

## REHABILITATION IN PRACTICE

# Involving youth with disabilities in the development and evaluation of a new advocacy training: Project TEAM

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**Purpose:** This paper describes a participatory research process in which six youth with disabilities (Youth Panel) participated in the development and evaluation of a manualized advocacy training, Project TEAM (Teens making Environment and Activity Modifications). Project TEAM teaches youth with disabilities how to identify environmental barriers, generate solutions, and request accommodations. **Method:** The Youth Panel conducted their evaluation after the university researcher implemented Project TEAM with three groups of trainees. The Youth Panel designed and administered a survey and focus group to evaluate enjoyment and usefulness of Project TEAM with support from an advocate/researcher. Members of the Youth Panel analyzed survey response frequencies. The advocate/researcher conducted a content analysis of the open-ended responses. **Results:** Sixteen of 21 Project TEAM trainees participated in the evaluation. The evaluation results suggest that the trainees found the interactive and individualized aspects of the Project TEAM most enjoyable and useful. Some instructional materials were difficult for trainees with cognitive disabilities to understand. **Conclusions:** The Youth Panel's involvement in the development of Project TEAM may explain the relatively positive experiences reported by trainees. Project TEAM should continue to provide trainees with the opportunity to apply concepts in real-life situations. Project TEAM requires revisions to ensure it is enjoyable and useful for youth with a variety of disabilities.

**Keywords:** Advocacy, Participatory Action Research (PAR), young adults

## Introduction

Incorporating youth perspectives into the development and evaluation of rehabilitation approaches gives valuable insight into the quality of services and can enhance programme

## Implications for Rehabilitation

- Group process strategies, picture-based data collection materials, peer teamwork, and mentorship from adults with disabilities can enable youth with disabilities to engage in research.
- Collaborating with youth with disabilities in the development of new rehabilitation approaches may enhance the relevance of interventions for other youth with disabilities.
- Youth with cognitive disabilities participating in advocacy and environment-focused interventions may prefer interactive and experiential learning activities over passive teaching approaches such as powerpoints and videos.

effectiveness [1–5]. When professionals design interventions, they may make incorrect assumptions about the effectiveness of the techniques utilized and the importance of the topics addressed [6]. When interventions are not acceptable or important to stakeholders, translation of knowledge to practise is not likely [7]. Involving youth with disabilities in the development of new rehabilitation approaches from the “ground up” may increase the likelihood that other youth will find the interventions enjoyable and useful.

A growing body of literature suggests the limited participation of youth with disabilities in home, education and the community is due to barriers in the physical and social environment [8–10]. Yet, to date, there has been limited translation of this knowledge to practise, and the primary focus of rehabilitation continues to be changing the young person instead of the environment [11,12]. A few exceptions can be found: rehabilitation practitioners have several environmental-focused assessments available for use in practice [13–16] and

within occupational therapy, environmental modification is a central focus of intervention [17,18]. However, in these instances, professionals adapt the environment on behalf of youth with disabilities. There is a need to develop rehabilitation interventions that provide youth with disabilities the knowledge and skills necessary to identify and advocate for environmental modifications. This is an ideal opportunity to involve youth with disabilities in the development and evaluation of such new rehabilitation approaches.

In this project, youth with disabilities participated in the development of a training curriculum that attempts to shift the focus in youth rehabilitation from individual impairment to social causes of disability [12,19,20]. This paper will describe the participatory research process [21,22] used to develop and evaluate a new advocacy training, Project TEAM (Teens making Environment and Activity Modifications). The participatory research team that developed and evaluated Project TEAM included a university researcher, a panel of six youth with disabilities ages 12–17 (the Youth Panel), and an advocate and experienced evaluation researcher who self-identifies as a person with Down’s Syndrome (referred to as advocate/researcher). The Project TEAM manualized curriculum uses a cognitive-behavioral technique named the “Game Plan” [23] to enable youth with disabilities to identify environmental barriers, generate solutions and request reasonable accommodations (Table I). Project TEAM’s conceptualization of the environment (11 “parts of the environment”) and environmental modifications (five “strategies”) are informed by rehabilitation frameworks as well as the social model of disability [24–26]. These concepts are introduced in eight group modules; each module includes an icebreaker, a teaching activity (such as a powerpoint), a shared discussion, and one or two learning activities. Each module also includes the opportunity for trainees to apply new knowledge to a goal activity. These goals reflect a trainee’s desire to begin

or increase participation in a self-selected activity in school or the community. Trainees had the option to view supplementary videos between group sessions. In addition, trainees were supported to participate in their goal activities during an individualized “field trip” in the community or in other familiar settings such as after-school programmes.

