OPEN ACCESS Freely available online

IJSSAI
International Journal of Social Sciences and Artistic Innovations

ISSN 2737-5293
Issue 1, Volume 4
https://www.iikii.com.sg/journal/IJSSAI
International Journal of Social Sciences and Artistic Innovations

Article

Evaluation of a Model of Transition-Related Instruction to Enhance Self-Directed Career Development of Students with Intellectual and Developmental Disabilities

Yu-Chi Chou

Department of Special Education, Chung Yuan Christian University, Taoyuan 320314, Taiwan;
yuchichou@cycu.edu.tw; Tel.: +886-3-265-6716

Received: Jan 23, 2024; **Revised:** Feb 22, 2024; **Accepted:** Feb 29, 2024; **Published:** Mar 19, 2024

Abstract: This study was conducted to investigate the effectiveness of a transition-related instructional model (TRIO) for students with intellectual and developmental disabilities (IDD). The model promoted self-directed problem-solving concerning transition-related goals and career development. The TRIO model contained three instructional phases for problem-solving. Throughout the three phases, three essential elements were determined in the transition curriculum for the self-directed learning process, including transition-specific curriculum, self-determination instructions, and the circle of support. 79 junior high school students participated in this study doing group assignments. They were split into the experimental group (n = 36) with the TRIO instruction and the control group (n = 43). Scores on the *Career Planning and Development Questionnaire* before and after the intervention were analyzed. The results indicated that the experimental group showed significantly higher scores than the control group on the overall career competency and each sub-domain, and the patterns of score change were different between the experimental and control groups when applying the hierarchical linear model (HLM).

Keywords: Career development, Intellectual and developmental disabilities, Problem-solving, Self-directed learning, Transition

1. Introduction

Article 27 of the United Nations Convention on the Rights of Persons with Disabilities (CRPD) supports the right of individuals with intellectual and developmental disabilities (IDD) to work on an equal basis with others in open, inclusive, and accessible environments. It reflects the importance of providing educational opportunities for individuals with disabilities to develop work-related knowledge and skills to work in inclusive environments. Meanwhile, it is also critical that transition training and career development must not be put off until late in secondary education (e.g., high school). They must be started early in junior high or early middle school. In this sense, before students with disabilities advance to high school, they need to be prepared to participate in transition planning and goal setting actively related to post-secondary life and career. Therefore, an instructional model is necessary to support a self-directed problem-solving process from career explore, and career orientation, to career preparation.

Students with intellectual and developmental disabilities have substantial challenges in intellectual and cognitive functioning as well as in adaptive behavior as expressed in conceptual, social, and practical adaptive skills. For better social inclusion, interpersonal relationships, and quality of life of individuals with IDD, career design focusing on individual strengths, environmental supports, and elements of self-determination are required (Almalky, 2020; Damianidou et al., 2019; Dean et al., 2019; Wehman et al., 2018). Morningstar and researchers (2012) indicated the importance of incorporating self-regulated learning, student-initiated goals, and self-directed learning plans in preparing all students with or without IDD for better postsecondary outcomes. The critical elements of the career-related curriculum have been validated for social inclusion and engagement, goal-directed problem-solving, family involvement, natural support, and the elements of self-determination (Carter et al., 2011; Damianidou et al., 2018; Shogren & Plotner, 2012). In addition, Youth Transition Demonstration projects are executed for beneficiaries aged 14–25 years old showing positive effects on their increased employment rates. Important intervention components were identified for providing individualized work-based experiences and supports, teaching self-sufficiency skills, involving family members, and promoting service linkages (Fraker et al, 2018).

For a career development program, the *Self-Determined Career Design Model* was designed for adults with IDD to provide higher self-determination and better employment outcomes (Dean et al., 2019). The study results indicated the critical features of individuals' strengths and interests included community support and strategies to support self-determination. other elements such

as educational assertive technology were proposed by Lee et al. (2011) who used a computer-based reading program for student-directed transition planning for middle school students with IDD. Improvements in transition-related knowledge were observed in the program with high outcome expectancy and self-determination. Another study supported the positive effect of using an online transition planning program (Better Outcomes & Successful Transitions for Autism; BOOST-A^{TM}) for adolescents on the autism spectrum (Hatfield et al., 2017). The online transition planning program is structured based on self-determination, strengths-based, and technology-based approaches as well as considerations of autism-specific needs. In that program, improvements were also confirmed in career awareness and transition-specific self-determination, such as participation in transition meetings, exploration of preferences and strengths, goal setting and work-related experiences. The study reported that more opportunities were provided for the adolescents in home setting promoting decision-making, goal setting and problem-solving, which emphasized the importance of home and family support.

