A Pilot Study of a Self-Determination Curriculum on Secondary Students

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Abstract

Special educators routinely help students develop their self-determination skills. One way this has been achieved is to provide instruction to the student on how they can lead aspects of their individualized education program (IEP) meeting. A pre-post-post single group design was used in this study to examine if, and to what degree, the implementation of the Choicemaker (Martin et al., 1996) modified self-directed IEP curriculum impacted self-determination levels for nine high school students diagnosed with various disabilities such as specific learning disabilities, other health impairments, and mild intellectual disability. This study addressed students in rural communities who received special education services through a variety of service delivery formats. These students were taught how to lead and participate in their IEP meetings. Two measures of overall and subscale aspects of self-determination were used along with a global teacher rating of student participation. The results conveyed an increase in self-determination levels after students participated in their IEP meetings.

Keywords: student involvement; individualized education program; student-directed planning; self-determination

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Historically, for students with intellectual disabilities, competitive employment, independent living, and access to community activities have been problematic (Wagner, Newman, Cameto, Garza & Levine, 2005). Students with intellectual disability are less likely to be employed, live in more supervised and isolated settings, and participate less in community activities (Wehmeyer & Palmer, 2003). The concept of self-determination has been recognized as being an important contributor to positive post-school outcomes for students with disabilities (Wehmeyer & Palmer, 2003; Wehmeyer & Schwartz, 1997). Self-determination was originally defined as "acting as the primary causal agent in one's life and making choices and decisions regarding one's quality of life free from undue external influence or interference" (Wehmeyer, 1996, p. 22). But more recently it was reconceptualized and re-defined within the construct of causal agency theory. Shogren and her colleagues re-defined self-determination as "... a dispositional characteristic manifested as acting as the causal agent in one's life. Self-determined *people* (i.e., causal agents) act in service to freely chosen goals. Self-determined *actions* function to enable a person to be the causal agent is his or her life" (Shogren, Wehmeyer, Palmer, Forber-Pratt, Little & Lopez, 2015, p. 258).

Literature Review

While researchers have delineated the expected skills and performance one is likely to see in a person who is self-determined (Wehmeyer & Kelcher, 1995), self-determination could be viewed as a larger issue of social justice and the expression of individual rights by virtue of the intersection of behaviors, personal characteristics, goal-oriented actions, self-advocacy, and contextual features such as environments, opportunities, and supports (Shogren, et al., 2015). From this perspective, the idea of teaching self-determination to individuals with disabilities might be seen as an important self-advocacy and social justice issue, for without the skills associated with self-determination, the ability to be a contributing member of a group or society may be limited. Perhaps this was best described by Shogren and Broussard (2011) who interviewed persons with disabilities and found that the participants' perspectives often emphasized larger aspects of rights, autonomy and self-sufficiency. For example, one participant referred to self-determination as being able to live independently and choose whether to get married. Another participant defined self-determination as deciding where to live and work (Shogren & Broussard, 2011). Thus, self-determination can be viewed as an important ability and opportunity to determine the direction that contributes to a personally satisfying life (Field, Sarver & Shaw, 2003).

From a functional standpoint, self-determination is comprised of multiple components or skills such as, "choice making and decision-making skills, problem-solving skills, goal setting and attainment skills, self-management skills, self-advocacy skills, positive perceptions of control and efficacy, and self-knowledge and self-awareness" (Wehmeyer, Agran & Hughes, 2000, p. 59). While these skill sets are important for all students, they are even more important for students with disabilities (Benz, Lindstrom & Yovanoff, 2000). Helping students with disabilities increase their self-determination skills, and actively involving students in planning for their future is considered best practice and a necessary focus of transition services (Field, Martin, Miller, Ward & Wehmeyer, 1998; Shogren, Villarreal, Lang & Seo, 2017).

