

# LEGO® Therapy

By Ashley Green and Jenny Smart



Ashley Green has been running LEGO® Therapy sessions at Cruckton Hall School near Shrewsbury, England since 2008. Until recently, Jenny Smart was his teaching assistant. One of Ashley's students, 13-year-old Thomas Herbert-Jones (pictured above between Ashley and Jenny), is now acting as his assistant. Jenny is now a support worker in a college for young adults with disabilities, and is also studying for a BA (Honours) in Childhood and Youth Studies. Ashley has been a MINDSTORMS enthusiast since 1998 and served on the MINDSTORMS Developer Program for the NXT robotics system in 2006. He is a LEGO Education UK Ambassador and has been heavily involved in both FIRST LEGO League and RoboCupJunior for the past decade.

## What is LEGO Therapy?

LEGO®-based Therapy[1] is a social development intervention for children with autism spectrum disorders (ASD)[2]. The goals of LEGO Therapy for such children are to:

- Improve their motivation to initiate social contact with peers
- Improve their ability to sustain interaction with peers for a period of time
- Overcome their autistic symptoms of aloofness and rigidity

LEGO Therapy was originated by Daniel LeGoff in the US and researched by Gina Gómez de la Cuesta, Simon Baron-Cohen and colleagues at the Autism Research Centre, University of Cambridge[3]. Daniel, Gina, Simon and G.W. Krauss have recently published a guide[1] to facilitate the implementation of LEGO Therapy. (G.W. Krauss and Daniel LeGoff have also recently established a LEGO Therapy website[4] for professional therapists.) LEGO Therapy encourages ASD children to communicate with one another and solve a problem by building in pairs or groups of three, according to set rules. When working together in pairs, the 'engineer' gives verbal descriptions of the pieces needed and directions for assembling them. The 'builder' follows directions, and collects and puts the pieces together. There is much checking back and forth between the plan and the creation. Roles are then switched so



they both have a chance to be 'engineer' and 'builder'. This division of labour with a common purpose allows students to practice joint attention, turn taking, sharing, joint problem solving, listening and social communication skills.

When working together in groups of three, the 'engineer' describes the instructions, the 'supplier' finds the correct pieces and the 'builder' puts the pieces together. After a time, they swap roles. Owing to his background in robotics education, Ashley favours the use of the LEGO MINDSTORMS NXT and EV3 systems, and LEGO Education WeDo (for younger children), so the three roles tend to be those of 'engineer', 'builder' and 'programmer'.

The therapist's role is not to point out specific social problems or give solutions to social difficulties, rather to highlight the presence of a problem and help children to come up with their own solutions. Solutions that children have come up with are practised until they can do them, and the therapist can remind children of strategies in the future if similar difficulties arise.

All LEGO Therapy sessions have these rules:

- Build things together!
- If you break it you have to fix it or ask for help to fix it.
- If someone else is using it, don't take it – ask first.
- Use indoor voices – no yelling.

- Keep your hands and feet to yourself.
- Use polite words.
- Clean up and put things back where they came from.
- Don't put LEGO® bricks in your mouth.

Cruckton Hall School[5] uses a “green/amber/red” behaviour reporting and reward system and the boys usually strive to deserve a green lesson report from Dr Green!

### The ‘LEGO® Club’ Level System

The recently published “LEGO®-Based Therapy” guide[1] identifies the following skill levels:

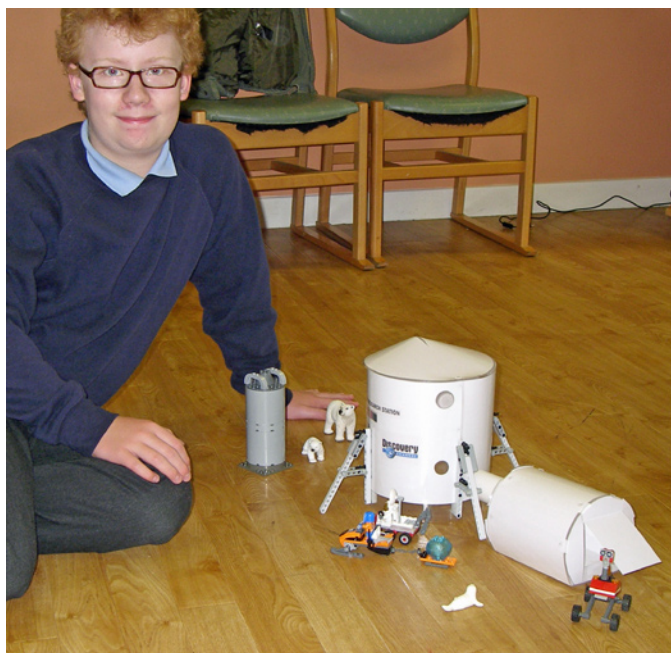
- A ‘LEGO Helper’ can find bricks and sort them into their correct colours.
- A ‘LEGO Builder’ can build models in a group and design freestyle models with adult help.
- A ‘LEGO Creator’ can build models in a group and design models without adult help.
- A ‘LEGO Master’ can direct a group project by assigning tasks and roles to group members, and enlisting support from outside the group.
- A ‘LEGO Genius’ can write a movie script or story and translate it into a LEGO stop-motion animated short film.

