White Paper – Life Sherpa
A pilot study: Life Sherpa in the Employment Setting for Individuals with IDD
Mason LIFE Program
College of Education and Human Development
George Mason University

Introduction
Individuals with IDD have traditionally required ongoing, one-to-one supports to learn and maintain mastery of independent tasks in the work setting. While one-to-one staffing support has historically been a costly proposition, technology offers the promise of a more scalable and cost-effective solution for helping clients with IDD navigate the workplace.

One such technological application, the Life Sherpa app, offers a solution to the staffing dilemma by using a mobile device to automatically remind, reinforce, and reward users to successfully complete pre-targeted workplace routines and skills. This flexible mobile platform can be customized to an individual user's needs, while providing real-time monitoring, evaluation tools and a data collection dashboard for analysis.

The Mason LIFE Program at George Mason University—a four year postsecondary program for students with IDD that focuses on academics, employment, independent living, and community integration—set out to test the efficacy of this new mobile app in supporting Mason LIFE students in their workplace environments.

Purpose
As part of a trial implementation of the Life Sherpa app, Mason LIFE Program conducted a pre/post survey with a control group, as well as a social validity study.

The purpose of the study was to determine:
1. The functional relationship between use of the Life Sherpa app and increased productivity of targeted work-related skills
2. The feedback of the student participants
3. The feedback of the support staff participants

The expected outcomes of the study were to increase support staff training and efficiency, decrease staff-to-student ratios, and to provide an effective teaching and skill maintenance modality for students.

Participants
Student participants were students of the Mason LIFE Program. Students are diagnosed with Intellectual and/or Developmental Disabilities (IDD), are male and female, ages 18-25, and come from Virginia and a variety of other states. Currently, 52 students are enrolled in the Mason LIFE program.

Support staff participants are undergrad or grad students employed by the Mason LIFE Program. They accompany their assigned student to the worksite, teach skills (both hard and soft), and fade support when possible.

Five students were selected for the intervention, and five students were selected for the control group. The intervention group support staff also participated in the survey.

Mason LIFE students earn a work specialty in one of a several areas (child development, senior living services, therapeutic recreation, sports management, pet grooming/care, mail service, customer service, digital imaging, community outreach/public works, data entry, and office work/clerical.) For the study, the work specialty areas of office work/clerical and customer service were targeted.

Research Design

Using a pre/post design with a control group, the students in both the intervention and control groups were assessed using the WAI, Brigance, and Vineland at the beginning and end of the study. During intervention, the students and their support staff used the Life Sherpa app to support students in the intervention group, and data was collected.

In addition, support staff kept a running log of spontaneous language spoken during the students' work sessions to measure potential changes in this area of communication.

After the research period was completed, both students and support staff in the intervention group were interviewed. Students were interviewed on their thoughts on completing tasks, asking for help at work, and interacting with coworkers. Support staff were interviewed on their thoughts about teaching skills to the students, how they support the students, and fading away.

Additionally, demographic data for each participant was collected, including students' medical diagnosis, IQ level, ethnicity, age, gender, year in the Mason LIFE Program. Staff information including year at University, degree, and semester experience (and what components) with the Mason LIFE Program was collected.

All data collected was coded and kept confidential. There was no foreseen risk for either student or staff. Expected benefits for students were increased independence in the work environment, as well as access to an ongoing resource when required. Expected benefits for staff were addition of a systematic tool to support students and provide feedback to administrators.

Budget
George Mason Life Vocational Pilot Cost Proposal
Students in Program 15
Staff 15

	Hours	Cost
Set-up and feature development	193	$14,085
Training	40	$2,332
Support	180	$10,494
Total	413	$26,911

Study Results

<u>Assessments</u>

Work Adjustment Inventory (WAI): This test looks at adjustment behaviors related to the work setting. There are five subdomains included: activity, empathy, sociality, assertiveness, and adaptability. It is a 80 item Likert scale questionnaire that was read aloud to the student by the researcher.

	Intervention Group (n = 5)	Control Group n = 5)
Total Score	9.8	10
Activity	2.2	3.25
Empathy	1.8	-0.25
Sociability	1.8	-0.25
Assertiveness	1.8	-0.25
Adaptability	1.8	1.5
Emotionality	1.4	1.5

Summary: Intervention and control groups saw very similar overall total gains (Intervention 9.8 and Control 10). Small differences included intervention group having greater gains in empathy, sociability, assertiveness, and adaptability, and for control group having greater gains in emotionality.

Brigance: For each student, support staff completed the Likert scales related to employment, including listening skills, self-concept (general), responsibility and self-discipline, trainee's work experience, and self-concept (job-related).

