

## **Engagement in Practice: One Program's Approach to Creating a Strong Network**

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## **Abstract**

The Toy Adaptation Program (TAP) currently has partners in engineering and health, interested in profit and non-profit work, and who are individuals and organizations. This intricate network was developed over the last four years and brings together a variety of stakeholders interested in toy adaptation. Toy adaptation is the process of modifying an electronic toy for a child with special needs. TAP along with its community partners has been able to establish a presence in this space while serving others.

Currently, TAP facilitates a variety of workshops for students, families, and other stakeholders, all interested in addressing the need for adapted toys. These workshops take many forms and have evolved over the years based on the recommendations and interests of our partners. To date, TAP has donated over 1,000 adapted toys to adapted toy lending libraries and directly to families with children with special needs.

In this paper, we will share our lessons learned through successes and failures related to TAP's network. For example, to establish our health related network, we had to reach beyond our current professional networks within engineering, leveraging personal connections in the health field that were not immediately obvious. By sharing our lessons learned, we hope to aid others wishing to establish a strong network which includes many stakeholders. Since we are still solidifying TAP, this is a Work in Progress paper which will also allow us to learn from others and strengthen our program. Through these collaborations, true success will be achieved and progress will continue to be made.

## **Background**

Networking plays a significant role in program success as it allows goals to be achieved that would be impossible on one's own. These networks can be thought of as social capital that require investment in order to receive expected returns (Lin, 1999). This social capital can be a driving factor in students' decision to select an engineering major and persist in undergraduate engineering studies (Bates, Martin, Wilson, Plett, & Floyd, 2013). Engagement in networks that contribute to the program's work and that the program believes are worth making a contribution to, will assist in creating a strong network of its own (Kenway, Espstein, & Boden, 2005). From this network, information about opportunities and choices that would not have been accessible otherwise become attainable (Lin, 1999) and in turn provide students with a wider range of possibilities within engineering. Program networks can even be built using students' existing connections outside of the university setting. Brown and Hulett (2013) outline one technical outreach program's successful partnerships as beginning with a network connection of a student in the chapter volunteering with an organization in another non-technical capacity. The Toy Adaptation Program's (TAP's) network was brought about in a similar fashion.

Kenway, Espstein, and Boden (2005) describe three different types of networks, academic, stakeholder, and networks for dissemination, which are based on the identity of the participants.

Academic networks include colleagues from your institution or others that have an interest in your work while stakeholder networks are comprised of organizations and individuals that may help with your work or benefit from it (Kenway, Espstein, & Boden, 2005). Networks for dissemination encompass any participants that support the progression of your work into the world for others to discuss, debate, and subsequently further your network as a whole. TAP has cultivated a strong network by including participants that fall under each type of network.

## **Project Design and Execution**

TAP provides hands-on educational opportunities to engineering students, while making a positive societal impact through the modification of electronic toys for children with special needs. TAP facilitates a variety of toy adaptation workshops for students, families, and other stakeholders with an interest in addressing the need for adapted toys. TAP focuses on student engagement at each of our workshops, whether the students are learning adaptation themselves or mentoring others in the learning process. From the adaptation process students learn concepts of reverse engineering, safe soldering practices, and the use of basic tools. In addition, the students gain an understanding of the importance of the service they are providing by participating in a workshop. The toys adapted during these workshops are donated to adapted toy lending libraries and families in order to help reduce the burden of purchasing marked-up adapted toys from select vendors. This aspect of the program shows students that their engineering work can truly have an impact. Throughout the last four years, TAP has created a strong network of partners interested in toy adaptation using varying methods. In the following sections, we provide an account of those partners to demonstrate the growing nature of the program. Through this Work in Progress format, we hope to share our lessons learned related to successes and failures while also learning from others.

## **Lessons Learned Through Successes and Failures**

In this section, we describe how TAP strategically built partnerships with non-profit organizations, professionals in healthcare, and professionals in education in order to create the strong network it has today. Each partnership falls into at least one of the three types of networks described by Kenway, Espstein, and Boden (2005). Figure 1 depicts the breakdown of TAP's partners within its network. The outcome (i.e., lessons learned) of each attempt to create the connections are shown in italics.