This project was informed by Lundy’s [27] framework that outlines four essential elements for youth participation in research. The first element is ensuring youth have a safe and inclusive space to express their views. The second element is facilitating youth’s voice by providing youth with accessible methods to express their views. The third and fourth elements are providing an audience for youth’s voice and allowing youth to influence decisions. The following section of this paper describes the accessible procedures and strategies used by the university researcher to provide youth with disabilities the space and voice to develop Project TEAM. The methods section, written in collaboration with the Youth Panel, highlights the influence the Youth Panel had on the evaluation of Project TEAM. The discussion section, also written in collaboration with the Youth Panel, reveals the continued influence of the Youth Panel on the future development and implementation of Project TEAM.

### Project TEAM development: accessible methods to facilitate space, voice, and influence of the Youth Panel

#### Youth Panel: group formation and characteristics

The university researcher received human subject’s approval and recruited youth with disabilities from the community through list serves hosted by disability advocacy networks and service agencies. Care was taken to avoid language typically used in research recruitment and enrollment, such as “subject” and “intervention”. Instead, the recruitment materials

Table I. Project TEAM module topics and activities.

Project TEAM module	Illustrative learning objectives	Illustrative learning activities	Supplementary videos
Module 1: Who am I and what would I like to do?	Identify personal strengths and challenges	Interactive “Amazing Race” activities requiring various visual perceptual, motor, auditory skills.	N/A
Module 2: Introduction to the environment: What is it?	Identify the 11 parts of the environment.	Environment “Uno” and Environment “Scategories”	“Katie buys a guitar: Part I”
Module 3: Identifying environmental barriers and supports	Identify parts of the environment that help or make it harder to do activities.	Supports and barriers scavenger hunt	N/A
Module 4: Working around barriers: Identifying modification strategies	Use strategies to generate solutions to environmental barriers.	Strategy bingo	“Katie buys a guitar: Part II”
Module 5: Thinking through strategies: “if . . . then” questions	Use “if . . . then” questions to consider consequences of strategy use.	If/Then coaching	“Using if/then questions: Changing dodgeball”
Module 6: Your rights: Laws about access and reasonable accommodations	Identify the main protections provided under ADA, IDEA, and the Rehabilitation Act.	Rhyme about rights	N/A
Module 7: Communication: Asking for change	Practice asking for changes in the environment using the ‘Asking for Change Script.’	Asking for change charades	“Asking for Change: Taking a break in PE”
Module 8: Checking the Game Plan: Did I reach my goal?	Describe the importance of tracking progress towards a goal.	Group discussion: How do I know when I reached my goal?	N/A

ADA, Americans with Disabilities Act; IDEA, Individuals with Disabilities Education Act; N/A, Not applicable.

advertised the search for youth with disabilities interested in serving as experts on a “Youth Development and Marketing Panel”. Purposive sampling was used to identify youth with disabilities that represented a broad age range (12–17 years), a variety of disabilities, and equal numbers of males and females. The following inclusion criteria ensured that youth had the capacity to engage in Youth Panel activities: communicate ideas in English verbally or by using other means (such as sign language), attend to task for 15 min, and follow two-step directions with minimal support.

A total of six youth formed the Youth Panel; all who identified as Caucasian (see Table II). All members elected to be coauthors of this paper with the permission of their guardians and contributed to the final draft. Youth Panel members chose to use their full names for publication, but this choice was not mandatory for participation on the Youth Panel in accordance with protections for research participants. This process was approved by the university Institutional Review Board. Katie, Sammi, and Yishai had previous experience advocating for inclusion in their schools and community. Four youth continued their participation over 16 months until the evaluation of Project TEAM as reported in this paper. Sammi chose to stop attending youth panel after 9 months to focus on her employment and transition to college. Maddy chose to not be involved in the evaluation of Project TEAM, and then moved out of the area.