	Intervention Group (n = 5)	Control Group (n = 4)
Mean gains	41.5	14
Mean loss	-6	-10
Total gain	32	8
Listening skills	7.8	11
self-concept (general)	5	6
Responsibility and self-discipline	8.2	2.5
Trainee's work experience	5.6	9.5
Self-concept (job related)	5.4	-0.75

*control group had (n=4) due to one student attending work independently, therefore support staff was unable to assess her at the end of the study

Summary: Intervention group made more progress overall than the control group (Intervention 41.5 and control 14). When looking at the subdomains, the intervention group had more gains in responsibility and self-discipline and self-concept (job-related). The control group had more gains in listening, self-concept (general), trainees' work experience.

Vineland: This scale looks at adaptive behavior. The researcher completed the receptive language, expressive language, interpersonal relationships, and coping skills subdomains. The Vineland uses GSV – which enables measurement of progress in the absolute sense. A student

can score above average rate of growth, average/expected rate of growth, no measureable growth, or a decline in growth.

	Intervention Group (n = 5)	Control Group (n = 5)
GSV Overall	14	12
Above average	5	7
Average	1	0
No growth	0	1
Decrease in growth		
Receptive language		
Above average	3	3
Average	2	1
decrease	0	1
Expressive language		
Above average	4	4
Average	1	1
Interpersonal relationships		
Above average	5	4
Average	0	1
Coping		
Above average	2	1
Average	2	4
No growth	1	0

This table shows how many students made what type of growth in each subdomain. For example, in the intervention group, 3 students had above average growth and 2 have average growth.

Summary: Overall, the intervention group demonstrated greater growth than the control group. When looking at subdomains the intervention group showed more growth in receptive language, interpersonal relationships and coping. Both groups had the same growth in expressive language.

Interviews:
Four of the students enjoyed using the app, and said the list, buttons, and structured steps helped to encourage them to get along with co-workers and manage their emotions. These four students would want to use the Life Sherpa App again, and offered no changes to the app. The fifth student was annoyed by the app, finding it a distraction that he would not want to use again. (It can be noted that this student has great fondness of electronics, even sneaking them into environments where they are forbidden. It was hoped that allowing him a mobile device during employment sessions would act as a motivator; however, he was annoyed he wasn't permitted to do what he wished on the electronics.)

Two of the four staff responded to the interview questions. Both reported that the Life Sherpa app was an interactive and unique way to keep students on track and focused, and that they enjoyed seeing their students grow in independence through their support. They also found the monitoring system easy to use, and helped to keep them focused on their job duties as support staff. Both indicated they would be interested in using the app again in the future.

Spontaneous language

Student 1

Session	Off topic sentences	Job related appropriate sentences
1	0	3
2	5	8
3	4	2
4	0	5
5	0	1

Variable with both the amount of off topic and job related sentences

Student 2

Session	Off topic sentences	Job related appropriate sentences
1	0	1
2	0	2

Small increase in asking for help appropriately

Student 3

Session	**Off topic sentences**	**Job related appropriate sentences**
1	69	15
2	34	0
3	29	0
4	26	0
5	27	0
6	28	6

Huge decrease in amount of off topic sentences. Decrease in job-related sentences.

Student 4

Session	**Off topic sentences**	**Job related appropriate sentences**
1	0	1
2	1	1
3	0	4
4	2	0

Stable low amount of off topic sentences and increase in asking for help appropriate during work sessions.

Student 5

No spontaneous language. This student is selectively mute, but does communicate via written language. No spontaneous written language during work sessions.

Summary:
Overall, some students increased their self-advocacy for help appropriately. One student made significant gains in decreasing inappropriate spontaneous language.