The positive outcomes associated with the development of self-determination skills are widespread. Student self-determination is one of the key pieces to successful post-school transition (Martin, Marshall, Maxson & Jerman, 1996). Self-determination skills can enhance students' learning experiences and quality of life (Lee, Wehmeyer, Soukup & Palmer, 2010; Reeve & Jang, 2006; Wehmeyer, Sands, Doll & Palmer, 1997). Lee, et al. (2010) found that academic performance was positively impacted by increased self-determination skills. Additionally, self-determination skills can predict positive employment and independent living outcomes as well as quality of life (Benz, Yovanoff & Doren, 1997; Shogren, Wehmeyer, Palmer, Rifenbark & Little, 2015; Wehmeyer & Palmer, 2003; Wehmeyer & Schwartz, 1997, 1998). In addition, students who learn to be self-determined contribute more actively to their education and transition planning (Cavendish & Connor, 2017; Hagner, Kurtz, Clouteir, Arakelian, Brucker & May, 2012; Martin, Van Dycke, Christensen, Greene, Gardner & Lovett, 2006; Mazzotti, Kelley & Coco, 2015) and also experience more postsecondary involvement (Field et al., 2003).

Teachers have stated that self-determination is an important curricular consideration and that their students can benefit from learning these skills (Agran, Snow & Swaner, 1999; Grigal,

Neubert, Mood & Graham, 2003; Mason, Field & Sawilowsky, 2004; Wehmeyer, Agran & Hughes, 2000). Special education teachers are often unsure of how best to teach self-determination skills to their students (Mason et al., 2004; Wehmeyer et al., 2000). Nevertheless, there are multiple ways to teach these skills. Students with specific learning disabilities, other health impairments, and intellectual disability can learn self-determination skills through a variety of instructional strategies (Algozzine, Browder, Karvonen, Test & Wood, 2001; Cobb, Lehmann, Newman-Gonchar & Alwell, 2009; Wood, Fowler, Uphold & Test, 2005). One important aspect of teaching self-determination is to pair direct instruction of the skills within the context of IEP or transition plan development (Hagner, et al., 2012). With direct instruction, students learn specific skills which allow them to identify goals, keep track of their progress, solve problems, monitor their behavior, utilize internal reinforcement, and evaluate their progress. Using these skills within the active involvement of the IEP process gives students more control and more responsibility (i.e., more self-determination).

Teaching self-determination in the IEP process provides an excellent opportunity for IEP student involvement (Algozzine et al., 2001). Several curricula can be used to facilitate instruction and involvement such as the National Gateway to Self-Determination (n.d.) or the Zarrow Center for Learning Enrichment (n.d.). For students with disabilities, IEP development provides another chance to practice ownership of their learning (Chan, Graham-Day, Ressa, Peters & Konrad, 2014). However, “despite national interest in promoting self-determination and active involvement in IEP planning, available data suggest that many students have little involvement in these activities” (Agran & Hughes, 2008, p. 69). These authors found that junior and senior high school students often did not speak during their IEP meetings. Most students were not taught the skills to actively participate or lead their IEP meetings. Close to half of the students did not attend their IEP meetings and most had no understanding of the IEP process. These findings are consistent with Martin et al. (2006) who observed 130 IEP meetings and found that students with disabilities talked less than 6% of the time at their meeting while special education teachers talked approximately 48% of the time. It was also noted that students did not have a leadership role in their meeting. This is in direct conflict with IDEA, which mandates that students are to be active participants in the creation of their IEP (IDEA, 2004). These findings are disappointing because IEP meetings provide an excellent opportunity for students to practice self-determination skills. It is crucial that students learn these skills while in school to become better self-advocates and to experience a higher quality of life.

Student involvement in the IEP process positively impacts self-determination levels. Test, Mason, Hughes, Konrad, Neale and Wood (2004) conducted a review of literature focused on increasing students’ involvement in their IEPs and found that one way to improve self-determination skills is to involve students in IEP planning. Simply attending an IEP, however, does not significantly impact self-determination (Shogren, Wehmeyer, Palmer, Soukup, Little, Garner & Lawrence, 2007). When students take leadership in their IEP meetings, self-determination is positively impacted. Williams-Diehm, Wehmeyer, Palmer, Soukup and Garner, (2008) stated “the relationship between self-determination and student involvement is, likely, reciprocal; enhanced student involvement and greater student involvement would, presumably, lead to enhanced self-determination” (p. 35).