### Youth Panel development of project TEAM training materials

The development of Project TEAM was a collaboration between the university researcher and the Youth Panel. The university researcher developed the original concept of the training, including the focus on environmental barriers and solutions, and the cognitive-behavioral technique used to identify environmental barriers and generate solutions. The university researcher also generated drafts of materials and learning activities. The Youth Panel reviewed and revised the university researcher’s initial ideas and also generated new materials during meetings that occurred at an average of once a month. The Youth Panel meetings used group process strategies to facilitate youth ownership of Project TEAM and reduce the power of the university researcher. This included having the youth panel create ground rules at the first meeting, using a picture-based agenda, and using “talking tokens” to designate a speaker. After 7 months, the panel members’ ownership of Project TEAM was evidenced by their requests for additional meetings and their ability to identify issues they wanted to resolve at future meetings. The university researcher continued to be responsible for planning each meeting and preparing accessible activities to enable the Youth Panel’s participation in the research process.

To review the materials and games initially generated by the university researcher, the Youth Panel completed the

Table II. Youth Panel members demographics and personal information.

Name	Age at recruitment	Gender	Disability	Grade at recruitment	Personal goal for serving on Youth Panel	Evaluation responsibilities
Maddy	12 years, 6 months	Female	Cerebral palsy; non-verbal learning disability	7 <sup>th</sup>	“To make it so teens with disabilities can advocate for themselves. Sometimes I think I can’t do stuff”.	Choose not to participate in evaluation activities.
Zach	12 years, 9 months	Male	Autism	7 <sup>th</sup>	“To assist people to be better prepared for the environment”.	Wrote survey items. Analyzed data.
Kit	14 years, 3 months	Male	Anxiety; Depression; ADHD	8 <sup>th</sup>	“To make it easier for the next disabled teen who needs something accessed”.	Wrote survey items. Wrote focus group questions. Conducted evaluation. Entered data.
Yishai	14 years, 1 month	Male	Cerebral Palsy; Learning Disability; Attention Deficit Disorder; Generalized Anxiety Disorder; Sensory Integration Disorder	8 <sup>th</sup>	“I saw teens who didn’t know how to advocate for themselves like I did”.	Wrote survey items. Wrote focus group questions. Wrote evaluation script. Conducted evaluation.
Katie	16 years, 9 months	Female	Muscular Dystrophy	11 <sup>th</sup>	“Wanted to help people. Wanted something to do”.	Wrote survey items. Conducted evaluation. Analyzed data.
Sammi	16 years, 9 months	Female	Stickler Syndrome; Deaf/ Hard of Hearing	11 <sup>th</sup>	“Wanted to help other teenagers advocate for themselves because I know how much of a struggle it is and how intimidating it can be, but I also know it does not need to be that way if you know what you are doing”.	Discontinued involvement in the Youth Panel before evaluation was conducted.

activities and then used picture-based review sheets to provide feedback on the positive and negative aspects of the activity. Group discussion about the activities, which often included references to the youth's personal experiences, led to brainstorming for new ideas or revisions. The Youth Panel also had the opportunity to develop additional training materials that utilized their individual assets, unique talents, and interests. Youth worked individually or in pairs with the university research team to complete these projects, including personal narratives, an introduction for the facilitator manual, videos, and card and board games. The university research team provided materials, electronic equipment, computer software, feedback, and technical assistance as needed. Final products used during the implementation of the Project TEAM training were based on the Youth Panel projects but produced by university research staff and a printing company using advanced desktop publishing and video editing software.

### Highlights of Youth Panel contributions to Project TEAM

The Youth Panel selected three major contributions that they made to the development of Project TEAM to highlight in this paper.

