Executive Summary: Final Report
Proving the Effectiveness of the Online *Communication Matrix*
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Www.communicationmatrix.org is an online assessment tool for evaluating the communication skills of children at the earliest stages of communication. It is based on the valid and reliable *Communication Matrix* (Rowland, 1990, 1996, 2004). The Matrix is used around the world to assess expressive communication skills in the earliest communicators. The Matrix is available in seven languages online and in additional languages in PDF format. Thus far over 65,000 assessments have been conducted online and entered into the Matrix database. This grant was funded for the purpose of demonstrating the effectiveness of using the Communication Matrix components to help develop high quality communication-related IEP/IFSP goals.

Participants

Participants were Teachers and SLPs across the nation. After signing consent forms, they were randomly assigned to the experimental or the control condition. From the professionals recruited, 30 experimental participants and 24 control participants provided sufficient data for analysis. The two groups of professional participants had similar characteristics with the exception of the grade level of target students. In the experimental group most target students were in pre-K programs, while in the control group most target students were in K-5 programs. Target students experienced a wide range of diagnoses. The most common were Autism and Developmental Delay/Disability

Methods

Professionals assigned to the Control group provided the current IEP/IFSP for the targeted student. Throughout the school year they were sent surveys to track the progress of their target students on communication-related goals from the current IEP/IFSP. Professionals assigned to the Experimental group provided the current IEP/IFSP, used the full Communication Matrix Suite (the instructional webinar, the assessment, and the Custom Report), provided data on their satisfaction with the Matrix Suite, provided the next IEP/IFSP developed, and then completed periodic progress reports on the target student's attainment of communication-related goals. Participants received incentives in the form of Target gift cards for completing activities over the course of one school year. All study components were approved by the Oregon Health & Science University Institutional Review Board.

Results

Professional Satisfaction with Matrix Suite

Satisfaction with the Matrix components provided by 25 participants in the Experimental group was high, with mean scores of 4-5 (on a 5-point scale) for all components except for item #3, related to the degree to which the Custom Report provides a clear/accurate picture of a student's communication skills. Scores for this item averaged 3.9. The Custom Report underwent some revisions over the course of the project, as we attempted to improve its usefulness to users. Results of the professional satisfaction survey appear below.

For the questions below, please circle the number that indicates the degree to which you agree with each statement. (1 = Strongly Disagree, 5 = Strongly Agree)	Mean Score
1. The instructions for using the *Matrix* are clear.	4.3
2. It was easy to complete the *Matrix* clinical report.	4.4
3. The *Matrix* Custom Report gives a clear and accurate picture of my student's communication skills.	3.9
4. The combination of pre-packaged and self-generated goals/recommendations available through the *Matrix* clinical report made it easy to specify clear and reasonable educational goals for my student.	4.3
5. I would recommend the *Matrix* to other professionals who serve the communication needs of students like mine.	4.5
6. The entire *Matrix Suite* (assessment, results, and custom report) fills an important need in terms of assessment and intervention planning of children with complex communication needs.	4.3

Quality of IEP Goals

We had intended to use the SMART criteria to evaluate the IEP/IFSP goals that we collected. However, we found that these criteria were too easily met and not meaningful in terms of characterizing the high quality that we would like to find in educational goals. Finding no better rating system, we decided to develop our own system to rate the educational goals created by our participants. We created the *Design to Learn IEP Development Guide* to fill the need for a useful way to evaluate IEPs. This new instrument is described, along with reliability and validity data, in Rowland, Quinn and Steiner (2014). It may be downloaded without cost from: http://designtolearn.com/content/educational-resources. We used this instrument to rate IEPs/IFSPs developed by Experimental participants before and after using the Communication Matrix suite.

Ten questions out of the total of 28 included in this instrument were identified as ones that could be scored meaningfully by individuals who had no familiarity with the target student (aside from the information provided in the IEP/IFSP). The items used appear in the table on the next page.