In a recent and updated meta-analysis study, the impact of technology on employment-related outcomes for individuals with IDD was examined (Damianidou et al., 2018; Damianidou et al., 2019), and the results supported the application of technology such as smartphones or portable devices to in enhance the employment skills and functional competency of people with IDD. With the advancement of more contemporary technology, more cognitively accessible accommodations can apply to individuals with IDD. In particular, the positive effects were evident when the features of universal design were implemented in the design of the intervention using applied cognitive technology, echoing the importance of earlier meta-analysis (Wehmeyer et al., 2006).

The purpose of this study was to examine the effectiveness of a transition-related instructional model (TRIO) for students with IDD to promote their self-directed problem-solving abilities in applications to transition-related goal setting and career development. In this study, the effect of the TRIO instruction on the Career Planning and Development Questionnaire (teacher- and student-rated) for students was investigated.

2. Materials and Methods

2.1. Participants

79 junior high school students between 12–16 years old (Mean (M) = 13.98, Standard Deviation (SD) = 0.86) were recruited from the northern part of Taiwan. Table 1 summarizes the participants' demographics. All participants met the eligibility criteria of (a) having cognitive and/or developmental disabilities and receiving special education and related services under The Special Education Act of Taiwan; (b) being able to communicate verbally or through augmentative communication or other communicative devices; and (c) being willing to engage in group activity such as discussing each person's role in school, family, and community.

Table 1. Demographics of participants.

Variable	All (N = 79)		Control (n = 43)		Exp. (n = 36)		Group Difference	
	n	%	*n*	%	*n*	%	*p*	*d* / *V*
Age	79	13.98 ± 0.86	43	13.70 ± 0.79	36	14.33 ± 0.83	0.001	0.79
Sex							0.822	0.03
Male	45	57.0%	24	55.8%	21	58.3%		
Female	34	43.0%	19	44.2%	15	41.7%		
Cognitive functioning							<0.001	0.48
Severely impaired	0	0.0%	0	0.0%	0	0.0%		
Mildly impaired	62	78.5%	26	60.5%	36	100.0%		
Not impaired	17	21.5%	17	39.5%	0	0.0%		
Talented	0	0.0%	0	0.0%	0	0.0%		
Interaction with peers							<0.001	0.33
Low	21	26.6%	7	16.3%	14	38.9%		
Medium	38	48.1%	27	62.8%	11	30.6%		
Well	20	25.3%	9	20.9%	11	30.6%		
Resource							0.250	0.23
No ability to find resources	3	3.8%	1	2.3%	2	5.6%		
Need assistant finding resources	30	38.0%	15	34.9%	15	41.7%		
Find resources independently	33	41.8%	22	51.2%	11	30.6%		
Find resources independently with efficiency	13	16.5%	5	11.6%	8	22.2%		
Problem solving							0.089	0.29
No ability to solve problems	12	15.2%	4	9.3%	8	22.2%		
No ability but would seek help	16	20.3%	7	16.3%	9	25.0%		
Solve problems independently	36	45.6%	25	58.1%	11	30.6%		
Solve problems independently with efficiency	15	19.0%	7	16.3%	8	22.2%		
Emotional/behavioral problems							0.213	0.14
Yes	64	81.0%	37	86.0%	27	75.0%		
No	15	19.0%	6	14.0%	9	25.0%		
Educational placement							–	–
Regular classroom	0	0.0%	0	0.0%	0	0.0%		
Resource room	79	100.0%	43	100.0%	36	100.0%		
Self-contained classroom	0	0.0%	0	0.0%	0	0.0%		
Itinerant special education services	0	0.0%	0	0.0%	0	0.0%		
Special school	0	0.0%	0	0.0%	0	0.0%		
Assistive technology support							0.029	0.26
Yes	73	92.4%	37	86.0%	36	100.0%		
No	6	7.6%	6	14.0%	0	0.0%		
Family support							0.088	0.25
Low	9	11.4%	4	9.3%	5	13.9%		
Moderate	37	46.8%	25	58.1%	12	33.3%		
High	33	41.8%	14	32.6%	19	52.8%		
Peer/teacher support							0.046	0.28
Low	2	2.5%	2	4.7%	0	0.0%		
Moderate	14	17.7%	11	25.6%	3	8.3%		
High	63	79.7%	30	69.8%	33	91.7%		