The first major contribution of the Youth Panel was the structure of the "Game Plan" created for Project TEAM. The Game Plan is a process of identifying and resolving environmental barriers following the steps "Goal, Plan, Do, and Check". The "Plan" step features five modification strategies generated by the Youth Panel: Planning Ahead, Teaching Others About Disability, Doing Activities Differently, Using Things Differently, and Changing Spaces. In keeping with cognitive-behavioral techniques, each step of the Game Plan is accompanied by a question designed to direct one's thought process [23]. Drawing from personal experience, one panel member suggested that the "Plan" step include an additional reflective question that directed trainees to consider the potential consequences of their plan. This reflective step included the new self-question: "What would happen if I changed this part of the environment or used this strategy?" The Youth Panel then worked as a group to create a series of four additional "if . . . then" self-questions to help trainees consider the impact of modification strategies on other peers and adults (see Box 1). These if . . . then questions, generated by the Youth Panel, broadened the focus of environmental modifications from personal impact to the potential impact of modifications on others. This unique addition provides an opportunity for trainees to begin to consider collective advocacy in addition to self-advocacy.

#### Box 1. Game plan "Plan: Step 3" if . . . then questions

- Would I be able to do this activity if I used this strategy?
- Would using this strategy help or make it harder for someone else to do this activity?
- Would using this strategy keep this activity fun for other people?
- If this strategy doesn't work, what other strategy can I try?

The second major contribution of the Youth Panel was the design of the Game Plan Worksheet. The Game Plan Worksheet was originally conceptualized by the university researcher as a two-page paper and pencil worksheet that guided Project TEAM trainees through the Goal, Plan, Do, and Check steps of the Game Plan. The Youth Panel indicated the two-page worksheet was inaccessible and difficult to use; the font was small and the worksheet had minimal space for writing. The Youth Panel recommended expanding the Game Plan Worksheet to one page for each step of the Game Plan. Expanding the worksheet provided more space to include images to enhance trainees' understanding of concepts. The font size was also enlarged to be more accessible.

The third major contribution of the Youth Panel was the creation of a new module one: "Who am I and what do I want to do?" The researcher originally suggested that the first module should introduce trainees to the concept of environmental barriers. However, the Youth Panel believed trainees would more effectively identify environmental barriers if they first reflected on their personal strengths and challenges in a supportive and fun environment. Therefore, for the new module one, the Youth Panel and the university researcher developed a series of games that required different skills such as remembering information, jumping and running, and hearing. After individual trainees completed activities during this module, the larger trainee group reflected on personal strengths and challenges by discussing how and why certain trainees completed each game.

### Methods: evaluating Project TEAM

After developing Project TEAM, the Youth Panel wanted to evaluate the extent to which other youth with disabilities completing Project TEAM (referred to as trainees) found the training useful and enjoyable. The Youth Panel conducted their evaluation after Project TEAM was implemented with three groups of trainees. The Youth Panel did not complete the training. The university researcher and a youth specialist from the local Center for Independent Living cofacilitated Project TEAM. Two groups of trainees met for 70 min twice a week and one group met for 120 min once a week to accommodate the trainees' schedules. Trainees first completed modules 1–7, and then attended individualized field trips. Module 8 was held after all trainees from each group completed their trips. Human subject's protection was obtained prior to all research activities. The evaluation responsibilities taken on by each Youth Panel member are featured in Table II.

#### Designing the evaluation

The university researcher felt that a fixed-response survey with open-ended follow-up questions would be the most accessible evaluation approach for trainees and the Youth Panel. The advocate/researcher taught the Youth Panel quality standards for survey design. The Youth Panel then designed survey questions and open-ended questions about the Project TEAM training. Survey items were answered using one of two rating scales selected by the Youth Panel: a "good/bad" rating scale to evaluate enjoyment and a "frequency" rating scale

Table III. Evaluating enjoyment: Good/bad rating scale results.

