School's Now in Session – For Everyone

How VGo Enables Your Students With Special Health Needs To Attend School

VGo removes the barriers of distance by enabling home and hospital bound students to:

- Develop strong teacher and peer relationships
- Participate in class discussions and school assemblies
- Stay socially connected
- Boost their morale, providing tangible health benefits

- - Abstract - -

Injury, disease, disability, allergy, extended illness, immune deficiencies and other challenges, whether temporary or permanent, can prevent a student from physically attending school. Data from the National Center on Education Statistics (2011) show that some 659,000 students reportedly suffer from a condition that compromises their participation in school. The data also shows that a quarter of students with health impairments attend school 40% or less of the school year.

How do you continue to educate a student that, for some reason, can't attend school in person? By law an education must be provided. School districts try to accommodate these special needs by providing on-line courses, in-home tutors, special busing, videoconferencing and more. But these solutions can be expensive and very limiting since students miss out on the classroom experience, social growth rewards that come with attending school.

VGo robotic telepresence is a new solution designed to address this challenge. ***Rather than trying to bring learning to the student, VGo takes the student back to school*** *– enabling them to attend classes and socialize with their friends just as if they were there. For about $6,000 plus a service contract, VGo can lower the cost of educating homebound students while making it easier for teachers and rewarding (and not to mention - fun) for the student. Students are now participating in the full school experience in a variety of learning and social facets:*

- *Interacting closely with teachers*
- *Participating in classroom discussions*
- *Moving from class to class with peers*
- *Developing friendships through hallway chats and lunch conversations*
- *Joining in extracurricular events*

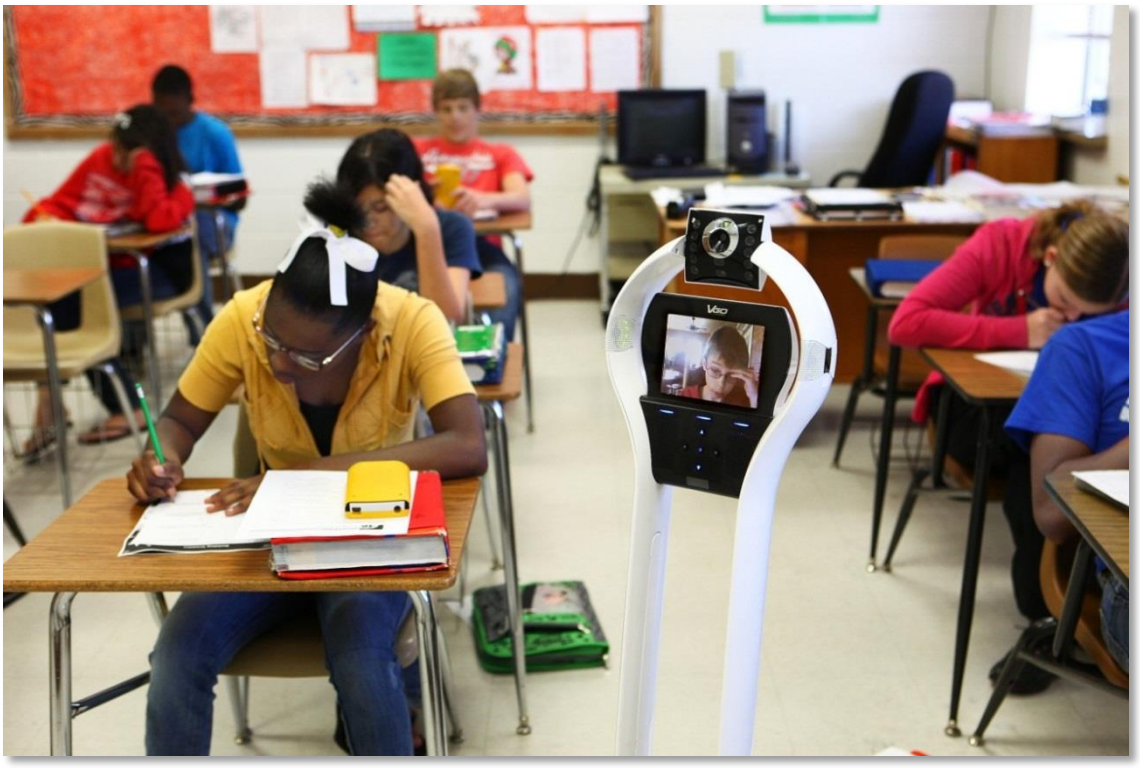
VGo is making a profound impact on the lives of physically-challenged or physically-limited students; simply put: letting these kids be kids. We know this because that's what school administrators, teachers, parents and children are telling us.

