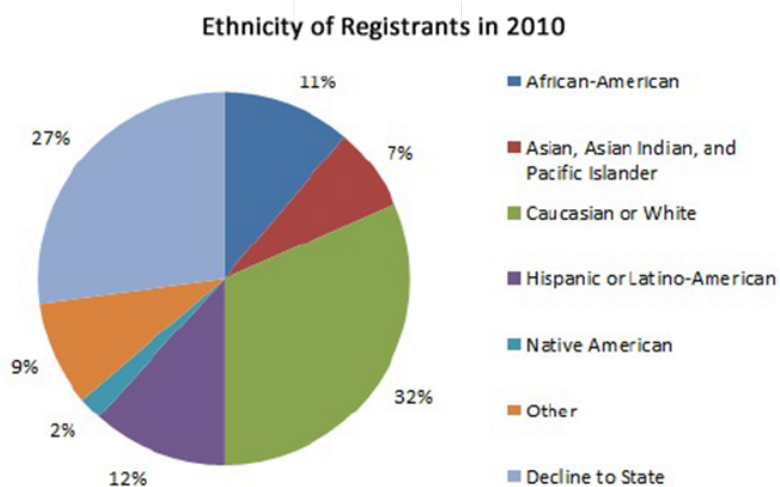
Figures 2 and 3 below (on the following page) show visitor demographics for our website. The figures are calculated based on the registered users of our optional Topic Selection Wizard survey (about 8-12% of our total visitors register). We can extrapolate these percentages to the visitors to our site, showing that our users come from all ages and backgrounds.

State	Registered Users	Population
Alabama	3,070	4,779,736
Alaska	6,071	710,231
Arizona	7,057	6,392,017
Arkansas	14,770	2,915,918
California	76,117	37,253,956
Colorado	10,374	5,029,196
Connecticut	5,254	3,574,097
Delaware	1,455	900,877
District of Columbia	2,942	601,723
Florida	107,796	18,801,310
Georgia	27,921	9,687,653
Hawaii	3,128	1,360,301
Idaho	1,993	1,567,582
Illinois	29,833	12,830,632
Indiana	13,091	6,483,802
Iowa	2,328	3,043,355
Kansas	3,109	2,853,118
Kentucky	5,989	4,339,367
Louisiana	9,808	4,533,372
Maine	1,000	1,328,361
Maryland	25,283	5,773,552
Massachusetts	11,900	6,547,629
Michigan	13,515	9,883,640
Minnesota	11,132	5,303,925
Mississippi	7,618	2,967,297
Missouri	7,444	5,988,927
Montana	2,982	989,415

State	Registered Users	Population
Nebraska	3,096	1,826,341
Nevada	4,262	2,700,551
New Hampshire	1,348	1,316,470
New Jersey	11,929	8,791,894
New Mexico	9,098	2,059,179
New York	33,263	19,378,102
North Carolina	26,411	9,535,493
North Dakota	698	672,591
Ohio	3,096	11,536,504
Oklahoma	5,259	3,751,351
Oregon	5,194	3,831,074
Pennsylvania	24,643	12,702,379
Puerto Rico	836	3,725,789
Rhode Island	1,455	1,052,567
South Carolina	12,347	4,625,364
South Dakota	1,784	814,180
Tennessee	12,146	6,346,105
Texas	63,598	25,145,561
Utah	15,078	2,763,885
Vermont	824	625,741
Virginia	23,816	8,001,024
Washington	15,198	6,724,540
West Virginia	5,557	1,852,994
Wisconsin	2,147	5,686,986
Wyoming	2,400	563,626
Outside U.S.	62,317	-
<b>Total</b>	<b>784,743</b>	<b>308,745,538</b>

Figure 2. Registrants for the Topic Selection Wizard by State or Region

Figure 3. Science Buddies Website Demographics



## The Topic Selection Wizard: A Proven Tool for Personalized Education

Because students have difficulty finding a topic to work on and because we strongly believe that students learn the most from a project when they have an intrinsic interest in the subject matter, we developed an “intelligent” recommender for the Science Buddies Web site (see Figure 4). The Topic Selection Wizard (TSW) asks questions about everyday interests and grade level and then directs students to matching project ideas from our library. In 2008, the National Academy of Engineering identified the advancement of personalized learning and, specifically, recommender systems for education, as 1 of 14 grand challenges in engineering for the 21st century. The performance of our Topic Selection Wizard substantiates the value of such tools. Students who use the Wizard are 95% more likely to find a project idea that satisfies them compared with students who simply browse possible projects.