2.2. TRIO Model

Students with IDD have different levels of difficulties in communication, social interaction, school, and community living skills as well as environmental support (American Association on Intellectual and Developmental Disabilities, AAIDD; Damianidou et al., 2018; Schalock et al., 2007; Shogren & Turnbull, 2010). Therefore, the TRIO model is used to deliberate the unique needs of students with IDD as well as the contextual factors of support networks and establish career-related goal-setting and self-regulated problem-solving skills. The TRIO model is composed of three phases and is instructional. It incorporates three essential components in the self-directed learning process, including transition-specific curriculum, self-determination related knowledge and behaviors, and circle of supports instruction (Figure 1). The three-phased instruction of the model represents the self-regulated problem-solving process related to transition-related goals and career development, starting from career exploration, and career orientation, to career preparation. In career exploration, students' current states are analyzed to guide them in envisioning their future lives. Self-determination skills such as goal-setting and decision-making are incorporated into this phase. In the second phase of career orientation, students are guided to complete a career blue print and action plans to achieve their goals earlier. Instructions on how to build a circle of support are given to reinforce career development. In the third phase of career preparation, their blueprints with people in their support network are discussed. Students communicate ideas and expectations in problem-solving and goal setting. The career development phases are designed to (a) adjust the context of early middle school students in a boarder concept of career awareness instead of specific job categories or specific skills and (b) connect their learning to possible transitioning of goals for goal setting/attainment and problem-solving skills.

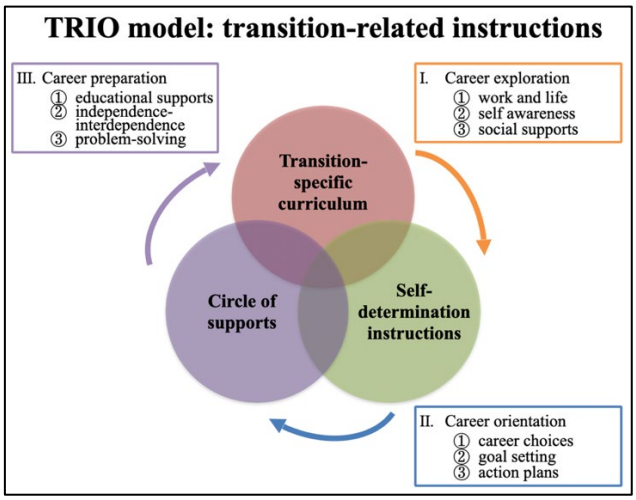

Fig. 1. TRIO model of Instruction.

2.3. Procedure

After obtaining permission to conduct the study from the university's Institutional Review Board, administrative offices and special education teachers of junior high schools in Northern Taiwan were contacted to recruit students with IDD using a purposive sampling method. 79 students met the inclusion criteria. After the research investigator explained the TRIO instruction and the intervention procedures, 79 students and their parents or guardians consented to participate in this study. A quasi-experimental study was used, and 79 participants were grouped by their teachers/classes to split them into the experimental group with the TRIO instruction (intervention; n = 36) and the control group with usual instruction (control; n = 43). Teachers of participating students were trained to administer the Career Planning and Development Questionnaire. Informed consents were obtained from all participants and their parents/guardians.

The special education teachers of the participants received an intervention package that contained an electronic device and hard copies of the TRIO instruction manual, class activities and presentation materials for each lesson, worksheets for students to complete during class activities, as well as study measures and administration protocols. In addition to the intervention package, 12-hour training workshops and a 3-hour rehearsal session were offered to ensure successful implementation of the intervention. Teachers had weekly meetings during the 16-week intervention period to evaluate the progress of the course, reviewed lessons, and discussed any concerns regarding reliable application of the model instruction.