Individual Student Reports
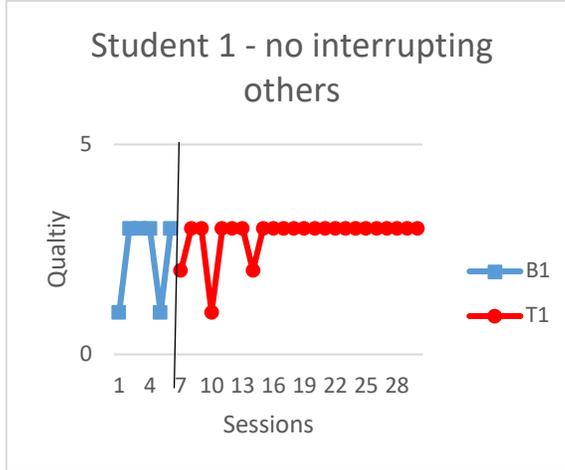
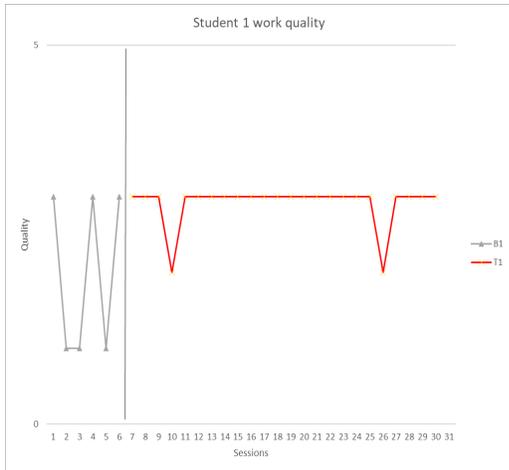Each student had data taken on the following behaviors:
- Overall quality of work
- Student not interrupting
- Student answering questions clearly
- Student asking questions clearly
- Student not talking or asking about personal topics
- Student showing appropriate emotions (self-regulation)
- Student getting work assignment for the session
- Student gathering needed materials for the session
- Student reviewing work task procedures
- If an issue arises, student tried to solve on their own before asking for help
- Asking for more work when finished

Each behavior was clearly defined and broken down into a rating of excellent (3), satisfactory (2), and poor (1). Each support staff was given role play scenarios to practice scoring for consistency across behaviors and participants.