Putting a face on the numbers, one parent told us that “[his fourth-grade daughter] is into stuffed animals, loves pets, and loves the Sierra Nevada camp with its bugs, birds & snakes, where my wife is director. I completely expected her to do an animal project and was prepared to talk about ethics and animal-use protocols. Well, as she went through the [Wizard] questions, what we discovered is that she's deeply interested in electricity, devices, and math-oriented topics. This was a real gift to all of us.” This student completed a project on static electricity, won an award at her school science fair, and reported to us, “Science is fun!”

In 2010, nearly 800,000 users registered using the TSW, including individuals from every state in the U.S., as well as other English-speaking countries.

## Content Development and Upgrades

### Science Careers

In 2010, we enhanced our Science Careers section. In-depth profiles of 105 STEM-related careers allow students who enjoyed a particular project or are interested in a particular area of science to find out how to translate their interest into a real-world profession. Since its launch in 2009, the Science Careers directory has proven extremely popular. Science Buddies, with STEM career content targeted towards a younger audience but leveraging the existing Science Buddies base, has in one year already surpassed

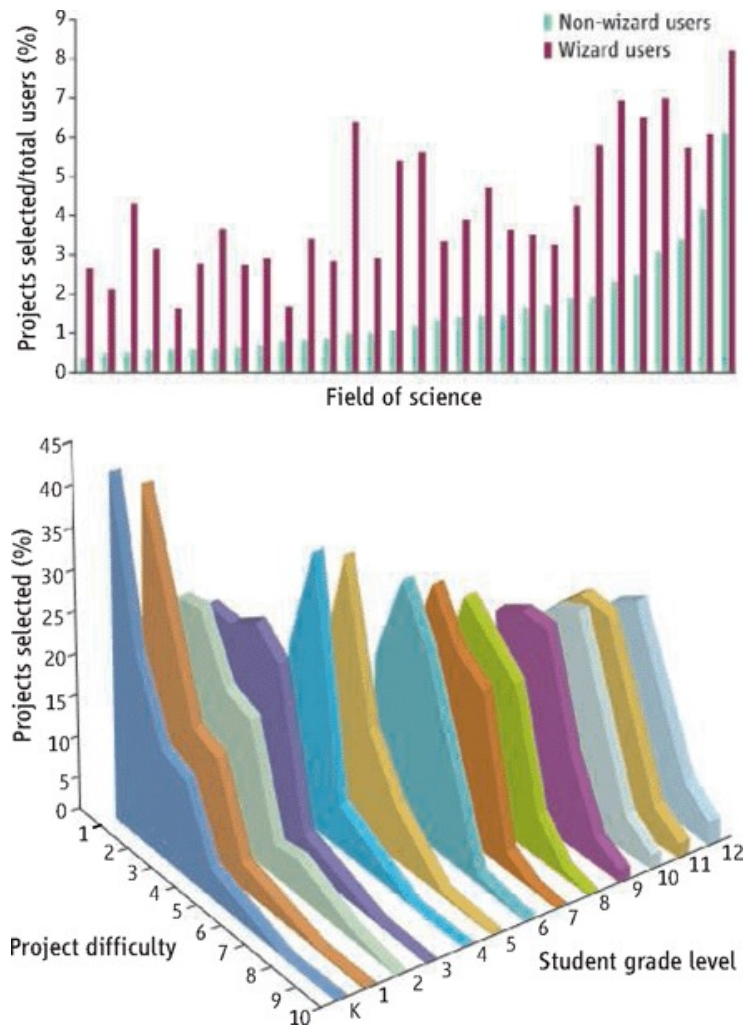


Figure 4. TSW Usage Statistics

the traffic of other K-12 STEM only sites (source: compete.com). Hoping to inspire the next generation of scientists and engineers, we added a total of 33 new Career Profiles in 2010. Linked to applicable Project Ideas, the Career Profiles answer that age-old question, “When will I ever have to know *this*?”