With possible scores of 0, 1 or 2 for each item, the maximum total score for these ten items was 20. Raters (who did know when the IEPs were developed) used this subset

of ten items to score the two IEPs/IFSPs provided by 18 of the experimental participants: one developed before using the Matrix suite and one developed afterwards. The mean score was 12.33 for IEPs developed prior to using the Matrix suite and 14.89 for IEPs developed after using the Matrix suite. The difference in scores was statistically significant.

Items from Design to Learn IEP Development Guide used to score IEPs/IFSPs
NOTE: ITEMS 1-17 ONLY RELATE TO INFORMATION INCLUDED IN GOALS/OBJECTIVES. **Scoring system: 0 = None of the goals have this quality, 1 = Only ONE goal has this quality, 2 = More than one goal has this quality**
Are the goals Focused and Precise?
1. Does each goal have one clear focus, as opposed to several different ones?
2. Can you picture exactly what the student will do (what behaviors the student will use) to achieve each goal?
Will the goals be Measured appropriately?
5. Does each goal include a way of measuring it (e.g., frequency, independence, correctness) that is appropriate and that reflects the most important aspect of the behavior targeted?
6. Does the criterion for achieving each goal (e.g., 3 times a day, independently, as measured once a week) make sense and represent meaningful progress?
7. Will progress be monitored frequently enough that the learning environment/expectations may be adjusted promptly in response to the student's successes or difficulties?
8. Is it clear whose responsibility it is to collect progress data?
Are the goals Functional?
15. Do the behaviors to be learned have real purpose/intent (for instance, saying a word to *ask* for something, rather than merely repeating the sound)?
16. Are the targeted behaviors likely to carry over to other settings and materials outside of the learning context? *Emphasis is on usefulness of the targeted BEHAVIOR outside of the classroom.*
17. Can the goal be implemented by nonprofessionals under natural conditions outside of school? *Emphasis is on the specified strategies for targeting the behavior, NOT the behavior itself.*
Is the Entire IEP of high quality? (Scoring system: No, 1 = Barely, 2 = Yes)
23. Taken together, do the goals have an appropriate breadth; will they make a real difference in the student's life?

Goal Attainment

Goal attainment surveys were sent to participants approximately every 2 months after receiving their latest IEP/IFSP. One survey was included for each goal, with the goal reproduced at the top of the survey. Each communication-related goal/objective was

scored according to the following metric: a) this goal has not been achieved at all; b) this goal has been partially achieved; c) This goal has been completely achieved; d) uncertain.

For each participant, the final status of each goal from the last survey completed was used as the ultimate score for the goal. The mean proportion of goals completely achieved was .06 for the Control group and .22 for the Experimental group. The difference in scores was statistically significant.

Dissemination

Many opportunities were taken to publicize the Communication Matrix Suite and extend awareness of this free service. A total of 32 presentations and 4 articles were completed during the project to disseminate research results and to broaden awareness of the Communication Matrix. The following measures show the degree to which we have increased awareness and interest in our web site and attracted new users to it since the start of this grant on Oct 1, 2011.

New users: 14,818
New assessments completed: 51,105 on 39,294 children
Custom Reports created: 8,737
New web site visitors: 288,433
Countries with highest usage of Matrix around the world:

- United States: 53% of sessions on website, 63% of children assessed
- Mexico: 7% of sessions, 6% of children assessed
- Australia: 5% of sessions, 10% of children assessed
- Chile: 4% of sessions, 10% of children assessed
- United Kingdom: 4% of sessions, 2% of children assessed

Conclusions

This project demonstrated that using the Communication Matrix suite has a beneficial effect on the development of high quality IEP/IFSP goals related to communication. It also showed that students are more likely to attain communication-related goals developed by professionals who have used the Communication Matrix suite than by those who have not used the suite. Since participants had many questions about the path from completing a Matrix assessment to creating educational goals, we sought and received funding for a Steppingstones Implementation project to create a virtual community of practice to address this gap.

Use of the Communication Matrix and the new Community of Practice funded by our current Implementation grant is free. We hope that it will be used by more professionals and family members in the future and that collaboration between parents and professionals will become the norm with regard to the assessment of communication in children with complex communication needs.

IDEAs that Work
Office of Special Education Programs

We would like to thank the many family members, students, and professionals who participated in this research.