Students should also participate in the larger IEP process. This can increase their ability to select and express their IEP goals (Cross, Cooke, Wood & Test, 1999; Snyder & Shapiro, 1997), help educate others about their disabilities and identify appropriate accommodations (Danneker & Bottge, 2009), as well as help draft their own IEP (Konrad & Test, 2004). Procedures have been identified to help prompt students to participate at their meetings (Hawbaker, 2007; Mason, McGahee-Kovac, & Johnson, 2004), however research indicates the real impact on self-determination comes with leading the IEP meeting (Mason, McGahee-Kovac, Johnson, & Stillerman, 2002; Shogren et al., 2007).

Just being at the IEP meeting does not necessarily increase self-determination. Research has shown that opportunities to exhibit self-determination skills are necessary to increase self-determination levels (Hughes, Cosgriff, Agran & Washington, 2013; Shogren, Plotner, Palmer, Wehmeyer & Paek, 2014). The idea of opportunities is inherent in the Shogren, et al., 2015 causal agency theoretical perspective of self-determination, but at a more practical level, it is necessary for good instruction and mastery development. Further, opportunities for self-determination align with components of positive psychology and can serve to enhance feelings of capability and competence, self-worth, and fulfillment in life.

While the student-led IEP process can promote participation in education and transition planning, the work of Seong, Wehmeyer, Palmer and Little (2015) stands out as an example of how specific instruction in skill development combined with opportunities impacts self-determination. These authors found that using the *Self-Directed IEP* curriculum had a positive impact on students' levels of self-determination and increased knowledge of the transition process after using it in school settings for a period of about one year. Teacher notations suggested that self-determination skill opportunities increased for these students.

This study serves to extend Seong (2015) and her colleagues' work. While many studies have examined self-determination in students who are in urban or suburban schools, this study specifically addressed students in rural communities and in a variety of service delivery formats typical of those communities. Further, this study used specific measures of student skill development and teacher perception ratings in conjunction with overall and subscale SDS scores to determine the impact of the work. The purpose of this study was to examine if, and to what degree, the implementation of the modified Self-Directed IEP curriculum affected the self-determination levels (as defined by Wehmeyer, Agran & Hughes, 2000), specific skill development, and teacher perceptions of self-determination of high school students with disabilities in a rural central plains state.

Method

Participants

The participants for this study were high school students with specific learning disabilities, other health impairments, and intellectual disability in a rural central plains state. A description of the student sample is presented below.

Student sample. Nine high school students from five different high schools in a rural central plains state participated in this study. Student participants had specific learning disabilities, other

health impairments, and mild intellectual disability. Student participants were on an IEP and between the ages of 15 to 21. Teachers recruited the students by first contacting parents to explain the study. If parents were interested, the teachers met with students to explain the study and obtain assent. Consent forms were mailed or sent home for parents to sign and return prior to the beginning of the study.

The student demographic information is shown in Table 1. All students lived in communities of 2,500 to 40,000 residents and all spoke English as their primary language. Two students (22.2%) required extensive services and supports from their school team, while the remaining seven (77.8%) required limited supports. It is important to note that this designation of level of support was provided by the primary teacher and does not necessarily correlate to more typical terminology used by the American Association on Intellectual and Developmental Disabilities (AAIDD) or through the Supports Intensity Scale (SIS) terms. For this study, extensive services and supports were defined as one-on-one assistance and supervision for the majority of the day. Limited supports were defined as less than one-on-one supports throughout the day. This included drop-in services to a resource room or a similar support situation.

Of the nine students, five were male and four were female. One student identified as Native American and eight students identified as white. The students had disability labels across four categories, including intellectual disability, visual impairment, emotional disturbance and Autism. All but three students received most of their instruction in the general education classroom with a variety of pullout, resource room, or community-based learning experiences offered.

Design

This study used a pre-post-post single group design. The phases of the study included a pre-instruction assessment, skill instruction in leading IEPs, a post-instruction assessment, participation in an IEP, and then post-IEP assessment of self-determination skills. While there was no comparison group in this design, the comparisons of pre-instruction, post-instruction, and post-IEP results can be used to determine if there are effects of instruction and of IEP participation when using specific non-parametric statistical tests.

