



2004 Project Guide

Before reading the **NO LIMITS** Project Guide,
be sure to read *Late for Lunch* by James Patrick Kelly.

NO LIMITS Project Guide

It usually takes a lot of people to find, solve and prevent problems. For the NO LIMITS Project, your team will work together as **detectives**, **specialists** and **marketing experts** to uncover, solve and prevent future obstacles for people with physical disabilities in your school or in your community.

Your team will work together to identify the things that prevent equal opportunities for people and then you will communicate what you have learned so you can help prevent inaccessibility in the future. Barriers often exist for simple reasons: people don't think about eliminating them because they simply haven't noticed them and many solutions can be very expensive or people can be afraid to talk openly about accessibility.

A physical disability can be as simple as needing glasses to see. Or, for a person using a wheelchair, some things may be too high or too low to reach. Many abilities vary with age—a grandparent might use a cane or a baby might be pushed in a stroller. A basketball player's height might serve him really well on the court, but when buying a car, being tall might mean needing to take out the driver's seat so he can drive from the back seat. For someone who needs glasses to read, some print might be too small or too far away to read. Often, people won't speak up about the obstacles they face and others tend not to think about the barriers. This simple communication barrier allows physical barriers to persist and talking about them is the best way to eliminate obstacles.

For this year's Project, we want you to:

- 1 Determine if a public place you choose is completely accessible
- 2 Create a solution to make that place more accessible
- 3 Finally, as your awareness grows, we want you to share your new knowledge with others.

Use the examples below set by two teams, Iniki and the Cyberkids, to inspire your team. These two teams are in the same school, but take very different approaches to solving the problem. There are NO LIMITS to what you can accomplish as a team, and if you work together you can help remove limits that exist in our world!

Here's what you need to do for the NO LIMITS Project....

1

Define a Problem—Detectives

Just like the detectives in a detective agency, your team is going to ask lots of questions, observe your surroundings and make note of anything that doesn't appear exactly as you might have expected. You might choose to look at a place that you feel is accessible to everyone or a place that might not be accessible. Just like Nina in *Late for Lunch* noticed that Brendan works differently from her other classmates and she noticed that others do not understand him, we want you to observe people's abilities in your school or community. To Nina her school probably seems accessible, but Brendan doesn't feel the same way. Ask questions, take measurements, take notes, and be a sleuth to determine what works and what doesn't for the people who use the place your team is studying.

Assess: Think about how people's physical abilities can be different, and what it means for the things they can do. Choose a public place and determine if it is accessible.

- If you have ever broken a bone, what things did it prevent you from doing? What were you still able to do?
- What are some things that you can do that an elderly relative is unable to do and what are some things you can do together? What are some things your elderly relative can do better than you?
- Do you know anyone who has a physical disability? What are some things that they are not able to do and what can they do very well? What questions do you have about physical disabilities? Who might be able to answer those questions?

Barriers are things that prevent people from participating in some activities.

A barrier can be **physical**, like a set of stairs inside a popular pizza place that keeps a kid in a wheelchair from going upstairs to eat with friends.

People's **attitudes** can also create a barrier. For example, if other kids feel embarrassed or uncomfortable about talking to a kid who uses a wheelchair, they might never invite him/her out for pizza.

Both of these are examples of barriers that hurt everyone because it prevents them from having as many friends and as much fun as they could. When we have eliminated barriers from a place, we say we have made that place **accessible**.



M Talk to people in your community and think about how their experiences apply to your life. Find people with disabilities, perhaps with the help of an assisted living center, veterans' organizations, a hospital, or through family and friends, and ask them about obstacles they experience and how they overcome them.

Imagine that you find yourself with a disability. Imagine you have just been in a car accident and now use a wheelchair or became blind. You're the same person you always were, but now you have a different physical abilities. What things in your house, your school, the places you want to visit, would become obstacles?

You may be able to find someone who will loan you a wheelchair or other assistive technology. Spend a few hours using it in your home or neighborhood to learn about these challenges directly. Be sure to try the *Designing for All* activity at the end of this guide, too.