2.4. Measures

Career Planning and Development Questionnaires in the student- and teacher-rated versions were developed to measure students' level of knowledge and skills of transition-related goals, career development, and problem-solving. The questionnaire included four subscales including career knowledge (11 items), career orientation (13 items), self-concept (12 items), and problem-solving (14 items). The career knowledge subscale was included to measure students' understanding of career-related roles, current plans, and responsibilities. The career orientation subscale was included to measure students' level of involvement regarding their plans and their abilities to utilize the circle of support for problem-solving. The self-concept subscale was included to measure students' awareness of their career-related strengths and shortcomings and relate/compare them to other people's view and expectations of them. The problem-solving subscale was included to measure students' abilities to identify problems and find solutions to reach goals. Each item was scored on a Likert-type scale (1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree), yielding a possible maximum total score of 250 (i.e., overall career competency). The values of Cronbach's alpha ranged from 0.75 to 0.98, indicating adequate reliability of the questionnaire (student-rated version: 0.94–0.95; teacher-rated version: 0.98) as well as each subscale (student-rated version: 0.75–0.90; teacher-rated version: 0.92–0.97).

2.5. Data Analysis

Descriptive statistics were obtained to describe the demographics of the participants and look at the statistical analysis results. *t*-test was used for continuous variables and chi-square or Fisher's exact test for categorical variables between the experimental group and the control group. Each measure was analyzed using a hierarchical linear model (HLM) for the dependency of observation—i.e., repeated measurements (level 1: time) of students (level 2)— and the differene between the experimental and control groups. Specifically, the model was used to evaluate the difference in the score according to the group (group effect), time (time effect), and intervention (group-by-time interaction). A significant group-by-time interaction indicated a significant effect of the TRIO instruction. All analyses were conducted using SAS 9.4.

3. Results

3.1. Demographics

Table 1 shows no significant difference between the experimental and control groups in terms of gender ($p = 0.82$, Cramér's $V = 0.03$), resources ($p = 0.25$, $V = 0.23$), problem-solving ability ($p = 0.09$, $V = 0.29$), emotional/behavioral problems ($p = 0.21$, $V = 0.14$), and family support ($p = 0.09$, $V = 0.25$). However, the experimental group was older than the control group ($p < 0.001$, $d = 0.79$). All students in the experimental group were mildly impaired, while 39.5% of the control group were not impaired ($p < 0.001$, $V = 0.48$). The level of peer interaction was slightly higher for the control group (16.3% at a low level) than for the experimental group (38.9% at a low level) ($p < 0.001$, $V = 0.33$). All students in the experimental group received assistive technology support, while 14% of the control group did not received the support. Also, all students in the experimental group received at least moderate support from their peers and teachers, while 4.7% in the control group received a low level of peer/teacher support. These findings indicated that the experimental and control groups were different in students' age, cognitive functioning, interaction with peers, assistive technology support, and peer/teacher support. Thus, these variables were controlled for in the HLM analysis when assessing the effects of the TRIO instruction.

3.2. Effect of Intervention

Table 2 shows the scores by students and teachers of career knowledge, career orientation, self-concept, problem-solving, and the overall career competency Career Planning and Development Questionnaire before and after the intervention.

3.2.1. Career Knowledge

The experimental group scored lower for career knowledge than the control group before the intervention (students: $p = 0.21$, $d = 0.29$; teachers: $p = 0.13$, $d = 0.35$). The experimental group increased the scores with the TRIO instruction, while the scores for the control group maintained or decreased (students: $p < 0.05$, $d = -0.56$; teachers: $p < 0.001$, $d = -1.74$). Consequently, after the instructions, the experimental group showed a higher level of career knowledge than the control group (students: $p = 0.29$, $d = -0.24$; teachers: $p < 0.001$, $d = -0.97$). These results suggested that the TRIO instruction impacted the career knowledge of students with IDD positively. The efficacy of the TRIO instruction was confirmed by the HLM. The group-by-time interactions were significant (students: $p < 0.05$; teachers: $p < 0.001$), indicating that after controlling for age, cognitive functioning, interaction with

peers, assistive technology support, and peer/teacher support, the patterns of score change were different between the experimental and control groups.