Instruments/Measures

The specific focus for this study was whether instruction of students with disabilities in a self-directed IEP curriculum, and subsequent participation in leading an IEP meeting, would positively impact self-determination scores. The instruments chosen measured teacher perceptions of self-determination and IEP involvement, and direct assessment of student self-determination.

While there are many options for instructional curricula for student IEP involvement, the independent variable in this study was the *Self-Directed IEP* (Martin, Marshall, Maxson & Jerman, 1997) and was selected because it addresses important components in the IEP process such as starting and ending meetings, expressing goals, and asking for feedback (Martin, et al., 1997). Further, there is a body of evidence that this curriculum can lead to improvements in IEP participation, self-determination, transition goal setting and empowerment (Allen, Smith, Test,

Flowers & Wood, 2001; Agran & Hughes 2008; Arnt, Konrad & Test, 2006; Kelley, Bartholomew & Test, 2013; Snyder & Shapiro, 1997).

Finally, studies of the *Self-Directed IEP* materials have been used in conjunction with two variables of interest, the *Choicemaker* curriculum assessment and the *Arc Self-Determination Scale* (SDS). Using these measurement variables allowed the researchers to compare study results more directly to previous research.

IEP Participation. The researchers were interested in actual skill demonstration and opportunities for self-directed IEPs. A two-part instrument was utilized to measure these features. The first part of the instrument was Part I: Section 2 of the *ChoiceMaker Self-Directed IEP Assessment Tool* (Martin et al., 1996). With this tool, teachers rated 11 questions on students' demonstration of IEP leadership skills. This included measures of students' reporting of interests, skills, and goals, along with the level of opportunity offered for students to perform these skills. The second portion of the survey was comprised of one Likert-type question, which was developed for this study where teachers assessed the overall level of student participation in the IEP process, ranging from 1 (*no involvement)* to 6 (*high involvement with student-led IEP meeting)*.

Self-Determination. Researchers selected *The Arc's Self-Determination Scale* (Wehmeyer & Kelchner, 1995) as a global measure of self-determination. The *Arc's Self-Determination Scale* is a 72-item student self-report measure designed for use by adolescents with mild intellectual and learning disabilities (Wehmeyer & Kelchner, 1995). The scale assesses the overall level of self-determination, along with the four essential characteristics of self-determination; autonomy, self-regulated behavior, psychological empowerment, and self-realization. The *Arc's Self-Determination Scale* was normed on students with cognitive disabilities and has adequate reliability (Cronbach's $\alpha = .90$) and adequate construct validity based on multiple means (Wehmeyer & Kelcher, 1995). The *Arc's Self-Determination Scale* was administered to each student at the beginning of the study (before curriculum implementation), in the middle of the study (following curriculum completion) and at the end of the study (following the IEP meeting/transition meeting). *The Arc's Self-Determination Scale* was administered directly by the teachers and scored by researchers.

Procedures

The University Institutional Review Board provided approval for this study. The recruitment process began with the first author presenting the study to special education professionals (i.e., special education teachers and rural special education unit directors) at their respective statewide meetings. Additionally, all authors followed-up with any teachers who expressed interest or with any leads that were provided by special education unit directors.

After teacher participants were recruited, the following 6-step process was followed: 1) researchers taught the modified Self-Directed IEP curriculum (modified from the *Choicemaker Curriculum* materials, Martin et al., 1996) and assessment protocol to the selected teachers; 2) teachers conducted pre-instruction self-determination assessments with the targeted students; 3) teachers implemented the Self-Directed IEP curriculum; 4) teachers conducted post-instruction self-determination assessments; and 5) students participated in their own IEP or transition team

meeting using the Student-Led IEP curriculum skills; 6) Teachers administered the final self-determination assessments. This process took between three and six months.