“A kid going to school on a robot? That’s crazy talk!”

Yes, we hear that all the time. VGo is new, and we’re all still learning about its applications. In time, academic papers will be published. Until then, this paper is a collection of our experience that will attempt to provide you with most of the information necessary to grasp the reality of a home or hospital bound student going to school on a robot. (Every photo is of VGo’s in use by homebound students – thanks everyone!)

We’ll address issues such as:

- *Why should a school and parents consider VGo*
- *How is VGo different from other alternatives such as Skype*
- *How does it work*
- *What’s it like for a kid going to school on VGo*
- *How do educators first react to the concept*
- *How do other students react to “the robot kid”*
- *How does the homebound student use VGo and what do they need*
- *How must a school prepare for a student using VGo*
- *Who pays for it*
- *What are the steps to get VGo-ing*



Why people consider VGo – The Benefits

"VGo is absolutely amazing. I would have never thought when I was sick that I would ever have any interaction, much less this kind. It is just like I am there in the classroom."
-Lyndon Baty, highschooler, Knox City, Texas

For some students, attending school just isn't possible. Injuries, extended illnesses, immune deficiencies and other physical challenges prevent a student from physically being able to attend school. School districts try to accommodate these special needs by providing on-line courses, in-home tutors, special busing, videoconferencing and more. But these are expensive and very limiting since students – particularly in middle school and high school – miss out on the classroom experience and social life that comes with attending school.

Now with VGo, they can participate in interactive classroom discussions and share in the social aspects of locker-side chats, lunch period and moving from class to class. Even attending school assemblies and after school activities – all from a laptop at home.

VGo is at the forefront of a new category of remote learning modalities that integrates videoconferencing, wireless networking and robotics enabling students with physical limitations to experience the full interactivity associated with attending school. VGo itself is a 4-foot high robotic appliance with integrated camera, screen and audio system that can be driven and operated from any Internet-connected computer.

Unlike with a fixed videoconferencing system or Skype and webcam, with VGo students can move around school autonomously throughout the school day, seeing, hearing and speaking with teachers and classmates as they go – just as if they were there in person.

Parents tell us that by removing the barrier of being unable to go to school, VGo has opened up academic and social environments that were previously closed off to their children. They've seen their kids flourish, both mentally and physically.

While some wish to be private, we also see that many schools and parents take advantage of the benefits of publicity that come with implementing such amazing technology. Schools demonstrate to the community (and sometimes the nation) that they are delivering the best education possible for all. Parents have used the publicity to raise awareness of particular health conditions or their personal situations.

COMPARISON WITH OTHER REMOTE LEARNING METHODOLOGIES

"It's just like having another student in the classroom. We do group work, and he's right in with the group, and the kids are interacting with him."

Michele Peterson, Language Arts teacher, Mohawk Junior Senior High School, PA

School districts have good intentions in working with parents of physically-challenged children to provide a comparable education to that received by children who are physically in the classroom. Everyone associated with VGo-empowered children universally agree that the traditional learning methodologies have drawbacks compared to VGo.

While fixed video systems and Skype/webcams can provide an audio-visual connection for the at-home student, there are important limitations because the remote student is dependent on people in the school for help and the camera and screen are fixed. The videoconferencing system must be installed in every classroom or wheeled by school personnel from room to room and connected to network and power. Someone in the class needs to be responsible positioning the camera – usually it's set in place and the student sees the same view for the duration of the class. In addition, the system is usually positioned at the back or side so as not to get in the way – other students can forget they are there and the remote student feels like a second class citizen. When the bell rings the remote student is left behind – literally and figuratively.