55 individual graphs were created to show the data of each behavior for each student. Rather than post each of the graphs, the following will summarize the data, while highlighting a few of the graphs.
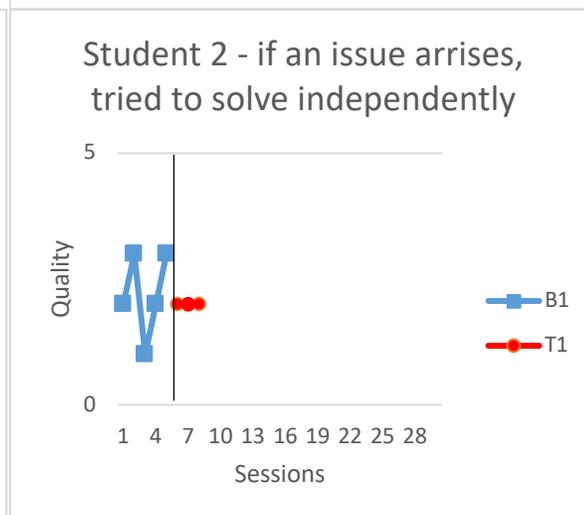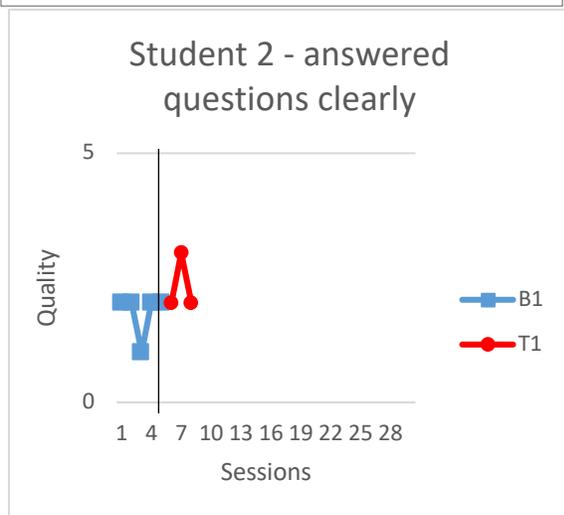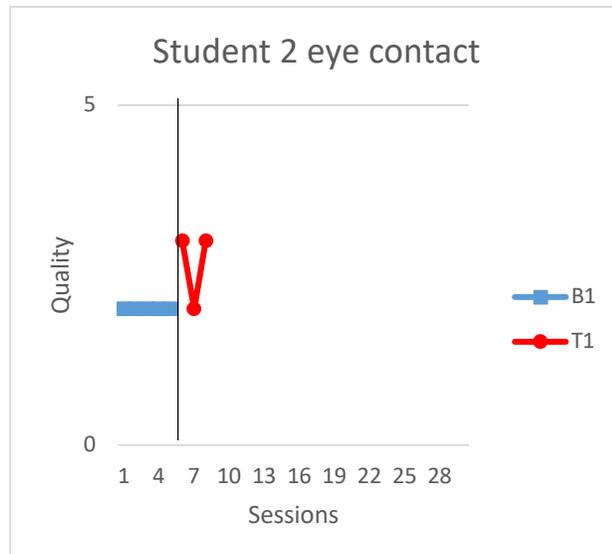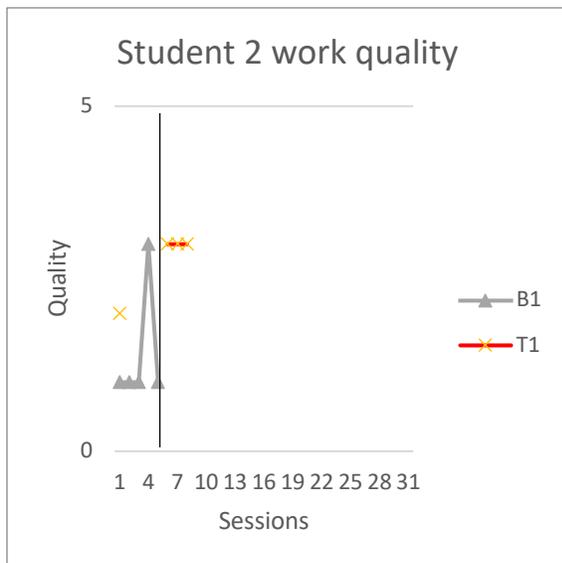
Student 1:
Student 1 is 3rd year male with ASD. His employment setting was an office. Work tasks involved data entry, shredding, and random office projects. Overall work quality, not interrupting others if an issue arises, trying to solve problems independently, and asking for more work when finished showed improvement between baseline and intervention. Student 1 was stable at excellent for eye contact, answering and asking questions, no personal topics, getting assignment, materials and reviewing procedures during baseline and intervention. There was some variability in showing appropriate emotions towards the end of the study.
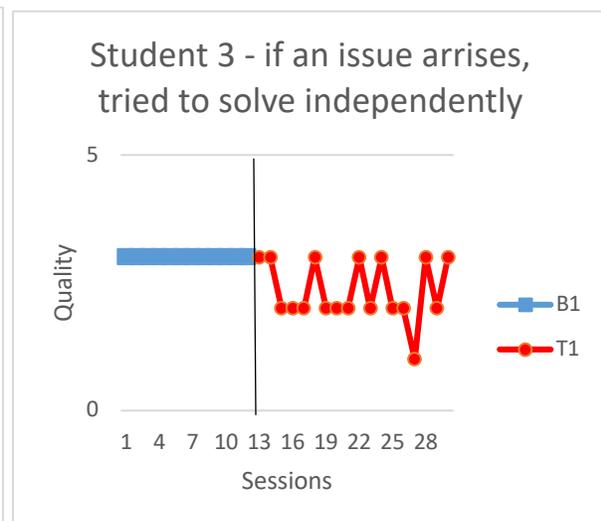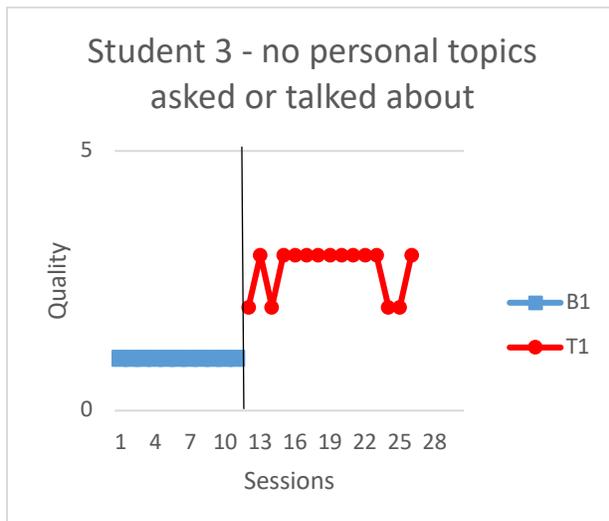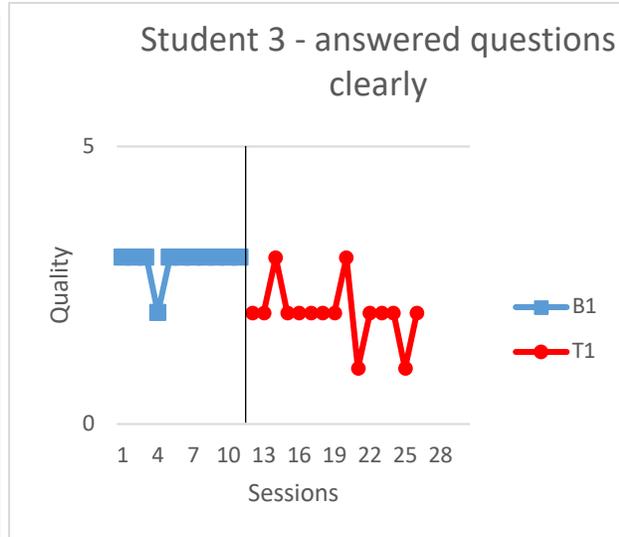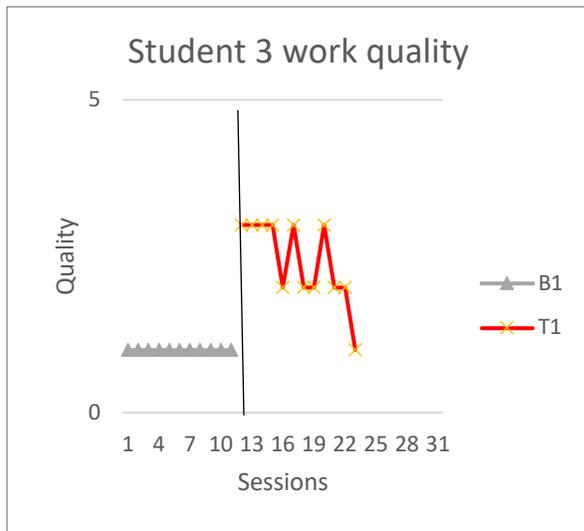
Student 1 work quality