Teacher Training and Instructional Materials. The modified Self-Directed IEP curriculum training consisted of a 15-hour training conducted over two or three days. Because of the location of the teachers and schools, and the timing of final selections, three separate teacher trainings were held. Each training session was divided into three sections: basic information about self-determination; implementation of the *ChoiceMaker* Self-Directed IEP curriculum; and administration techniques of the student assessment instruments. Teachers were provided with a packet of information containing curriculum and assessment material, consent and assent forms for student participants, study protocol and instructions, contact information for the research team, and additional articles focused on self-determination concepts and research. Teachers were also given the opportunity to obtain graduate credit for their participation in the training and curriculum instruction.

Assessment and Instruction Procedures. After the training was completed and the teachers returned to their schools, the teachers recruited student participants and obtained parent/guardian consent and student assent. At this point, the teacher and the research team set a timeline for steps 2-6 in the study process. Each implementation timeline varied to avoid long breaks between the curriculum instruction and IEP meeting. As part of the study protocol and the individualized teacher timeline, the teachers were instructed to send completed demographic forms and questionnaires/assessment protocols to the researchers. The researchers monitored the timelines and when necessary, reminded the teachers about items that had not been submitted to the research team.

Following the development of the process timeline, the teachers completed the pre-instruction assessments with student participants. Teachers then began the curriculum instruction step of the process. Teachers utilized the Student-Directed IEP curriculum as the study intervention with the permission of the primary author of the curriculum. The Student-Directed IEP curriculum was a modified version of the *ChoiceMaker: Self-Directed IEP* curriculum. The curriculum as originally designed provided instruction in specific skills for leading IEPs, such as stating the purpose of the meeting, introducing participants, and reviewing prior IEP goals. The curriculum was modified by condensing 11 lessons into 9 lessons. Teachers scheduled instructional time for delivering the curriculum in approximately 50 minute sessions. To accommodate these schedules, lessons 1 and 2 and lessons 9 and 10 were combined into single lessons. Further, the materials were modified by enlarging the print for students who had visual impairments. Each teacher implemented the nine lessons with their students over a five to six-week period. While designed for group instruction, the lessons were delivered in either small groups or with individual students. At the completion of all lessons, the teachers were directed to conduct the post-instruction assessment of student participants.

Following the post-instruction step, teachers then scheduled an IEP meeting to allow each student to demonstrate the skills learned during the *ChoiceMaker: Self-Directed IEP* curriculum instruction. These were naturally occurring IEP meetings and involved the entire IEP team. The scheduled IEP meetings were held from one to six weeks following instruction. The final

administration of the *IEP Participation Survey* and the *Arc's Self-determination Scale* was completed following the IEP meeting.

Analytic Procedures. The Friedman's Two-Way Analysis of Variance by Ranks procedure was used to analyze the Arc SDS scores. This test produced Median Interquartile Range (IQR) scores to reflect the mean ranks between each intervention point, indicating how the groups differ. Friedman's analyses were appropriate because of the ability to handle varying numbers of participants across the three data collection points. A Friedman's Two-Way Analysis of Variance by Ranks test was conducted to investigate the impact of the Choice Maker curriculum on student's level of self-determination, total scores and all sub score data were investigated. A post hoc analysis with Wilcoxon signed-rank tests was conducted to determine where the differences were present in the intervention sequence. Finally, the overall ratings of IEP participation were analyzed with the Friedman's Two-Way Analysis of Variance by Ranks test.

Results

The purpose of this study was to examine if, and to what degree, the implementation of the modified Self-Directed IEP curriculum impacted self-determination levels in rural high school students with disabilities. The results listed in this section are based on an overall n of 9, however due to issues with inventory completion in both the pre-instruction and post-instruction phases, the n value for each calculation listed in Table 3 is provided. Overall, this study had complete data from all three phases for five participants for the Arc's Self-Determination Scale (for detailed individual score data see Table 2). Table 3 shows the Arc's Self-Determination Scale Median IQR scores and ranges for the students at each of three points. A significant difference was found in the total Arc's Self-determination scale scores, $\chi^2(2) = 8.316$, $p = 0.016$. Post hoc analysis with the Wilcoxon signed-rank test showed there was no significant difference between the pre-instruction and post-instruction scores ($Z = -0.368$, $p = 0.713$). There were significant differences, however, between the pre-instruction and post-IEP scores ($Z = -2.207$, $p = .027$), and between post-instruction and post-IEP scores ($Z = -2.023$, $p = 0.043$).