While there are other options for remote learning such as in-home tutors and online classes, these solutions can be costly, and don't provide the student with the rich benefits that come with physically being in school.

With VGo, teachers and the homebound student can see each other and the student can move around the class, be it for speaking at the front of the class or gathering with a small subset of classmates to work on a group project. He/she is able to ask and answer questions and participate in discussions. Team building skills are fostered and students can move from class to class alongside their peers to benefit from the subject matter expertise of each teacher.

VGo also enables kids to socialize in the hallways between classes, sitting with fiends at lunch with friends, attend school assemblies, participate in extracurricular activities and generally join in the typical "kid" interactions.

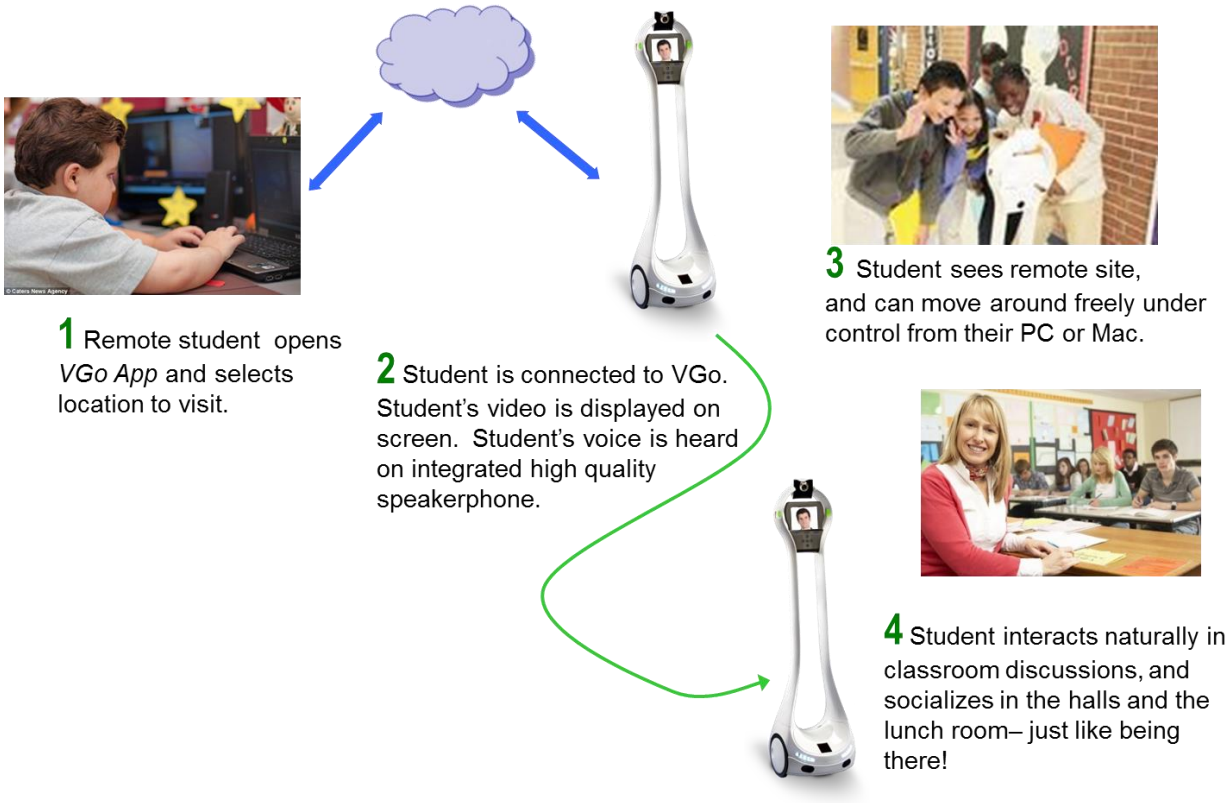
How it works

"Kids are so tech savvy these days – learning to control a VGo from their computer at home is second nature."