Survey questions <sup>a</sup>	Really bad n (%)	Bad n (%)	Good n (%)	Really good n (%)
Icebreakers at the beginning of each module	1 (6.2%)	2 (12.5%)	5 (31.2%)	8 (50%)
Group discussion and sharing	0	4 (25%)	5 (31.2%)	7 (43.8%)
Games and activities	1 (6.25)	0	5 (31.2%)	10 (62.5%)
Powerpoints	2 (12.5%)	1 (6.2%)	7 (43.8%)	6 (37.5%)
Self-check quiz at the end of each module	0	3 (18%)	8 (50%)	4 (25%)
The 11 parts of the environment	0	0	6 (37.5%)	10 (62.5%)
The 5 strategies	1 (6.2%)	1 (6.2%)	10 (62.5%)	4 (25%)
Game Plan and Game Plan Worksheet	2 (12.5%)	2 (12.5%)	7 (43.8%)	5 (31.2%)
Asking for Change script	2 (12.5%)	2 (12.5%)	5 (31.2%)	7 (43.8)
Disability rights laws	1 (6.2%)	0	7 (43.8%)	8 (50%)
Meeting by myself with a group leader about my goal	2 (12.5%)	0	7 (43.8%)	7 (43.8%)
The field trip with a group leader	0	0	6 (37.5%)	10 (62.5%)
Videos about the training	3 (18.8%)	2 (12.5%)	7 (43.8%)	4 (25%)

<sup>a</sup>In response to the direction: Read about the different parts of the training. Check if the part of the training was “really good”, “good”, “bad” or “really bad”.

to evaluate usefulness (see Tables III and IV for rating scale categories). Survey questions were revised by the university researcher and advocate/consumer to ensure they adhered to survey design quality standards and also added visual cues to each question and rating scale to enhance accessibility. The Youth Panel reviewed the revised survey using a picture-based evaluation form; this feedback was incorporated into the final survey (see Figure 1 for an example of a survey item).

### Evaluation procedures

The evaluation was conducted by Youth Panel members and supervised by the advocate/researcher. A research assistant was also available to provide support, distribute materials, and take field notes. This evaluation team followed a script written by the university researcher, the advocate/researcher, and a member of the Youth Panel. The university researcher, who had been the Project TEAM facilitator, was not in the room during the evaluation to reduce trainee bias. Trainees did not put their names on the surveys so responses remained anonymous. All survey directions and items were read out loud while trainees completed the survey. The survey was followed up with three open-ended questions conducted in a focus group fashion [28]:

- What was one of your favorite parts of Project TEAM?
- What are some things you didn't like about Project TEAM?
- What could [the university researcher] do to make Project TEAM better?

The script included follow-up probes for each question. The third training group did not have time to answer the third open-ended question. All evaluation sessions lasted 45–60 min and were tape-recorded.

### Analysis of evaluation data

Survey responses were entered into an SPSS database by a member of the Youth Panel, and one-third of entries were checked by the advocate/consumer. Only one entry error for one item was found and corrected. Response frequencies were

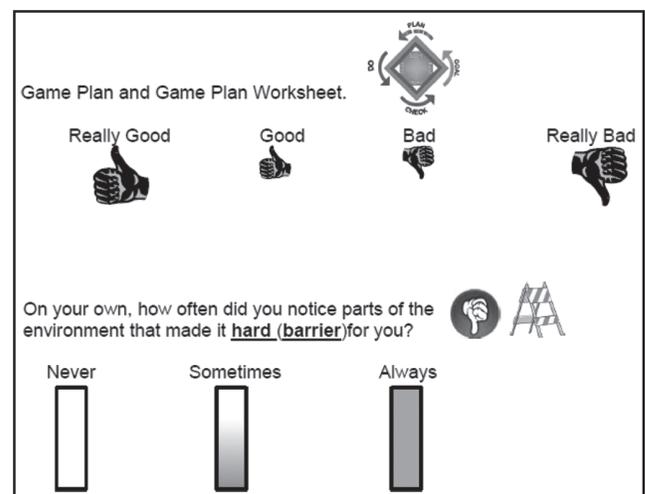


Figure 1. Examples of accessible survey items.

obtained for each survey item, and depicted as bar graphs using SPSS. The Youth Panel member also calculated the average rating for each survey item. For each survey question, the university researcher transferred the bar graph and average rating to one page of a Word document that included the item text and image to enhance analytical accessibility as in other PAR studies [29].