Analyses of the Arc's subscale scores showed a significant difference in the Autonomy Subscale scores of the Arc's Self-determination scale pre-post-post scores, $\chi^2(2) = 6.000$, $p = 0.050$. Post hoc analysis with Wilcoxon signed-rank tests showed no significant differences between the pre-instruction and post-instruction ($Z = -1.761$, $p = 0.078$), or between post-instruction and post-IEP ($Z = -1.761$, $p = 0.078$). There was a significant difference, however, between pre-instruction and post-IEP ($Z = -2.201$, $p = .028$). Subsequent analyses of the self-regulation, empowerment and self-realization scores yielded no significant differences across or between any of the study phases.

Table 4 shows the pre-instruction, post-instruction and post-IEP meeting scores on the Choice Maker assessment and teacher ratings of students' IEP participation. A significant difference was found in the total Choice Maker pre-instruction, post-instruction and post-IEP participation scores, $\chi^2(2) = 6.000$, $p = 0.050$. Post hoc analyses conducted with a Wilcoxon signed-rank test showed no significant differences between the pre-instruction and post-instruction ($Z = -1.826$, $p = 0.068$) or between post-instruction and post-IEP ($Z = -0.365$, $p = 0.715$). There was a

significant increase, however, in the total Choice Maker Self-determination score between pre-instruction and post-IEP (Z = -2.668, p = 0.008).

Furthermore, there was a significant difference in the skills subscale of the Choice Maker pre-instruction, post-instruction, and post-IEP scores, $\chi^2(2) = 7.600$, p = 0.022. Post hoc analysis with Wilcoxon signed-rank tests yielded no significant differences between the pre-instruction and post-instruction (Z = -1.841, p = 0.066) or between post-instruction and post-IEP (Z = -1.604, p = 0.109). There was, however, a significant increase in the total Choice Maker Skill subscale scores between pre-instruction and post-IEP (Z = -2.668, p = 0.008). Subsequent analyses of the opportunity subscale scores yielded no significant differences across or between scores.

A significant difference in the overall rating of IEP participation scores at pre-instruction, post-instruction and post-IEP were found, $\chi^2(2) = 7.000$, p = 0.030. Post hoc analysis with Wilcoxon signed-rank tests was conducted showing no significant differences between the pre-instruction and post-instruction (Z = -1.604, p = 0.109) or between post-instruction and post-IEP (Z = -1.633, p = 0.102). There was, however, a significant increase in scores between pre-instruction and post-IEP (Z = -2.684, p = 0.007).

Discussion

The purpose of this study was to examine if, and to what degree, the implementation of the modified self-directed IEP curriculum impacted self-determination levels for high school students with disabilities. The large amount of research and attention to self-determination and the accompanying components indicates that these skills for participating and leading IEPs are critical for progress for transition-age students and for young adults with disabilities (Martin et al., 1996). In this study, the authors used a modified version of the *ChoiceMaker* curriculum (Martin et al., 1996), specifically the Student-Led IEP section. Teachers were trained to deliver the curriculum to high school students with disabilities, while measuring their self-determination prior to instruction, immediately after instruction and then immediately after participating in an IEP meeting. Two measures of overall and subscale aspects of self-determination were used, and a global teacher rating of student participation were obtained on the students.

Results suggest that overall the significant changes occurred in *Arc's Self-Determination Scale* scores between pre-instruction and post-IEP phases, and between post-instruction and post-IEP phases. The only Arc's subscale which produced statistically significant results was in the Autonomy subscale, with the difference between the pre-instruction and post-IEP phases. The *ChoiceMaker* overall assessment scores yielded a significant increase in self-determination between pre-instruction and post-IEP. The Skills subscale scores increased significantly between pre-instruction and post-IEP. Finally, the teacher ratings of student participation in the IEP once again showed a significant increase between the pre-instruction and post-IEP phases.