3.2.2. Career Orientation

Before the instructions, the scores of the experimental group for student career orientation were lower than those of the control group ($p = 0.09$, $d = 0.38$). Teachers' scores were similar for the groups ($p = 0.57$, $d = 0.13$). While the scores for the control group slightly increased after the intervention, the experiment group showed a substantial increase in the scores (students: $p < 0.05$, $d = -0.61$; teachers: $p < 0.001$, $d = -1.49$) after the intervention (students: $p = 0.29$, $d = -0.24$; teachers: $p < 0.001$, $d = -0.90$). The group-by-time interactions were also significant in the HLMs (students: $p < 0.01$; teachers: $p < .001$), confirming that the TRIO instruction impacted the career orientation of students with IDD positively.

3.2.3. Self-Concept

Before the intervention, the score of students for self-concept was similar between the experimental and control groups ($p = 0.80$, $d = 0.06$), and that of teachers was higher for the experimental group ($p < 0.05$, $d = -0.53$). The experimental group showed an increase in the score, while the control group showed a small increase (students: $p < 0.05$, $d = -0.54$; teachers: $p < 0.001$, $d = -0.82$). The experimental group showed a significantly higher level of self-concept than the control group after the intervention (students: $p < 0.05$, $d = -0.54$; teachers: $p < 0.001$, $d = -1.43$). In the significant group-by-time interactions, the enhancement in self-concept was significantly higher for the experimental group than for the control group (students: $p < 0.05$; teachers: $p < 0.001$). These results suggested that the TRIO instruction impacted self-concept among students with IDD positively.

3.2.4. Problem-Solving

The experimental group showed a lower score for problem-solving than the control group before the intervention (students: $p = 0.13$, $d = 0.36$; teachers: $p < 0.05$, $d = 0.45$). The experimental group increased the scores with the TRIO instruction, while the scores for the control group maintained or decreased during the "business-as-usual" intervention (students: $p < 0.01$, $d = -0.63$; teachers: $p < 0.001$, $d = -2.30$). Consequently, after the intervention, the experimental group showed a higher level of problem-solving ability than the control group (students: $p = 0.27$, $d = -0.25$; teachers: $p < 0.001$, $d = -0.88$). The group-by-time interactions were also significant in the HLMs (students: $p < 0.01$; teachers: $p < 0.001$), confirming that the TRIO instruction increased the problem-solving ability of students with IDD.

3.2.5 Overall Career Competency

The experimental group had a lower level of overall career competency than the control group before the intervention (students: $p = 0.16$, $d = 0.33$; teachers: $p = 0.51$, $d = 0.15$). The scores for the experimental group increased after the TRIO instruction, while the scores for the control group increased slightly or maintained after the usual intervention (students: $p = <0.01$, $d = -0.74$; teachers: $p < 0.001$, $d = -1.98$). As a result, the experimental group demonstrated a higher level of overall career competency than the control group after intervention (students: $p = 0.11$, $d = -0.37$; teachers: $p < 0.001$, $d = -1.08$). The significant group-by-time interactions also indicated that the improvement was greater significantly for the experimental group than the control group (students: $p < 0.01$; teachers: $p < 0.001$). These results suggested that the TRIO instruction increased the career competency of students with IDD.

Table 2. Scores for measures by students and teachers.