Iniki Example

In talking to Brendan, the team learns that he is frustrated by how long it takes him to get around the school. So team members take turns and spend a whole school day with him, counting how many stairs he has to use, paying attention to other things about the school (like heavy doors) that make it difficult to get around. They are amazed at what they discover! After school the team members split up and visit parks, stores, restaurants, their homes and their friends homes - all the places they like to go. Using what they learned from Brendan, they count how many stairs they find and take note of anything else that would make it difficult for Brendan.

Cyberkids Example

The Cyberkids are interested in learning about different kinds of disabilities, so they ask Brendan if he is willing to talk about the disability he has. Brendan says he doesn't mind, so the Cyberkids ask him questions about what his disability is called, how it affects his life, and what kinds of tools he uses for assistance. Afterwards and with permission from Brendan, they talk to his physical therapist and research Brendan's disability on the internet to learn even more. To learn about other kinds of disabilities, the Cyberkids call a local independent living center to ask if they know people who would be willing to educate them like Brendan did.

2

Solve the Problem—Specialists: Engineers, Teachers, and Medical Staff

Just like the team of engineers or doctors who might work with Brendan, your team is going to look carefully at the problem and the clients' needs and then come up with a creative yet simple solution to the accessibility issue you have identified.

Create Access: Create a robotic or other engineering solution to solve an issue of accessibility you found in your school or community.

M Continue your interviews to determine what kind of solution would work best. Figure out who is an expert on this situation: You might talk to engineers, prosthetists, physical therapists, people who use the building, a business owner, your school principal, city council members, the mayor, the health department, a guidance counselor or a school nurse. FLL coaches and team mentors might have lots of suggestions too.

Iniki Example

As the Iniki team determined in earlier talks with Brendan, they learned that he finds stairs difficult to use. This is especially irritating to Brendan on pizza day when he feels that he will let his classmates down if he can't get to the cafeteria on time. In order to make pizza day safer and more fair for everyone in the school, Iniki decides to invent a robot that delivers pizza to students in their classrooms. The robot will deliver to different classes every week, making sure every class gets pizza. Because students aren't racing to the cafeteria, the school is now a much safer place on pizza day and everyone has more fun.

Cyberkids Example

By talking to Brendan, the Cyberkids learned that he has difficulty writing his ideas down on paper, so they have decided to design a voice-activated robot that will type for him. They spend time at several FLL team meetings drawing their designs for a robot that can help Brendan with his homework. They mount their drawings on boards so they can share them with the judges at the FLL competition at the end of the season.

3

Raising Awareness—Marketing Experts

Now that your team has defined a problem and found a solution, it's time to make sure others understand it so it can be solved and other problems can be avoided.

Just like a marketing specialist or public relations officer, your team is going to shake lots of hands, create a campaign and spread your ideas about how issues of accessibility can be avoided in the future!

Create Awareness: List all the facts and opinions you learned about the accessibility of your chosen place and then create a campaign to change attitudes and raise awareness in your community *without singling out an individual*.

M Continue talking to your experts: engineers, prosthetists, therapists, classmates, principal, teachers, members of your community, parents, the school board and anyone else you can name. Think about which experts were aware of the barriers you found and who gave you ideas to help you invent a solution. By raising awareness, you will change attitudes for years to come, so be sure to focus on issues and attitudes instead of individuals. This will give your project more lasting power and won't put an individual on the spot.

Iniki Example

Iniki asked around and learned that the principal, teachers and librarian were all unaware of Brendan's frustration about the stairs in their school. In fact, the team quickly realized it hadn't thought much about how Brendan might feel until Nina recently brought it up after art class.

The team decided that needs to raise recognition of the problem. With a little awareness, other students might help find ways to help future students participate more fully in class activities. Iniki organized a meeting about the problem and invited everyone: teachers, the school nurse, the librarian, the principal, students and the head of the Parent-Teacher Organization. The team explained obstacles of accessibility, demonstrated its robotic solution to solve the current challenge and then asked the audience to help find other solutions to other challenges.

Now, the whole school is more aware of issues of accessibility and everyone in the school is working together as a team to find solutions and to remove other barriers. Yay, Iniki!

Cyberkids Example

Now that the team has a solution to the issue of accessibility it uncovered, the Cyberkids have decided to share it with everyone at their school who helps students with reading and writing. They have invited tutors, the school librarian, their teachers and other students. Not only is this a good chance to share their solution with everyone, but it's a good time to practice their presentation so they aren't as nervous in front of the FLL judges at the tournament. And, best of all, everyone will benefit from knowing how they might make their school a more friendly place for all the teachers, students and staff. Congratulations, Cyberkids!