## ***Project Guides***

We drafted and published five entirely new Project Guides in 2010. Providing great background and contextual information about preparing for, creating, and presenting science fair projects, the guides are invaluable resources and have quickly become popular. Our new guides are:

- [From a Judge's Perspective: Tips for a Successful Scientific Interview](#)
- [Data Analysis for Advanced Science Projects](#)
- [How to Get Started Downloading and Using Storytelling Alice](#)
- [SCRATCH User Guide](#)
- [Using Animal Tracking Data from Movebank for Science Projects](#)

These guides have been extremely well-received by our audience. As we heard from Marilyn Just, a parent in Pittstown, NJ, “My eldest made a xylophone from copper pipes to explore music/sound and was introduced to SCRATCH programming through your website. He now shows all his friends how to program using SCRATCH & has joined a SCRATCH club & attended a SCRATCH convention. He introduced & taught SCRATCH to the local public school computer teacher & club members...The site is a fantastic resource. I’ve recommended the site to our friends, our home school friends, and to traditional educators and will continue to do so. I can’t think of a way at this time that you could improve the site. The only thing I can think of is to make sure the word is out about this great resource. I’d hate to lose it!!!”

## ***Website Upgrade***

Anticipating additional content, traffic, and the need for higher operating capability, Science Buddies replaced its servers in 2010. With our upgraded computing and storage capacities, Science Buddies has more room to grow and to implement the sophisticated tools we are developing to meet the growing needs of our audience.

## ***"My Science Buddies"***

We added the "My Science Buddies" tab to the website in 2010. This area of the site is linked to free general site membership. Users can now log in to the Science Buddies website to save their favorite Project Ideas, view their individual Topic Selection Wizard recommendations, and adjust their account settings. The ability to log in to Science Buddies is an improvement over our prior cookie-based system and enables users to access their stored content from any computer, which can be particularly useful for students who may use the site at school and at home.

## ***Social Media***

With an eye to the growing awareness and use of social media within our core audience, we rolled out a “Share This Project Idea” feature that lets users share Science Buddies content more easily with their friends and family. Science Buddies also began posting videos of our projects to our YouTube channel in 2010. In addition, we integrated a “Report a Problem with This Page” feature that lets users alert us more quickly to any issues that need our attention.

## **Project Ideas**

While adding new resources, we continued to both develop new Project Ideas and update existing content for our website. By the end of 2010, we added 56 new Project Ideas to our already expansive library, bringing our total to more than 1,000. Highlights of our new Project Ideas include [Star light, Star bright: How Does Light Intensity Change with Distance?](#), (from our Astronomy Interest Area) [Exploring DNA Damage: What Effect Do Ultraviolet Rays Have on Yeast Colony Growth?](#), (Biotechnology), and [Swimming in Acid: Understanding Ocean Acidification](#) (Ocean Science).

Students, teachers, and parents appreciate the scope and depth of Project Ideas we have to offer. Kelley Tenkley, a teacher from Cherry Hills Christian School in Highlands Ranch, CO, told us, “We have primarily used Science Buddies with our fifth grade students as they are trying to find a direction for our giant science fair. What I love about Science Buddies is that it introduces students to topics that align with their interests and helps them find areas of science that they can be passionate about. We have found that when our students use Science Buddies before and during their project, the finished product is much more thorough and the kids put more effort into them. I believe this is due in part to the students finding a topic that really interests them.”

## **Ask an Expert (AAE)**

“Ask an Expert” is an online advice forum staffed by a team of volunteers, including scientists, engineers, and talented science students who offer their help and expertise to students (and parents) engaged in science projects. AAE offers drop-in help to students looking for guidance with science projects throughout the year, whether for a class assignment or a science fair. Although AAE can be helpful for any student involved in a science project, it is especially beneficial for students whose parents lack the time or expertise to assist them, students who may not have access to the kinds of expertise required for a project, and advanced students who cannot find a suitable mentor in their own community. At the same time, Ask an Expert presents a convenient and rewarding volunteer opportunity for scientific professionals and high school students, who can serve as mentors on their own time and from their home or office computers.