Once students can demonstrate skills at a particular level, they should be given a certificate to reward their achievement in front of all the students. If certificates are awarded on an individual rather than a group basis, students should be highly motivated to participate socially and build models together so that they can move up to the next level.

### LEGO City Arctic Young Explorer

The recent LEGO City Arctic Young Explorer competition provided an opportunity, near the end of the school year, to try doing something different. The challenge was to design a brand new piece of Arctic equipment that would help an explorer survive an icy adventure. The boys were shown a video about the Flashline Mars Arctic Research Station (FMARS) on Devon Island in the Canadian Arctic, which inspired two of them to prepare entries. Only Thomas completed and submitted his. Thomas’s idea was to add a ‘garage’ to FMARS, linked to it via a tunnel. The ‘garage’ could house one or more remotely-controlled robots for exploring nearby Houghton Crater, and could also serve as an alternative means of access to FMARS. Ashley helped him build a 1/40th scale model of FMARS and its ‘garage’. Thomas arranged the FMARS and LEGO models for the photos which he submitted with his competition entry.

The competition winner was announced[6] in mid-September. His winning idea was for an ingenious 8-in-1 Arctic sled with built-in fishing rod, ice saw, snow shovel and ice axe. The Arctic sled can also be transformed into skis, a snowboard, or a towable sled!



### Current and Future Activities

Ashley will be experimenting with the new LEGO Fusion Battle Towers[7] when it becomes available in the UK. He has supplied photographs and an Acquired Materials Release form to the producers of the film “BEYOND THE BRICK: A LEGO BRICKUMENTARY” due to be released next Spring, so you may glimpse a photo of Thomas in that documentary!

When we helped run the RoboCupJunior[8] UK Finals in Warwick last year, Jenny noted that competing in a robotics competition would be a good experience for some of the boys at Cruckton Hall School, so we proposed the formation of an after-school LEGO Club to provide the additional time needed to prepare for competitions. The new Club will start meeting on Tuesday afternoons in the New Year, and will provide an opportunity for some of the boys to build a long-planned 1/40th scale LEGO model of Cruckton Hall for display in the school’s reception area.

Ashley is currently mentoring an FLL Team at his local primary school in Shrewsbury. They’re collaborating (via Google Groups and email) with FLL teams at Wooranna



Park Primary School (WPPS)[9] in Victoria, Australia, on this year's FLL World Class challenge[10]. That school's principal, Ray Trotter, is pioneering the use of Stimulating Learning Platforms and Enigma Missions[11] in school teaching. Thomas and his music teacher are advising WPPS's "Team Failure" who are researching the FLL project question "How can music be used to help teach autistic children to perceive facial expressions?". Ashley's FLL Team are researching the FLL project question "How could we improve the way that someone in Year 6 learns physics concepts?". WPPS staff are advising him about the astronomical software they use in their Stimulating Learning Platforms and Enigma Missions.

Some of Ashley's LEGO® activities are detailed on LEGO Education UK's BrickByBrick website[12].

- [1] "LEGO®-Based Therapy" by Daniel B. LeGoff, et al., Jessica Kingsley Publishers (2014).
- [2] HispaBrick Magazine® 013, pp30-33.
- [3] [www.autismresearchcentre.com](http://www.autismresearchcentre.com)
- [4] [www.legotherapy.com](http://www.legotherapy.com)
- [5] [www.cruckton.com](http://www.cruckton.com)
- [6] [www.lego.com/en-gb/campaigns/youngexplorer/articcity](http://www.lego.com/en-gb/campaigns/youngexplorer/articcity)
- [7] [www.youtube.com/watch?v=A66cxeqkOpk](http://www.youtube.com/watch?v=A66cxeqkOpk)
- [8] <http://rcj.robocup.org/>
- [9] [http://woorannaparkps.com.au/?page\\_id=31](http://woorannaparkps.com.au/?page_id=31)
- [10] [www.firstlegoleague.org/challenge/2014fllworldclass](http://www.firstlegoleague.org/challenge/2014fllworldclass)
- [11] <https://fuse.education.vic.gov.au/pages/View.aspx?pin=P5NPCQ>
- [12] <http://legoeducationuk.wordpress.com/tag/ashley-green/>