At the Tournament

When you attend a tournament, you're going to need a clever way to present the work you did as **Detectives, Engineers and Marketing Experts**. You will have up to five (5) minutes to give your presentation in front of a panel of judges. Once you're done, the judges will have some questions for you. For specifics on judging criteria and awards, please see the Awards section of the 2004 FLL Team Manual.

When deciding how to present your project, please keep in mind that the judges have most likely seen many computer slideshows (PowerPoint, for example). If you want your team to stand out, find a creative way to share your research and your team's story!

Good luck!

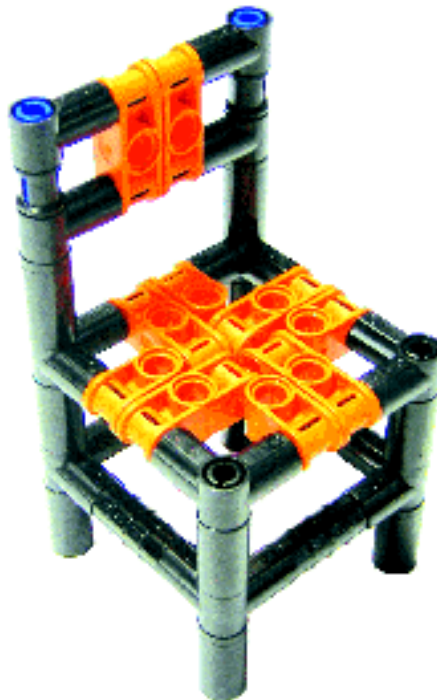
Suggestions for Interviewing

Resist the urge to tiptoe around this topic. People with disabilities often prefer to be asked direct, yet sensitive questions than avoiding the topic of disabilities altogether. When most of us see someone with a cast and crutches, we are not afraid to ask what happened. Keep this in mind as you interview people with more permanent physical disabilities.

FIRST LEGO League chose this topic for 2004 because we wanted to make a difference by opening lines of communication and breaking down barriers. Once the barriers have dissolved, it will be easier to avoid accessibility issues in the future because we won't be afraid to talk about them!

The Disabled Veterans of America have generously agreed to provide FIRST LEGO League volunteers across the US. Please don't be afraid to contact your local chapter to answer questions your team has. For more information, visit them online at www.dav.org.

For more help in understanding various disabilities and sensitivities, check out the resources and links on the FLL web site.



Designing for All Activity*

Materials:

1. Safety goggles with petroleum jelly rubbed on the inside of the lenses
2. Latex gloves. Tie the fingers of both gloves together with string.
3. Several cans of one type of soda. Make a one-inch marking somewhere on one can with a permanent marker.

Ask one team member to volunteer to have a visual disability, such as glaucoma. This student will wear the safety goggles smeared with petroleum jelly. Ask another team member to volunteer to have a digital disability, such as arthritis. This student will wear the latex gloves with the fingers tied together.

The team mentor or coach will put the cans of soda on a table across the room and the student with the simulated visual disability will go to the table and try to find the can of soda with the mark on it. Once s/he has found the can, s/he will return to the table where the team is seated so the teammate with the digital disability can open the can of soda for the team.

While the two disabled teammates are attempting the challenges of finding, transporting and opening the can, the others should observe them closely and ask them how they feel about doing the tasks with limited abilities. You might consider asking the following questions:

1. How does this make you feel?
2. Did you use any special strategies to do the task?
3. Can you think of something that might make the task easier?

Once you have observed how challenging an everyday task can be, you may want to take some time to design some simple inventions that might make the task easier for someone with a disability. This can be easily done using Popsicle sticks, cardboard, tape, straws, string, magic markers and scissors.

Keep in mind that you will only be experiencing a little piece of what it is like to have a disability. There are many other aspects to having a disability such as emotional and social factors. Only a person with the actual disability can tell your team what it is really like.

* This activity was created by Colin Twitchell and Donna Cohn from the Lemelson Assistive Technology Development Center of Hampshire College, Amherst, Massachusetts, USA.