Quality

Sessions

B1
T1

Student 1 - no interrupting others

Qualtiy

Sessions

B1
T1

Student 1 - asked for more work when finished

Quality

Sessions

B1
T1

Student 1 - if an issue arrises, tried to solve independenly

Qualitiy

Sessions

B1
T1
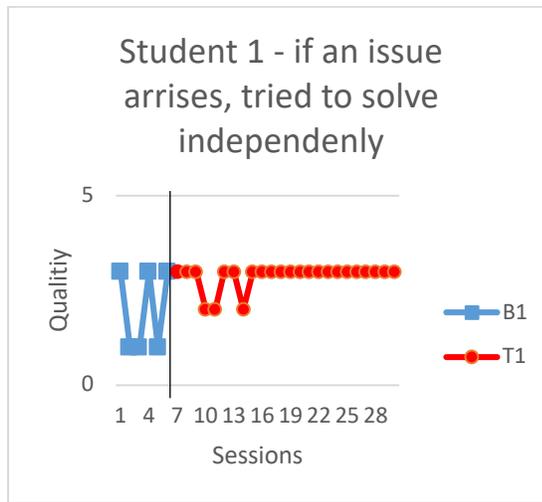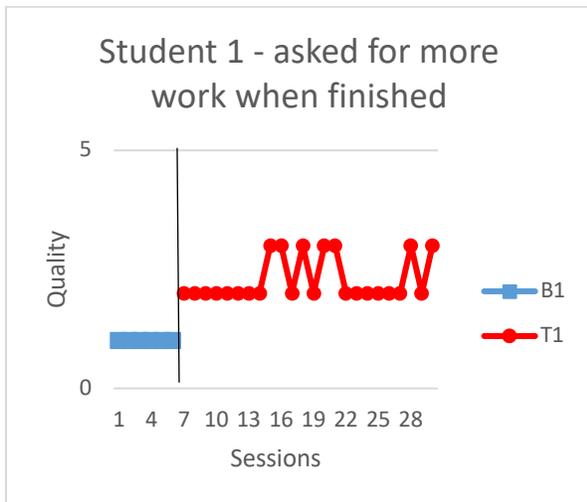
Student 2
Student 1 is a 2nd year male with Down syndrome His employment setting was an office. Work tasks involved data entry, shredding, and random office projects. Overall work quality, eye contact, and answering questions showed improvement between baseline and intervention. Not interrupting others, asking questions, showing appropriate emotions, getting assignments, and reviewing work procedures was stable in baseline and showed variability in intervention (scattered between poor, satisfactory and excellent). Avoiding personal topics was stable before and after. Other behaviors were variable in baseline but become stable in intervention.