Technology Administrator, Colorado High School

The VGo solution has three main elements.

- **The VGo Robot** - is in the school
- **The VGo App** (for a Windows PC or Apple Mac) - is the student's interface to the VGo
- **VGoNet** - is the invisible cloud-based network that sets up the connection between the student and the VGo and provides access control for school administrators.



The VGo robot provides a physical presence for the remote student. Their face (a live video image) is always displayed on the VGo's screen. When the student talks, his or her voice comes out of the VGo's speakers. The VGo's microphone array picks up all the sounds so the remote student hears everything that's spoken or is happening. The VGo's camera is the eyes of the remote student. The robot is "driven" by the student to enable them to go where they want and position themselves where they need to be, just as they would if they were there in person.

To use VGo, a student must have the VGo App installed on their computer which must have speakers, a microphone and a camera. The VGo App is the student's portal into the classroom – it provides high quality two-way audio and video via a data connection through the internet. When the student positions his/her mouse pointer on the screen, driving controls appear. The student simply clicks and drags the mouse pointer in the direction he/she wants to drive, and the VGo moves in that direction. When he/she moves the mouse pointer further, VGo accelerates.

The camera can look anywhere – up, down, all around. The student can slowly pan around the classroom, move around the room and join a friend walking down the hall to the next class. Students say that the single, most empowering part of using VGo is that they can drive where they want, look at what they want and talk to whomever they want – just as if they are there in person.

VGo itself is a light-weight, motorized, remote-controlled platform uniquely integrated with a camera, microphones, and video display. It takes up about 1 square foot of floor space and can pivot within its own footprint. The appliance is optimized at 4 feet tall so it works equally well when interacting with people who are sitting or standing, and is the ideal height to interact with other classmates at their desks. Most of its weight is in the base so it can be bumped or tipped without falling over. It's all wireless so it can move about. Battery power enables it to run for up to a full school day between charges. When it's time to recharge – just click the "Dock" button and VGo automatically positions itself on its charging dock (included). The appliance also includes sensors so it can't be driven down stairs, and will recognize and warn the user of large objects such as walls and furniture, and also when it is reaching the edge of the wireless network.

In addition to WiFi, VGo also supports communications over Verizon's 4G LTE wireless networks.

VGoNet ensures the shortest possible connection through the network do minimize delays. A special web interface for administrators/IT enables precise control of who can access specific VGo's in the school district. Access can be scheduled so that students can only come to school during specific hours on specific days.

What it's like for a kid going to school on VGo

"The VGo is a great way to provide the Homebound student with a vehicle to access direct classroom instruction while still being a part of the school community all from the safety and security of their home."

Troy Krotz, Assistant Director Student Outreach, Poudre School District, Fort Collins, CO

Instead of getting on the bus, remote students get on their computer. Kids love going to school on VGo. It's fun since they see their teachers and friends "on TV" and they drive the VGo – sort of like a video game. They raise their hand by toggling on camera lights which are directional so as not to distract other kids in the class. They position themselves in the classroom – in a row of desks, in front of the maps on the wall, in the discussion circle. The talk and listen just like they would if they were there in person. The empowerment they feel is real, since they aren't dependent on help from an adult. The experience of course isn't exactly like being there in person, but it's the closest thing to it. The major limitations are that they can't touch anything and their peripheral vision is limited by the field of view of the camera – but we've never heard a complaint by a student. The VGo can't climb stairs but since its light weight, friends or teachers can carry it up or down any stairs. We've heard stories of students driving to the bottom of the stairs and asking the next person who comes by for a lift.

Like the student who comes back to school with their leg in a cast, since it's different and new, the "robot kid" initially gets a lot of attention. Some kids report that everyone is so interested that they feel like rock stars. Everyone wants to be their friend. This is a tremendous feeling for students with health issues who may have had little recent interaction with their peers.