In general, these results suggest that global measures of self-determination as measured by the overall *Arc's Self-Determination Scale*, the overall *ChoiceMaker* assessment, and overall teacher ratings of IEP participation increase primarily after the students engage in actual IEP meetings. There were no significant differences in scores between the initiation of the study and the end of classroom training phase. These results appear to verify previous research that suggests that

opportunities to exhibit self-determination and engagement at the leadership level positively impacts self-determination (Mason, McGahee-Kovac, Johnson, & Stillerman, 2002; Shogren et al., 2007). This seems to suggest that teachers need to not only teach the skills, but they need to give students opportunities for participation and have them provide leadership. The IEP process offers multiple opportunities for this to occur, and the capstone is the IEP meeting itself.

Limitations. This study has several limitations that influence the ability to generalize these results to larger populations. First, there were very small numbers of teachers, and subsequently students with disabilities who participated in the study. Due to the sample size, the results are not as powerful or as generalizable. Other studies, such as Allen et al., (2001) and Shogren et al., (2007) used much larger samples and thus their studies yield more power regarding the results.

Second, there were data collection problems that resulted in varying numbers of participant scores being available for analyses. There were communication difficulties with some teachers that impacted the collection of pieces of data at different periods of time during the study. The lack of complete data for this study required the use of non-parametric statistics that may not have the strength or controls necessary for more rigorous examinations of effect. In addition, the Wilcoxon signed ranks test which were used for post-hoc analyses, may be too liberal. At times the Bonferroni adjustment is used to decrease the *p* value for which post-hoc analyses are determined to be significant. The authors, however, thought the reduced p value level of $p <= 0.017$ was substantially lower than typically expected in educational research. The use of $p <= 0.05$ seemed in line with most studies reviewed. Thus, while the results appear to be statistically significant, the strength or power of the results (related again to small numbers of participants) may not be widely applicable to similar participants.

Student and teacher participants in this study were not randomly selected, nor were there control groups used for comparisons. The authors believe that the teachers were likely motivated and pre-disposed to being involved in the study due to their interest in assuring that their students gained self-determination skills. A large participant sample, random selection of participants, and use of control groups would have added greater rigor to the study.

Finally, the issue of fidelity needs to be addressed. Although curriculum monitoring was completed, the evidence of missing data emphasizes the complexity of a multistage intervention and data collection procedure. This highlights that the limitation likely lies on teachers being able to complete the entire research process rather than incorrect implementation of curriculum.

Future Considerations. There is no question that self-determination is an important and viable component of school, post-school transitions, and adult success for youth and young adults with disabilities. While self-determination is a large concept with linked components and features, being able to participate in goal setting and program planning activities such as IEPs is one important activity that can be used to develop person-centered plans that are directed by individuals with disabilities. This study adds to the literature by showing that a relatively short duration and straightforward instruction processes for teaching IEP leadership skills to students with disabilities can influence their participation levels in IEPs and affect some measures of self-determination.

Future research should expand upon this work by increasing the sample pool, by using students from a wider range of disability categories, and by using other more refined measures of self-determination. While the results here seem to indicate both statistical significance (by virtue of the analyses of global self-determination measurement data) and clinical significance (by virtue of teacher overall ratings of IEP participation), more work should be done on the durability of these effects. Additionally, a comparison of whether students who participate in the IEP process without direct instruction also see gains. This would help to better understand if it is the participation, direct instruction, or both that is making an impact on students' self-determination. Measurements of the lasting effects of the instruction and IEP participation at longer periods after the IEP meeting, and in subsequent IEP meetings, should be examined. Also, student perceptions of their leadership and self-determination might add valuable information as to the essential features of the curriculum and meeting participation that might have impacted the results.

Table 1
Student participant demographics

Variable	n	%
Gender		
Male	5	55.6
Female	4	44.4
Age		
15	2	22.2
16	2	22.2
17	2	22.2
18	1	11.1
19	1	11.1
20	1	11.1
Primary Disability		
Autism	1	11.1
Intellectual Disability	5	55.6
Visual Impairment	2	22.2
Emotional Disturbance	1	11.1
Educational Setting		
Consultative/Direct	2	22.2
General education with pullout	4	44.4
Community-based	2	22.2
Self-contained class	1	11.1
Level of Support		
Limited	7	77.8
Extensive	2	22.2