Two additional members of the Youth Panel worked as a team with support from the university researcher to analyze the bar graphs. The following analytical questions were posed to the Youth Panel analytical team:

- What was the best, worst, and most surprising finding?
- Why do you think trainees reported this?
- What should we do differently in the future?

To analyze the good/bad rating scale, the Youth Panel analytical team decided to review the item averages and identify the items with the most “really bad” and “really good” responses. For the frequency rating scale, the Youth Panel analytical team decided to identify the rating category with

the most responses for each item and determine if it indicated a positive or negative finding. The Youth Panel analytical team wrote and dictated their analysis and interpretation. This information was used to write the results and discussion section of this manuscript.

To analyze the three open-ended evaluation questions, the advocate/researcher (who was unfamiliar with the voices of trainees) listened to the audio recordings and transcribed trainee responses to maintain trainee anonymity. The advocate/researcher and university researcher then sorted responses by question and grouped similar responses into content categories.

## Results

### Project TEAM trainee demographics

Of the 21 trainees completing the Project TEAM curriculum across three implementation groups, 16 youth completed the evaluation survey (76% response rate). Trainees who did not complete the survey were absent the day of the evaluation. Trainees were 15–17 years old, and five were female. Ten trainees were African–American, three were Caucasian, two were multiracial, and one was Hispanic/Latino. Trainees received special education services under the following qualifying categories (one missing): mental retardation (n = 10), visual impairment (n = 1), deafness (n = 1), speech/language (n = 1), multiple disabilities (n = 1), and autism (n = 1).

### Enjoyment: Good/bad rating scale results

Table III includes the results for the “good/bad” rating scale. Trainees rated the following aspects of Project TEAM the highest on enjoyment: “parts of the environment” and “field trip with a group leader” (both M = 3.62). These aspects of Project TEAM each received 10 “really good” ratings and no “bad” or “really bad” ratings. Although “meeting by myself

with a group leader about my goal” received two “really bad” ratings, this aspect of Project TEAM was still rated “good” or “really good” by 14 of the 16 trainees. “Games and activities” also received 10 “really good” ratings.

Trainees rated the following aspects of Project TEAM the lowest on enjoyment: “videos about the training” (M = 2.75) and the “Game Plan and Game Plan Worksheet” (M = 2.94). Other aspects of Project TEAM that received “really bad” ratings were the “powerpoints”, the “Asking for Change script” (used to request accommodations), and “meeting by myself with a group leader about my goal”.

### Usefulness: frequency rating scale results

Table IV includes the results for the frequency rating scale. Overall, the responses suggest that trainees found Project TEAM useful. Forty-three percent of trainees reported that they always had fun, were never bored, and were never distracted during the training. Trainees appeared to use the peer and social learning approach encouraged in Project TEAM: two-thirds reported helping their peers and receiving help from their peers during the training. However, some aspects of the training appeared to be a problem. Two-thirds of the trainees reported some or all of the time they did not have enough time to finish training activities. Over half of the trainees reported the training was hard to understand some or all of the time. Many trainees (37.5%) reported they always received help from group leaders, which could also imply that trainees had difficulty understanding the material without assistance from group leaders.

Most trainees reported that they were able to identify environmental barriers (93.8%) and supports (87.4%) in their daily lives after completing Project TEAM. However, 56.2% of trainees did not use a strategy in their daily lives to change the environment. Thirteen of the 16 trainees at least sometimes benefited from the training by learning information that

Table IV. Evaluating usefulness: Frequency rating scale results.