The VGo's screen primarily shows the students face. Patients who may be connected to peripheral medical devices don't have to worry about the reactions of other students to unfamiliar situations.

By far the biggest thing we hear from parents is that VGo enables their children to interact with their friends. Being part of the group while learning is great but socializing outside of the academic class is something they can't do from home or the hospital. Hanging out in the hallways, going to lunch and participating in other activities are all important parts of growing up.

Sitting in front a computer monitor can get tiring even for a healthy student. We know of some students who might only attend one class while others go to school all day. Even minimum school attendance can provide tremendous health and educational benefits.

Educators' first reaction to the concept

We know of many administrators that enthusiastically bring VGo into the school, while a few are reluctant at first. The reluctance can come from a wide variety of concerns, but it's not really much different than other new educational methods – some embrace the possibilities while others won't be comfortable until it's positively proven.

Obviously, for VGo to be successfully, everyone (administrators, teachers, and parents) must be supportive. Since we interact with those who have decided to implement VGo, we've come to know many wonderful educators – some who started out skeptical and became enthusiastic and others who've been excited right from the start.

We've heard that people who are not supportive site the following challenges:

- We can't have a camera in the classroom.
    - This is the one we hear the most. The basis for the concern is that a teacher's performance could be monitored. Also some say that an "event" could be captured, but unlike cell phone cameras, which are in the pockets of many students, VGo can't record video without custom modifications.
- VGo will be disruptive.
    - For the first day or two – that is true – VGo generates a lot of excitement. But after that it is just "Jane" there in class just like everyone else.
- "Robot Kid" could be a target for bullying
    - Although it is bound to eventually happen, we haven't heard of a single instance of this happening.
- Wireless environment can't support VGo without being upgraded or the necessary IT skills are unavailable to assess it
    - This element can be true. We know of a couple of schools that chose to hold off on purchasing since a WiFi network with complete coverage was not in place and Verizon 4G LTE was unavailable.
- It's too expensive
    - While there is a capital cost to a VGo, it is significantly cheaper over the long term than other methods of providing home/hospital-bound instruction to these children.

For the schools that have successfully implemented VGo, obviously these issues haven't been true. For parents or special educators who are advocating for VGo for homebound student, it is important to understand where school administrators stand before proceeding.

We do believe that in time, robotic telepresence devices will be common in schools. Learn what educators are saying about VGo here.

How do other students react to “the robot kid”?

When we learned of the first VGo going into a school we had visions of the VGo being grabbed as it went down the hallway and getting put in a locker with a bag over its head.

In every case it couldn’t be more the opposite. Maybe an expert could tell us all the reasons why, but to us it seems as simple as the fact that VGo is so new and fresh and unlike anything people have seen before that they are just simply amazed. They want to be a part of it and so that means interacting and being friends with the remote student and helping out when they can.

Kids have always loved robots and VGo is no exception.

How does the homebound student use VGo and what do they need

“Before VGo, doing school work was a daily struggle between me and my child. With VGo now my kid is excited about going to school every day.”

Jenna Flanagan, mother, Tyngsboro, MA

The remote student must have a computer to connect to the VGo. It should be a recent model with a faster processor for best performance (see minimum specs). It of course needs a camera, microphone and speakers. Although it can be driven using the arrow keys on a keyboard or the touchpad on a laptop, it is far easier to drive with a mouse. It is also easier to move the camera up and down.

The student must a have a good internet connection. A broad connection is best (see minimum specs).

Although many laptops have integrated speakers and microphones we find that both the teachers and remote student can hear better if the student is using ear buds, headphones or a headset that has a microphone. The ear buds help the student focus and can reduce audio artifacts and echo that can come with less than perfect audio implementations on the computer itself. A headset gives the best performance and also reduces home background noise from being transmitted to the classroom (the barking dog always gets a good laugh).

The VGo App gets downloaded onto the student’s computer. To go to school, they just click on the name of the VGo that they wish to use and within a few seconds they are there in school.