Student 2 work quality

Student 2 eye contact

Student 2 - answered questions clearly

**Student 2 - if an issue arrises, tried to solve independently**
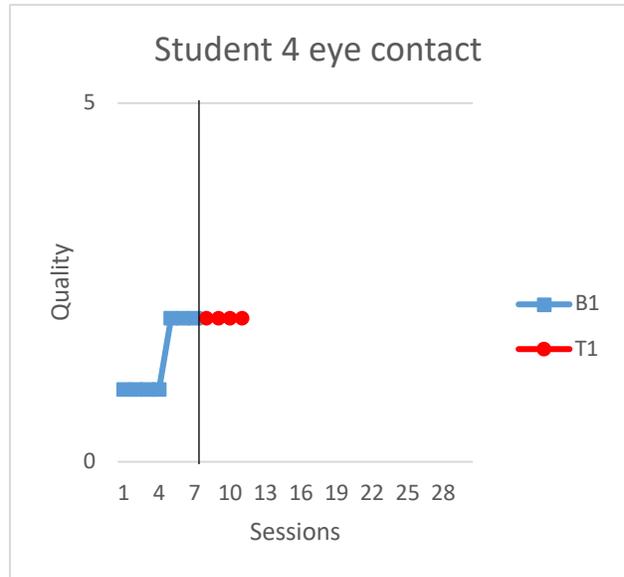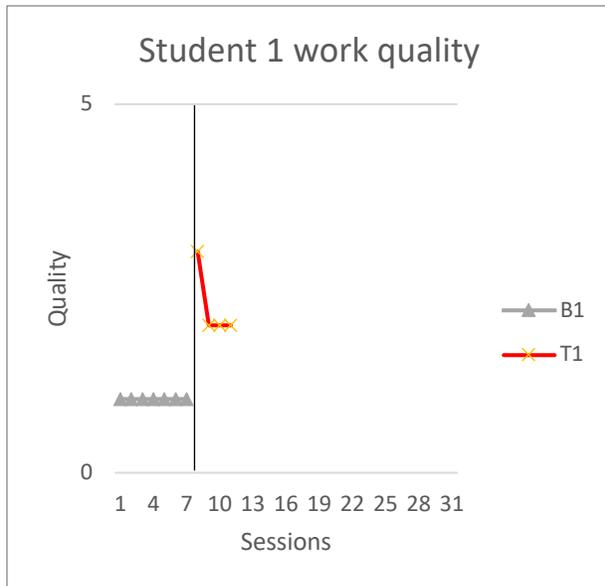
Student 3

Student 3 is 2nd year male with Fragile X syndrome. His employment setting was at the campus gym. His responsibilities included greeting clients, swiping their cards, and taking care of simple questions at the front desk as they arrived to check in. Overall, Student 3 made improvements in work quality and avoiding personal topics. This student also made significant improvement in decreasing his spontaneous language. However, eye contact, answering and asking questions, solving issues independently decreased during intervention. Not interrupting others and showing appropriate emotions, while stable in baseline, were more variable during intervention.