Survey question	Never n (%)	Sometimes n (%)	Always n (%)
How often did you share your thoughts with the group during the training?	1 (6.2%)	8 (50%)	7 (43.8)
How often did you feel bored during the training?	7 (43.8%)	6 (37.5%)	3 (18.8%)
How often were the ideas hard to understand during the training?	6 (37.5%)	8 (50%)	2 (12.5%)
How often did you have difficulty paying attention during the training?	7 (43.8%)	6 (37.5%)	3 (18.8%)
How often did you run out of time before finishing your work?	4 (25%)	7 (43.8%)	5 (31.2%)
How often did you have fun during the training?	3 (18.8%)	6 (37.5%)	7 (43.8%)
How often did [group leaders] help you during the training?	3 (18.8%)	7 (43.8%)	6 (37.5%)
How often did pictures and symbols help you understand the new things you were learning?	1 (6.2%)	9 (56.2%)	6 (37.5%)
How often did you help another student in your class during the training?	4 (25%)	7 (43.8%)	5 (31.2%)
How often did a student in your class help you during the training?	5 (31.2%)	6 (37.5%)	5 (31.2%)
On your own, how often did you notice parts of the environment that made it hard (barrier) for you?	1 (6.2%)	11 (68.8%)	4 (25%)
On your own, how often did you notice parts of the environment that helped (support) you?	2 (12.5%)	5 (31.2%)	9 (56.2%)
On your own, how often did you use a strategy to change the environment?	9 (56.2%)	3 (18.8%)	4 (25%)
On your own, how often did you ask someone for a change you needed in your environment?	3 (18.8%)	8 (50%)	5 (31.2%)
On your own, how often did the things you learned during the training help you do something you wanted to do?	4 (25%)	5 (31.2%)	7 (43.8%)

helped them participate in their self-selected goal activity. However, four trainees said Project TEAM did not help them participate in their goal activity.

### Open-ended questions results

Overall, trainees were able to name more things they liked about Project TEAM than things they did not like about Project TEAM. This suggests that trainees had an overall positive impression of Project TEAM. The following quote illustrates this finding: “I liked everything” (Group 3). Box 2 reports the categories of trainee’s responses to the open-ended evaluation questions; exemplar quotes are presented for some categories.

## Discussion

### Future implications for the development of Project TEAM

The evaluation results suggest that the interactive and individualized aspects of the Project TEAM, such as the games and field trips, are most enjoyable and useful for trainees. These findings further support the training’s use of an experiential learning approach [30]. A member of the Youth Panel

explained the importance of interactive learning activities with this example: you can watch a video about how to play a guitar, but you will not learn how to play the guitar until you actually pick it up and practise playing the instrument. Therefore, Project TEAM should continue to provide trainees with the opportunity to apply concepts in real-life settings and self-selected goal activities. Trainees may enjoy Project TEAM even more if the Youth Panel develops more games and interactive activities. Interactive activities may be most effective and enjoyable when trainees are split into smaller sub-groups facilitated by one group leader. This would address trainees’ requests for more one-on-one time, and further encourage the peer learning approach promoted in Project TEAM.

Although the Youth Panel thought trainees would like powerpoints and videos because they were “easy” (i.e. do not require trainees to write or solve problems), these components of Project TEAM received lower ratings than the interactive training activities. However, during the open-ended evaluation questions some trainees shared that the videos were one of their favorite parts of the training. It is possible that the content featured, not the medium, was the reason for the lower ratings. The videos and powerpoints featured mostly physical disabilities, and many trainees had cognitive and sensory disabilities. Videos and powerpoints can continue to use personal stories and pictures to ensure trainees find them interesting, but should include additional examples of barriers that youth with cognitive and sensory disabilities may relate to, such as inaccessible signs and information, short time limits for difficult activities, and noisy or distracting spaces.

The key materials created for Project TEAM, including the Game Plan Worksheet and Asking for Change script, received low ratings from trainees. These materials require abstract thinking and have a lot of information and language “clumped” together on a page. This may have been confusing and intimidating for the trainees with cognitive disabilities and limited literacy. The language in the Game Plan Worksheet and Asking for Change script should be simplified by reducing the amount of words and other visual clutter. Existing images and symbols should be enlarged, since all trainees except one reported that the pictures and symbols helped them learn the concepts taught in the training. Simplifying language and using more symbols may also reduce the misunderstanding reported by trainees completing the training.