AAE is a cornerstone of the Science Buddies website, and the feedback from our audience sings its praises. As Carolyn Saint Angelo, a teacher from Tecuesta Trace School in Weston, FL, put it, “Science Buddies has been a favorite resource for my students. I have seen 6th graders go through the selection process to narrow down a topic to an experiment that interests them. I have often referred to the free poster on the Scientific Method that Science Buddies provided as we did our science fair projects. The teacher resources were very helpful in designing my own guides, timelines, and information packets that fit my specific students. But nothing tops the “Ask an Expert” dialogue that Science Buddies offers to these budding scientists! Your support keeps the enthusiasm going!”

During 2010, we had 46 adult volunteers staffing the Ask an Expert Forum. Participating companies and universities include:

<b>Advisor Organization</b>	
Abbott Laboratories	National Semiconductor
Bank Land	Palo Alto Medical Foundation Medical Group
Bio-Rad Laboratories	Refreshment Concepts
Carus Chemical Co.	Seagate Technology
Chevron	Stanford University
Chevron Environmental Management Company	Symantec
Chevron Global Lubricants	Synaptics

Children's National Medical Center	Texas A&M Health Science Center IBT
Eike Consulting	UC Riverside
EMC Corporation	UC Berkeley
Frontier Astronautics	UC Santa Cruz
Henderson State University	University of Minnesota
In Silico Studios	University of Pennsylvania
Intel Corporation	US Air Force
Lockheed Martin Space Systems	Wyeth
Motorola, Inc., Enterprise Mobility Solutions	Xilinx, Inc.

## **Testimonials**

Each year, we receive feedback from dozens of teachers and parents who have had success with our services. Here is a sample of the feedback we received in 2010.

*I use Science Buddies as a resource for my students to learn about science fair project components and to get ideas for projects if they are planning to do one. I put the site on the flyer that goes home with everyone in our school as part of the advertisement about the upcoming science fair (I am our school Science Fair chairman). I think the site is well-organized and has great information. Your site is actually a component of a web-based scavenger hunt assignment that I created for my students to use while we are studying the scientific method. Keep up the good work!*

–Julia Arth, Teacher, Des Peres, MO

*My name is Cecilia Avila Young, and I am a teacher of 6th graders. We have used Science Buddies for the past two years with our entire school. I sit on the Science Committee, and we strongly encourage this site to all staff. We love many features, including the Topic Selection Wizard, which includes the various topics and ideas into neat categories for the children to choose from. Many of the projects for the Science Fair were chosen from this site in previous years. The news links and the plethora of quality science links to choose from are a tremendous resource. Keep up the great work!*

–Cecilia Young, Teacher, Central Islip, NY

*My son got a project off your site last year, and I thought you might like to take a look at how he did. He almost got a PERFECT score on it but because he was in 3rd grade he couldn't go any further than his school. We are now looking to do something else this year but I don't know if we can top last year's. :) Thanks for such a great website that helped us.*

–Denise Nelson, Parent

*Science Buddies helped me teach the scientific method to my fourth grade class at Berkwood Hedge. I've found "Project Guide" to be very useful when teaching students how to design a "fair" experiment. They learned about independent, dependent, and controlled variables. My students love the Scientific Method Classroom poster. Science Buddies is one of my favorite science websites. Thank you so much. I've learned a lot as a teacher from your website.*

–Vera Balerin, Teacher, Berkeley CA

*I can't say enough good things about Science Buddies. What a great resource for myself and my students. I referenced your website in all communications I sent home during the weeks leading up to our science fair. I sent home copies of relevant pages from the site as examples for students and their families. I used many of the handouts from the site for teaching concepts and student practice.*

*This year, nearly every student in my fourth grade class chose their project via the website. I was able to quickly get them all on board with an age and skill-appropriate project for each. I LOVE ScienceBuddies.org! Love it!*

*Please keep up the good work and service your website provides to students and teachers alike. I'm so glad I found you guys!*