Student 3 work quality

Student 3 - answered questions clearly

Student 3 - no personal topics asked or talked about

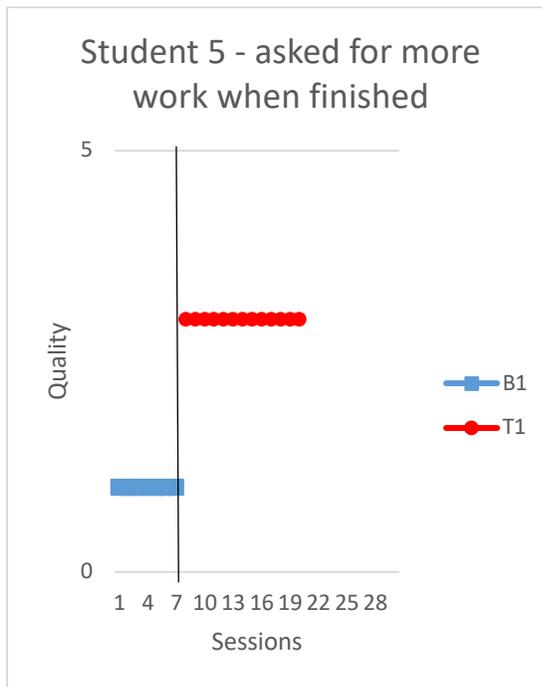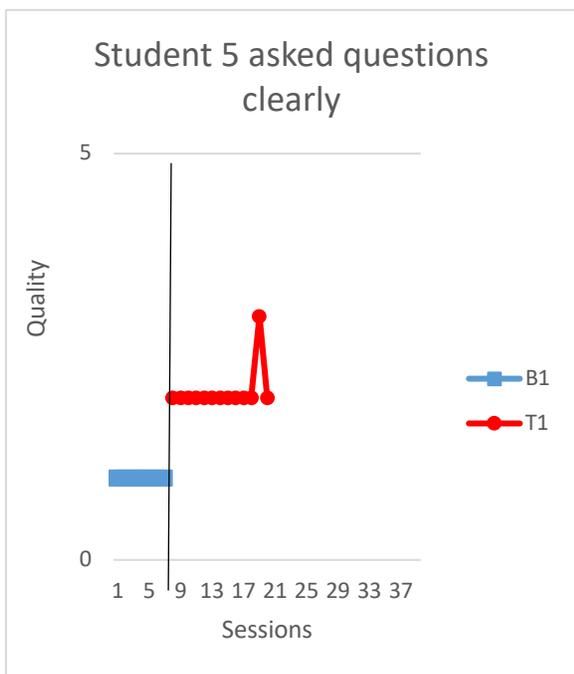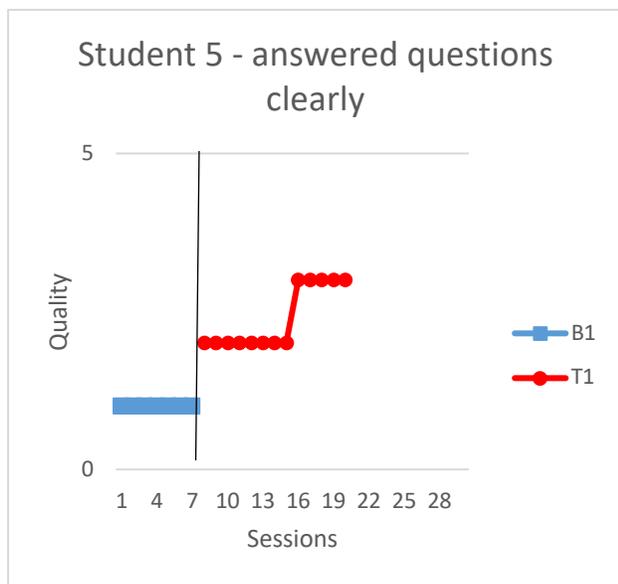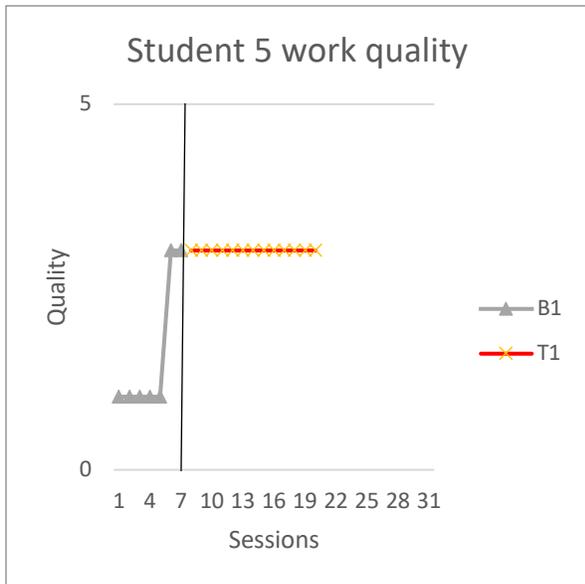Student 3 - if an issue arrises, tried to solve independently

Student 4
Student 4 is 2nd year male with Fragile X syndrome. Work tasks involved data entry, shredding, and random office projects. Overall Student 4 showed an increase in overall work quality, eye contact, appropriate self-regulation and getting assignments between baseline and intervention. Not interrupting others, answering questions, avoiding personal topics, solving issues independently, and asking for more work stayed stable between baseline and intervention.