A routine will quickly develop just as it does for any new child or for the class at the start of the school session with respect to where they go and how they behave and interact. This is usually

set by the teacher. We hear that students are most productive when they are left by themselves without parents or tutors hovering around.

The student can drive and adjust their camera and volume. A handheld remote control is also provided so that the teacher can adjust the volume or position the VGo or tilt the camera without touching it. This can be useful for the youngest students who don't necessarily care that they're not looking at the teacher.

A frequently used feature is "snapshot" which lets the student take a photo of a whiteboard or anything in the class. The photo is available on the student's computer for reference after the class. (Note in an upcoming software update, a setting will be available for VGo administrators to turn disable this feature (although it is not recommended).

How must a school prepare for a student using VGo?

For schools who want to move forward with VGo, the following steps seem to result in the most successful implementations.

- Examine the wireless network
    - If using Verizon 4G LTE, use a phone or computer that supports Verizon 4G LTE (3G is unsupported on VGo) connection and run a real-time application like while walking around everywhere that VGo will go to make sure there is adequate signal strength.
    - If using WiFi, do the same thing checking for dead spots in building. If an earlier implementation, often WiFi is not adequate in the hallways or outside of places where computers are normally operated.

- Identify the person who will get the VGo, set it up and test it. They also need to setup a user account for the remote student so access can be granted and so that the student can download the VGo App on to their computer.

- Make sure the teacher(s) are comfortable with the new technology and that they have a process of getting materials to and from the student.

- Enable the VGo equipped student to drive his or her VGo around the school to become familiar with the layout of classrooms and other locations they may be visiting before, during and after classes. This is best done after school or during a vacation break without other kids in school.

- Minimize disruption by holding an assembly or in class briefings before the VGo arrives to explain that one of their classmates is going to attend school via a telepresence

robot. Explain how they should behave around the robot - instruct them to be respectful and treat the student like they would anyone else.

- Have the VGo-empowered student's teachers break the ice in their classrooms by introducing the student and explaining he/she is just like them.

- Identify where the VGo will get charged at the end of the school day. Assign someone who will make it available in the morning and secure it after school. A VGo has never been taken – no one else can use it, but the schools that have VGo's today tell us they lock them up at night as a precaution.

Have someone on call just in case the VGo gets turned off accidentally, gets stuck or has a technical problem.

Case Studies

"My best friends were my parents. No offense against them, but I want other friends."
Lyndon Baty, high schooler, Knox City, TX

VGo has opened up academic and social environments to disabled and immune-deficient students in schools throughout the United States. There are no longer boundaries between them and the world that was previously inaccessible. Their lives are transformed by being able to learn and be stimulated in a social setting, walk the corridors, sit in the cafeteria and attend after school activities with their friends.

Meet some VGo-empowered students

Lyndon Baty, Knox City, TX

Lyndon is a high school student in Knox City, Texas who has an illness that requires him to remain at home because of the risk of physically being in class. He's a perfect example of the type of student who benefits greatly by being able to "attend" school via his VGo – or "BatyBot" as it's affectionately known at Lyndon's school.

From the safety of his home, in the morning, Lyndon gets on his computer instead of the bus. He uses VGo to move around school, interact with teachers, chat with his friends between classes and spend the lunch period with them without endangering his health.

Lyndon operates his VGo simply with an internet-connected computer equipped with audio capabilities and a webcam. As he recently told *Sports Illustrated*, "I gained my independence through the robot. If you have bad health, it gives you back your self-worth, so you feel like a real person, not just a sick person."

Aidan Bailey, Colesburg, Iowa

2nd grader Aidan received a double lung transplant, which prevented him from joining his classmates at Edgewood-Colesburg. He had been Skyping with his classmates, but that changed when the school district raised enough money to fund a VGo, which Aidan controls from a computer at home. Now instead of being stationary he can interact with his classmates and teacher by moving around wherever he wants.