Table 2
Arc self-determination individual student score

Student	Total Arc Score	Autonomy Subscale	Self-regulation Subscale	Empowerment Subscale	Self-Realization Subscale
Student 1					
Pre	73	75	43	81	93
Post	-	-	-	-	-
Post	82	91	33	100	80
Student 2					
Pre	59	49	52	100	87
Post	65	55	62	100	93
Post	66	55	71	100	93
Student 3					
Pre	62	56	62	81	80
Post	-	-	-	-	-
Post	54	52	33	62	87
Student 4					
Pre	55	44	95	62	67
Post	61	51	95	81	60
Post	65	54	95	88	67
Student 5					
Pre	-	-	-	-	-
Post	-	-	-	-	-
Post	65	52	90	94	80
Student 6					
Pre	-	-	-	-	-
Post	-	-	-	-	-
Post	77	80	57	88	73
Student 7					
Pre	-	-	-	-	-
Post	-	-	-	-	-
Post	62	61	43	100	53
Student 8					
Pre	47	42	57	62	53
Post	52	52	38	56	67
Post	54	49	62	69	60
Student 9					
Pre	64	50	76	94	100
Post	64	57	48	94	93
Post	72	68	57	100	93

Table 3
Students' Arc Self-Determination Scale Median IQR scores.

Arc score	Pre-instruction Median (IQR) n=6	Post instruction Median (IQR) n=5	Post IEP meeting Median (IQR) n=9
Total Arc Score	60.5 (53 to 66.25)*	61.0 (53 to 64.50)	66.0 (63.5 to 74.5)*
Autonomy Subscale	49.0 (43 to 53)*	52.0 (51.50 to 56)	55.0 (51.5 to 67.5)*
Self-regulation Subscale	59.5 (49.75 to 80.75)	48.0 (35.5 to 78.5)	57.0 (43 to 80.5)
Empowerment Subscale	81.0 (59.0 to 97.0)	81.0 (62.0 to 95.5)	94.0 (84.50 to 100.0)
Self-Realization Subscale	83.5 (63.5 to 94.75)	87.0 (63.5 to 93.0)	80.00 (63.5 to 90.0)

*p =< 0.05

Table 4
ChoiceMaker Individual Student Score

Student	Total Skills/Opp Score	Skills Subscale	Opportunity Subscale	Rating of Student IEP Participation
Student 1				
Pre	29	8	21	1
Post	-	-	-	-
Post	71	30	41	3
Student 2				
Pre	20	10	10	1
Post	-	-	-	-
Post	86	42	44	5
Student 3				
Pre	4	0	4	1
Post	42	15	27	8
Post	46	17	29	12
Student 4				
Pre	25	7	18	2
Post	56	23	33	2
Post	76	40	36	6
Student 5				
Pre	33	0	33	1
Post	-	-	-	-
Post	40	7	33	2
Student 6				
Pre	38	5	33	2
Post	-	-	-	-
Post	47	14	33	3
Student 7				
Pre	42	5	37	2
Post	68	26	42	3
Post	65	26	39	3
Student 8				
Pre	57	13	44	2
Post	73	29	44	4
Post	71	30	41	5
Student 9				
Pre	25	13	12	1
Post	-	-	-	-
Post	80	36	44	5

Table 5
Choice Maker Assessment Results and Teacher Ratings of Students' IEP Participation.

Choice Maker Score	Pre-Instruction Median (IQR) n=9	Post-Instruction Median (IQR) n=4	Post IEP Meeting Median (IQR) n=9
Total Score	29.0 (22.5 to 40.0)*	63.0 (45.5 to 72.25)	71.0 (46.5 to 78.0)*
Skills subscale	7.0 (2.5 to 11.5)*	24.5 (17.0 to 28.25)	30.0 (15.5 to 38.0)*
Opportunity subscale	21.0 (11.0 to 35.0)	38.5 (28.5 to 44.0)	39.0 (33.0 to 42.5)
Rating of Students' IEP Participation	1.0 (1.0 to 2.0)*	3.5 (2.25 to 7.0)	5.0 (3.0 to 5.5)*

*$p < 0.05$

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