Asking questions clearly decreased during intervention. Gathering needed materials and asking for help remained variable in baseline and intervention. Lastly, while stable in baseline, reviewing work procedures became variable in intervention.
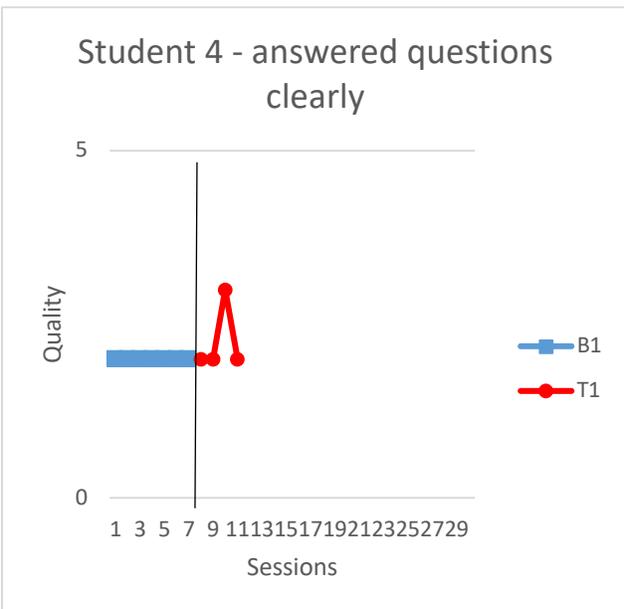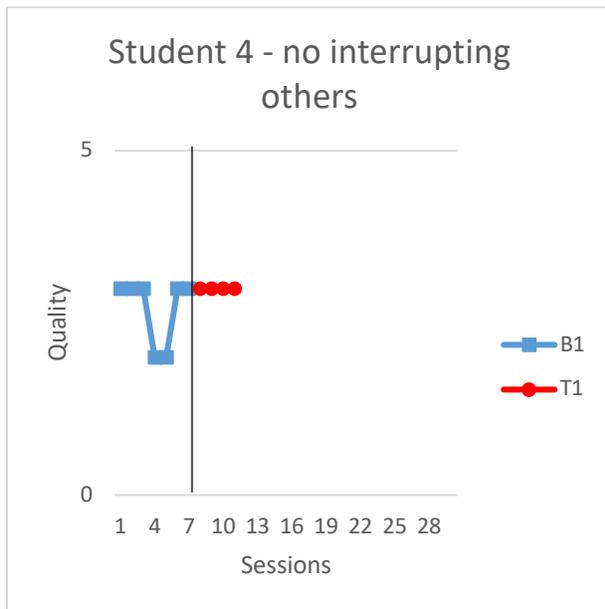
Student 5
Student 5 is a 3rd year student with Down syndrome and selective mutism. Work tasks involved data entry, shredding, and random office projects. Overall, she showed improvement in work quality, answering questions clearly (verbally), asking questions clearly (verbally), and asking for more work between baseline and intervention. Eye contact was variable in both conditions. Not interrupting, avoiding personal topics, showing appropriate emotions, getting assignments, materials, and reviewing procedures remained stable in both conditions. Solving issues independently began to increase during baseline and remained so during intervention.

Student 5 work quality

Student 5 - answered questions clearly

Student 5 asked questions clearly

Student 5 - asked for more work when finished

Summary:

Overall, students experienced the most success between baseline and intervention in the areas of overall work quality, improving eye contact, trying to problem solve on their own before asking for help, and asking for more work when finished with a task. Not interrupting others and asking questions clearly had growth for two of the students. The Life Sherpa app was found to be more effective in the work setting when compared to customer care at the campus gym. Lastly, two students in particular (Student 4 and 5) experienced growth in many of the domains more so than the other three students.

Disability:

When looking at the data (WAI, Brigance, Vineland, and Life Sherpa app) of the intervention group, some preliminary trends might be emerging. Participant disabilities included Down syndrome (n = 2), Fragile X (n = 2) and ASD (n=2).

On the WAI, both participants with Ds and Fragile X made gains in the activity and sociability domains. The participant with ASD made gains in the sociability and emotionality domain.

On the Brigance, participants with Ds made gains in listening and self-concept (job related), participants with Fragile X made gains in listening, self-concept (general), responsibility, and self-concept (job related), and the participant with ASD made gains in responsibility.

On the Vineland, participants with Ds made gains in the interpersonal relations domain, the participants with Fragile X made gains in the expressive language and interpersonal relations domain and the participant with ASD made gains in receptive language, expressive language, and interpersonal relations domain.

While using the Life Sherpa App, participants with Ds made gains in work quality, eye contact, answering questions clearly, solving an issue on their own before asking for help, and asking for more work when finished. Participants with Fragile X made gains in work quality behavior, and the participant with ASD made gains in work quality, not initiating conversations, solving an issue on their own before asking for help, and asking for more work when finished. What is emerging is that activity and sociability, listening, self-concept (job-related) and interpersonal relations skills grew with the Ds and Fragile X participants. Work-related behaviors such as work quality were improved with the Ds and Fragile X participants as well. With only one participant with ASD, further research would be needed to determine trends.

Support Staff
The support staff in this program coach the students with hard skills and soft skills in their employment internships. Following each work site visit, they write up a report on the students' progress. The support staff in this study found reporting via technology to be easier and faster. By tracking the pokes they gave their students to keep working, administrators were able to then ask the support staff about patterns in the pokes, which then led to further training for the support staff. By keeping track of the students' data, an unanticipated benefit was the real-time knowledge gained in evaluating our support staff as well.

Conclusions
Although the small sample size did not allow for any statistically significant analysis, overall the Life Sherpa app showed an increase in productivity, as well as soft skills (measured by the assessments) in the intervention group when compared to the control group. Both students and support staff liked using the app, and expressed a desire to continue using it.

Future research should focus on larger sample sizes as well as evaluating more and different work-related behaviors.