



Project 「UNLOCK」

TEAM

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AIM

To tackle the issue of **under-provided education for physically impaired students**, we aim to

- ① Design and manufacture three-dimensional puzzles together for visually impaired students to assist their physical and mental development
- ② Empower physically impaired students to make a change with technology by collaborating with them to design and model the puzzle
- ③ Raise awareness of the need for physically impaired students' education in local and global community

CONTEXT

According to national statistics, there are approximately 130,000 visually impaired children age 6 to 14 in China. On average, however, per 160 visually impaired student has one book, not to mention other educational tools. From our questionnaires to citizens, physically impaired student parents and teachers in five cities, we concluded that education for this marginalized group is insufficient. Childhood is an important period of time for physical and mental development. Lack of learning materials and toys in particular could result in weaker life skills such as tactile sensing and mental visualization, which are vital for their independent living.



HIGHLIGHTS

- Designed and modeled 6 puzzles with students from three special education institutions
- Bonding with over 40 physically impaired students through design and 3D modeling learning experiences, regular online communication
- Hold four online workshops with over 700 viewing person-time from 3 countries
- Over 20,000 views on social media platform (weibo), publishing articles, videos and images about 3D printing technology, education for visually impaired, and advocating for values of inclusiveness, awareness, empowerment

- Planning a collaborated art exhibition about visually impaired children
- Creating puzzle design and modeling curriculum for special education, including beginner, intermediate and advance modules
- Reading sessions for visually impaired students with over 70 participants



IMPACT

So far, we collaborated with over 40 physically impaired students to design and model the puzzles. The prospect group of puzzle users for the first batch of design has an approximate of 450 students, from our 4 collaborator schools in 4 cities in China and 2 community centers. We have established connection with 6 organizations, and initiating collaborate projects including reading sessions for the visually impaired, art exhibition for public about experiences of the visually impaired, radio workshops on creative approaches to physically impaired students' education. We have over 20,000 views on social media platform, where we published articles, videos and images about 3D printing technology, education for visually impaired, and advocating for values of inclusiveness, awareness, empowerment. We've spent an approximate of 150 hours on the project, working on global issue investigation, existing product analysis, product design, community outreach projects, curriculum design and etc. We procured 2 firm sponsors as our 3D printing manufacturer.

KNOWLEDGE & SKILLS

◆ The Sustainable Development Goals

③ - Good Health and Well-Being & ④ - Quality Education

With our focused on mental health of the physically impaired students, we noticed their lack of self-esteem for the perceived incompetence from questionnaires and personal engagements. We decided to focus on "empowerment", that is, to help them find their inner strengths and confidence. Along the experience, we expanded our project from simply involving the students to design and model the puzzles to a more sustainable one: starting workshops and designing curriculums that focus on process-oriented learning with hands-on activities. We wanted to evoke their interests in learning, and prompt them to take initiatives, and to encourage their independence through peer teaching.

⑩ - Reduced inequalities

We realized that for people to be aware of the needs of a marginalized group, it is critical to stand in their point of view and break biases and prejudices. That's why we started to plan for exhibitions that aim to guide citizens to experience the unequal life in order to raise awareness.

◆ Learnings

Beside improvements on our 3D modeling skills through application and teaching experiences, we cherish the critical thinking we practiced during puzzle and curriculum design. We became more aware of perspective taking in order to attain mutual respect with the physically impaired students, and practiced flexible thinking in order to find alternatives. We practices our presentation, collaboration and social communication skills. Our inspirations for creative comes primarily from surrounding environment, which made us to be more observant. From challenges of failure to reach out to or being rejected by multiple institutions, trial and error for puzzle design, we became more resilient.

TESTIMONIAL

"UNLOCK taught me how to use technology to design and use it to solve problems." — Allen Zhang, a hearing-impaired middle school student

"I enjoyed learning with my friends and feel proud of the design we created. I wish we could help more people." — Kris Wang, a high school student who has speech challenges

"I see a lot of progress made, and it is a unique learning experience for out students." — Mr. Xu, a senior teacher at SZYP school

* Above quotes are translated from Chinese



NEXT STEPS

- Design and manufacture up to 20 types of puzzles
- Joint project of puzzle design and solving tutorial
- Establish UNLOCK community with an online database for 3D puzzle designs, recruitment of volunteers, and education forum to discuss creative approaches to education needs
- 3D model design competition for secondary school students
- Widening collaboration network
- Broaden content on social media to increase public engagement