The self-reported impact of Project TEAM on trainees’ daily lives was limited. Trainees reported that they were able to apply Project TEAM’s conceptualization of the environment to their everyday lives to identify environmental supports and barriers. However, few reported using Project TEAM modification strategies to address environmental barriers. Trainees may have felt comfortable identifying barriers and supports in their environment because the 11 parts of the environment introduced in Project TEAM are concrete concepts. Further, the environment categories describe familiar aspects of the environment such as “inside places”, “ground”, “people”, or “rules”, and the categories remain consistent across contexts. However, the modification strategies are a set of abstract ideas that must be further individualized to a specific scenario in order to resolve environmental barriers. Revising the strategy

#### Box 2. Categories derived from open-ended questions

What was one of your favorite parts of Project TEAM?

- Showing videos: “Showing Katie’s video I was like wow” (Group one)
- Disability laws
- My personal goal (examples included: learning to dance, going to a restaurant, and going bowling)
- Everything about the environment [the 11 parts of the environment taught in the training]
- Learned about physical disabilities
- The group leader
- Icebreakers
- Doing activities and games
- Drawing during reflection: “I really liked that, liked the drawing” (Group three)

What are some things you didn’t like about Project TEAM?

- It was boring: “Doing a lot of work” (Group one)
- The ‘rules’ part of the environment was hard to understand
- Powerpoint projection: “The problem was that it was too low- didn’t like area. Visually did not like it” (Group three)

What could [the university researcher] do to make Project TEAM better?

- More one-on-one time
- Take trainees out and show them the parts of the environment: “Not teaching, showing it” (Group one)

categories so they are more concrete may help trainees better understand and use strategies in their everyday lives.

### Limitations

There are several limitations to this evaluation. Five Project TEAM trainees (25% of trainees) were absent the day of the evaluation, so results may not reflect all participants' experience. The small sample size further limits the type of analyses that can be performed with the evaluation data. Additionally, trainees may have misunderstood the evaluation questions, or may not have remembered the beginning modules of Project TEAM training when completing the evaluation at the end. However, the evaluation team's instructions and the use of images in the evaluation survey helped ensure trainees answered the survey questions accurately. Future research should implement and evaluate Project TEAM with a larger group of trainees, and trainees with physical disabilities.

### Conclusions: involving youth in the development and evaluation of rehabilitation interventions

This manuscript illustrates the value of collaborating with youth with disabilities in the development and evaluation of rehabilitation interventions. By providing members of the Youth Panel with an accessible and youth-friendly space to share their voice, the university researcher enabled the Youth Panel to provide insights stemming from their lived experience that the university researcher did not hold as an adult without a disability [7,27,31,32]. As a result, the Youth Panel had a meaningful influence on the development of Project TEAM, and their contributions may explain the relatively positive impression of Project TEAM reported by trainees. Although some members of the Youth Panel had learning disabilities, no member identified as having an intellectual disability. This may have led the panel to create materials that were more accessible and targeted to trainees with physical disabilities. The Youth Panel may be strengthened by inviting a young person with an intellectual disability to participate in the future revision and creation of Project TEAM materials.

The results of this study highlight the ways in which youth with disabilities can engage in participatory action research [27,33]. With support, the members of the Youth Panel designed data collection tools, effectively collected data, and analyzed data. Meaningful involvement in all phases of the research process provided youth with disabilities the opportunity to influence not only the current research project, but other rehabilitation professionals and youth who may implement and complete Project TEAM in the future. In this way, the Youth Panel may influence a new approach to rehabilitation practise that addresses the social and environmental factors that contribute to disability.

### Acknowledgements

The authors would like to acknowledge the Project TEAM trainees who participated in the training. We would also like to thank the following research staff who assisted with this

project and the development of Project TEAM (all affiliated with Boston University unless noted): Sarah Bonderud, Sarah Kreditor, Stacy Hart of the Boston Center of Independent Living, Kristin Heinze, Kendra Liljenquist, Sarah Olsen, Michelle Mermelstein, and Julia Shin.

**Declaration of Interest:** This study was supported by a grant from the Deborah Munroe Noonan Memorial Research Fund, Bank of America, N.A., Trustee, PI: Jessica Kramer. Authors have no other conflicts of interest to report.

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