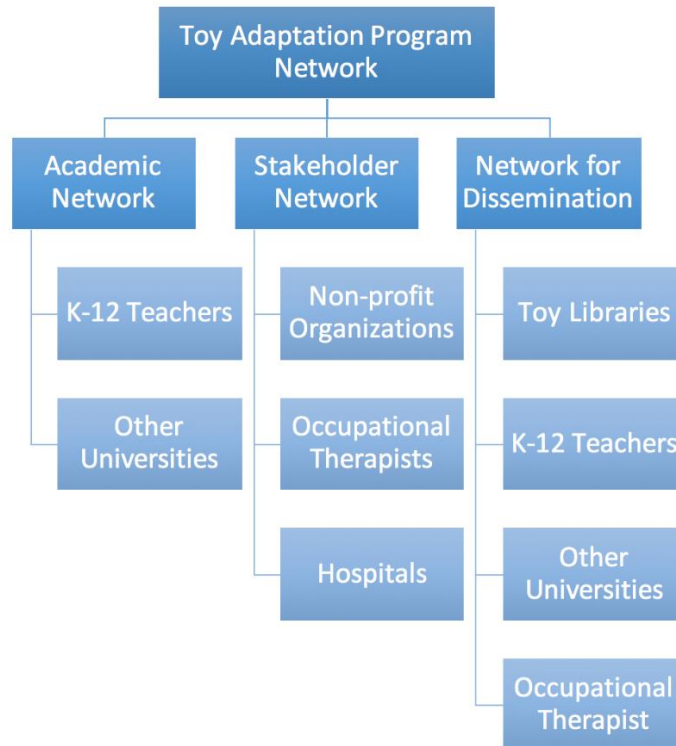


Figure 1. Breakdown of the Toy Adaptation Program's network of partners

### Connections to Non-Profits

TAP began as a collaboration between a non-profit organization which adapts and repairs toys for children with special needs and an engineering-focused living-learning community program at The Ohio State University. In 2013, a second-year undergraduate student in the program studying mechanical engineering expressed an interest in toy adaptation after attending a workshop held by the non-profit organization. After discussing this interest with an engineering program manager, together they reached out to the non-profit organization to arrange a workshop for her students. *This connection came from this student's desire to apply her engineering skills to make a societal impact and to be able to share this experience with her peers. She was able to use her academic network, in particular her program manager, to make her peers aware of the need for adapted toys and how they can contribute to this need.* The program manager was then able to begin TAP's stakeholder network by partnering with the non-profit organization to deliver a beneficial experience to her students. The non-profit organization taught students how to adapt toys in the first workshop held on campus. The first students to complete a workshop then passed on their knowledge by mentoring other students through the toy adaptation process in the subsequent workshops. Since then, the focus of TAP has been to teach the process of toy adaptation to others. Only recently has this focus shifted to also teaching engineering content.

In the following year, a handful of parents of children with special needs discovered TAP and contacted one of the program directors. She invited the parents to attend a toy adaptation workshop held on campus. After the experience, one of the mothers started a non-profit organization dedicated to enabling safe and developmental play for children with special needs. As part of their mission, this organization has created an adapted toy library in order to provide

families with needed toys. *This addition to TAP's stakeholder network was initiated by an individual's interest in our work based on the impact it could directly have on her daughter and other families with special needs children.* This interest grew into a non-profit organization that TAP now volunteers with monthly and donates a portion of their adapted toys to on a regular basis, resulting in a mutually beneficial partnership. This strategic partnership has allowed TAP a constant partner in progress where TAP and the non-profit continually share ideas and best practices related to toy adaptation.

### Connections in Health

After the first workshop, TAP recognized the need for a consistent donation outlet for the adapted toys. One of TAP's directors was connected to an occupational therapist (OT) from The Ohio State University Nisonger Center, through her academic network. The OT works at the toy and technology library, a place where families of children with special needs can borrow adapted toys and the switches which activate them. Through this connection, TAP is now able to donate adapted toys to the library as well as directly to families. In addition, the OT has shared her knowledge of the most fitting types of toys to adapt for children with special needs, as well as varying methods and processes for adapting different types of toys. *This connection, generated from an existing academic network, has increased TAP's stakeholder network, as well as their ability to disseminate their work to families of children with special needs.*

After a few years, it was evident that additional donation outlets and partners in health were needed. Through community based investigations, TAP learned that a local children's hospital has held toy adaptation workshops for over six years to teach families of children with special needs how to adapt toys for their own children. TAP was interested in partnering with them to help with their workshops in addition to gaining another donation outlet. One of TAP's directors attempted to build connections to the hospital through the university, who are already partners; however, she was not successful. The other co-director then tried to connect with the hospital through other means, since the academic network had failed. She was able to find contacts through her son's physical therapist who worked at the hospital. *It is sometimes necessary to look beyond professional networks in order to achieve the partnership that is desired.* Since then, TAP has worked with the hospital to enhance their toy adaptation workshops and to donate adapted toys directly to families who need them.

### Connections in Education

In the past year, TAP has seen increased interest in toy adaptation workshops from the K-12 space. For example, one local high school teacher reached out to TAP after attending a summer workshop at a conference, hoping to facilitate a workshop for his engineering elective class. *TAP believed that this could potentially be a beneficial partnership to add to their network for dissemination.* TAP worked with him to fit a workshop into a class period and had great results. However, the partnership is still developing and TAP recognizes the need for more K-12 partners beyond this one teacher. Our hope is that we will be able to use toys to teach K-12 students about engineering, which is currently beyond the scope of our efforts. With this new focus, we will aim to increase recruitment into engineering at our partner schools.

As the TAP team grows so does its overall network. One graduate student, a former TAP member, has since continued her graduate career at another university across the country. There she has been able to continue the work of TAP by holding toy adaptation workshops and connecting with families in a geographic location with even more limited resources related to adapted toys. *Through this addition to our academic network and network for dissemination, TAP could extend their freshman engineering toy adaptation lab to other universities in the future.* As with TAP, her focus is on teaching the process of toy adaptation; however, her partners are interested in studying the efforts of toy adaptation on students' views of those with disabilities. This will open a new line of research and assessment related to TAP.

## **Conclusions and Next Steps**

TAP has been able to cultivate a strong relationship with a variety of partners to create a stable foundation for future work using many different methods. Through existing academic networks, TAP was able to acquire partners that helped to initiate the program at its earliest stages. From there, it was necessary to look elsewhere, including personal networks, to gain additional partners in the health field when the academic networks had been unsuccessful. Once TAP was established, it became possible to market the program to the public. With this came requests for partnerships with TAP from both the non-profit and educational fields. TAP's stakeholder and dissemination networks grew from these requests and made it possible for TAP to share its success. In the future, TAP hopes to grow its network for dissemination by exploring the K-12 space, teaching toy adaptation to professional therapists, and connecting directly with families of children with special needs. Since TAP is relatively new, we still have a lot to learn, but we believe the relationships we have established can serve as a model for the types of relationships others will have to cultivate if they are interested in creating a TAP of their own. Our hope is that TAP will be a pilot for other programs that address this need across the country.

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