*–Karen Nielsen, Teacher, Campbell CA*

*I am an eighth grade science teacher in New Jersey, having one eighth grade science class that spends the entire term working on an independent science fair project. We have been using the Science Buddies site for a few years now, and we find it to be an invaluable resource for our students. As part of my program, I have students take your survey to help them find a topic idea. We also encourage our students to use your ideas as a foundation for their study. We especially like the background detail you provide for your project ideas. Many thanks for your site. My colleague and I are continually looking for suitable online resources for our students, and we find your site to be one of the best.*

*–Marie Behnke, Teacher, Englishtown, NJ*

## Financial Summary

Science Buddies is a very cost-effective organization that offers excellent “bang for buck.” Because most of our programs happen online, rather than in person, we are able to keep costs and barriers to volunteering low, and yet the impact is still powerful. Our cost structure is unusually straightforward in that we have few expenses beyond staff salaries. The nature of the program means that the bulk of our expenses are in software development, online programming, and staff time (for content development as well as for recruiting, screening, and monitoring of participants in programs, such as Ask an Expert). Our 2010 operating costs are shown below:

Description of Expense Categories	Expenses Incurred in Category
Employee salaries and wages	\$552,331
Pension plans, employee benefits	\$59,566
Accounting and other professional fees	\$1,655
Taxes	\$142
Travel, conferences and meetings	\$3,668
Other expenses	\$407,606
<b>Total expenses</b>	<b>\$1,114,606</b>

Our 2010 revenues are shown below:

Sources of Revenue	Revenue Category Totals
Funding from corporations, private foundations, and individuals	\$1,455,227
Interest on savings or temporary cash investments	\$388
Dividends and interest from securities	\$169
Other income	\$1,582
<b>Total revenue</b>	<b>\$1,457,366</b>

Science Buddies continued to enjoy generous support from dozens of corporate sponsors whose donations funded the majority of our operating budget. As in prior years, enlisting corporate support was the focus of our fundraising strategy. Science Buddies received grants or in-kind donations from the following organizations and individuals in 2010, recognized in descending order, from larger to smaller gift:

**National Presenting Sponsor (\$150,000)**

Motorola Foundation  
Seagate Technology

**Einstein Level (\$100,000-\$149,999)**

Noyce Foundation  
Abbott Fund  
Chevron  
Symantec Foundation

**Copernicus Level (\$50,000 – \$99,999)**

Medtronic Foundation  
Northrop Grumman Foundation

**Darwin & Salk Levels (\$15,000 – \$49,999)**

Bio-Rad Laboratories  
MedImmune  
Amgen Foundation  
Intel Foundation  
Monsanto Fund  
Juniper Networks  
OSI Pharmaceuticals

**Edison Level (\$10,000 – \$14,999)**

EMC  
Lynn Brewer  
SanDisk  
Western Digital

**Galileo Level (\$5,000 – \$9,999)**

Pacific Gas and Electric Company

**Galileo Level (continued)**

Xilinx  
Beckman Coulter Foundation  
The Tech Museum of Innovation  
Biogen Idec Foundation  
Callidus Software  
Gordon Eubanks  
Lockheed Martin  
National Semiconductor  
PPG Foundation  
Xerox Foundation

**Curie Level (\$1,000 – \$4,999)**

Citrix Systems  
Peter Hatton  
Synaptics  
Xilinx  
Dr. Aaron Romanowsky  
Advanced Micro Devices  
Dr. Elizabeth Young  
Genencor  
Sybase

**Donations in Kind**

Google  
Advanced Micro Devices  
Citrix Systems  
Pacific Gas & Electric Company  
Symantec Corporation

## Contact Information

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### ***Name Change***

In April 2010, Science Buddies' parent organization, the Kenneth Lafferty Hess Family Charitable Foundation, formally changed its name to "Science Buddies" to better reflect the organization's business and status as a public charity. The official name change completes the process of establishing Science Buddies as the legal name of the organization.

The change does not impact Science Buddies' K-12 science education offerings and resources. The change will, however, help reduce confusion for donors, friends, and volunteers who will now see the Science Buddies name on all official receipts and documents. Similarly, the change will simplify legal contracts and grant applications.