"I think it's like really cool because like there are two remotes," said classmate Mariah Cherne. "One where Mrs. Tegeler can drive when Aidan doesn't know where to go and then Aidan can drive when he knows where he needs to go."

As a recent news report put it, "Technology at its best helping a little boy have as normal of an education as possible." "We are so fortunate there are so many people that believe every child should have a good education no matter what their situation is," said Aidan's grandmother Lori Gearhart.

Cris Colaluca, New Castle, PA

Cris is in the 7th grade at Mohawk Junior Senior High School in Bessemer, PA. The technology coordinator at Cris' school saw VGO with Lyndon Baty, his family and classmates on *The Today Show* and thought it would be a great solution for Cris.

Cris' mom Terry speaks of her son in terms of "old Cris" and "new Cris." The old Cris, before he developed a rare seizure disorder, was a bubbly kid. After his condition prevented him from attending school, his sparkle disappeared. Since going to school with VGo, the old Cris is emerging again. He has something to get excited about every day and looks forward to going to school. In fact he recently missed a class and was upset about it.

"This has opened up a wonderful opportunity for him," says Terry Colaluca. "Before he couldn't attend an assembly, go to a basketball game, clubs, band concert

or play. With VGo, he can participate and feel a part of something and learn teamwork. Before, he would never have had that chance. To me it's a miracle. A year ago I never would have imagined this could happen."

(Click here to meet even more students)

How to Fund A VGo

"We want to get the word out to other school districts that if they have students who can't come to school for physical reasons, VGo is a great option."
Lorree Houk, Assistant to the Superintendent, PA

VGo is very affordable (less than $6,000 plus a $1,200 annual service contract) in comparison to the cost of a one-on-one instructor who comes to the home and even to fixed videoconferencing systems. Another way to think of it is - for a VGo that is used 180 days out of the year – the cost is about $20/day (excluding any costs for the student's computer).

To date most VGos have been paid for by schools' special education budgets. We also know of VGo's that have been purchased by parents and given to the school. We've see newspaper articles about school clubs or affiliated organizations holding fund raisers. Also, there are charitable organizations that help if you seek them out.

Summary of the steps to implementing VGo

"Sometimes when you have a sick child, just that little bit of hope helps with the medical situation too, because they say that your attitude has a lot to do with your healing."
Terry Colaluca, Mom to a VGo-empowered student in New Castle, PA speaking about VGo

- *Educate yourself on VGo using this whitepaper and VGo's website*
- *Get agreement to implement*
  - *with administrators, teachers and parents*
- *Check and prepare the quality of the network*
  - *WiFi / internet network or Verizon 4G LTE service in the school*
- *Identify and prepare the computer the student will use*
  - *Fast processor, good camera, ear buds or headset, mouse, good internet connection*
- *Order the VGo*
- *Test the connectivity between the VGo and the student*
- *Familiarize the student with operating the VGo in the school*
- *Introduce the VGo student to teachers and classmates*
- *Enjoy results*

If you are responsible for investigating remote learning modalities in your school district, or if you're a parent in search of bringing the full school experience to your homebound child, your next step is to get to know VGo. We are ready to help you deploy the system, and also to share what we have learned from our student users. We can even put you in touch with parents of VGo-empowered students who are more than happy to share their personal experience with you. They can tell you what the educational and social enrichment experienced by their child thanks to VGo has meant to them and their child.

To learn more, we suggest you join one of our regularly scheduled webinars where we can tell you more about how VGo works and answer all your questions.

To register, visit:
http://www.vgocom.com/attend-webinar

Or to schedule a demo or request additional information, visit:
http://www.vgocom.com/moreinfo

About VGo Communications

VGo Communications, Inc. develops and markets visual communications solutions for the workplace. The company was founded in 2007 by experienced successful veterans of visual communications and robotics industries. VGo Communications is VC backed and is based in Nashua, NH. We are leveraging the recent trends of widespread wireless high speed networks, lower specialized component costs and the universal acceptance of video as a communications medium to create a new market category called "Robotic Telepresence."

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