Variable	α	All (*N* = 79)			Control (*n* = 43)			Experimental (*n* = 36)			Group Difference	
		n	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*p*	*d*
Career knowledge (student-rated)												
Pre	0.94	79	45.01	5.85	43	45.79	4.77	36	44.08	6.88	0.214	0.29
Post	0.95	79	45.78	5.69	43	45.16	6.01	36	46.53	5.27	0.291	-0.24
Change		79	0.77	5.63	43	-0.63	5.19	36	2.44	5.74	0.015	-0.56
Career orientation (student-rated)												
Pre	0.75	79	45.70	9.85	43	47.40	8.41	36	43.67	11.10	0.094	0.38
Post	0.80	79	49.51	8.23	43	48.60	8.02	36	50.58	8.46	0.290	-0.24
Change		79	3.81	9.74	43	1.21	7.53	36	6.92	11.19	0.012	-0.61
Self-concept (student-rated)												
Pre	0.86	79	45.73	8.97	43	45.98	7.12	36	45.44	10.87	0.802	0.06
Post	0.86	79	48.87	7.57	43	47.07	7.49	36	51.03	7.19	0.020	-0.54
Change		79	3.14	8.49	43	1.09	7.75	36	5.58	8.80	0.018	-0.54
Problem-solving (student-rated)												
Pre	0.86	79	47.84	11.40	43	49.70	9.42	36	45.61	13.18	0.125	0.36
Post	0.86	79	53.10	10.20	43	51.93	9.43	36	54.50	11.02	0.268	0.25
Change		79	5.27	11.00	43	2.23	9.04	36	8.89	12.12	0.007	-0.63
Overall (student-rated)												
Pre	0.90	79	184.28	30.72	43	188.86	24.28	36	178.81	36.59	0.164	0.33
Post	0.90	79	197.27	27.12	43	192.77	26.61	36	202.64	27.11	0.108	-0.37
Change		79	12.99	28.50	43	3.91	20.98	36	23.83	32.56	0.003	-0.74
Career knowledge (teacher-rated)												
Pre	0.98	79	38.00	8.27	43	39.30	7.33	36	36.44	9.13	0.127	0.35
Post	0.98	79	42.56	7.92	43	39.40	8.01	36	46.33	6.00	0.000	-0.97
Change		79	4.56	7.45	43	0.09	4.29	36	9.89	6.93	<0.001	-1.74
Career orientation (teacher-rated)												
Pre	0.92	79	34.25	10.75	43	34.88	11.21	36	33.50	10.27	0.572	0.13
Post	0.94	79	39.94	10.81	43	35.88	10.72	36	44.78	8.85	<0.001	-0.90
Change		79	5.68	8.57	43	1.00	5.61	36	11.28	8.18	<0.001	-1.49
Self-concept (teacher-rated)												
Pre	0.94	79	39.20	8.81	43	37.12	8.78	36	41.69	8.29	0.020	-0.53
Post	0.95	79	43.53	8.88	43	38.81	7.77	36	49.17	6.59	<0.001	-1.43
Change		79	4.33	7.54	43	1.70	6.08	36	7.47	7.97	0.001	-0.82
Problem-solving (teacher-rated)												
Pre	0.94	79	35.33	12.94	43	37.95	14.05	36	32.19	10.85	0.048	0.45
Post	0.94	79	42.09	11.54	43	37.84	11.95	36	47.17	8.75	<0.001	-0.88
Change		79	6.76	9.98	43	-0.12	5.48	36	14.97	7.65	<0.001	-2.30
Overall (teacher-rated)												
Pre	0.97	79	146.78	36.06	43	149.26	37.16	36	143.83	35.00	0.509	0.15
Post	0.96	79	168.11	37.27	43	151.93	36.87	36	187.44	27.53	<0.001	-1.08
Change		79	21.33	29.03	43	2.67	15.41	36	43.61	25.59	<0.001	-1.98

4. Discussion

The results of this study confirmed the efficacy of the TRIO model showing that the experimental group showed significant increases in scores compared with the control group in all measures. The findings echoed the previous results indicating that despite challenges in social and daily life, students with cognitive and developmental disabilities were capable of adopting self-directed learning in fulfilling their transition-related goals with interventions (Agran & Wehmeyer, 2000). One essential element of the intervention model was self-determination. Transition planning is essential for self-directed goal-setting and problem-solving for career development. It requires instructions to enhance strengths and needs, assessment of progress in reaching goals, and evaluation of outcomes and resolutions. Research studies supported the inclusion of self-determination-related intervention in transition planning (Carter et al., 2008; Damianidou et al., 2019; Dean et al., 2019; Powers et al., 2012; Wehmeyer et al., 2007). It was also found that opportunities with natural and social support structures foster better career development for individuals with IDD (Almalky, 2020; Dean et al., 2019). Since the result of this study proved that self-directed problem-solving and the circle of support were effective, future research is necessary to incorporate additional contextual factors into the design of intervention for career development. For example, the involvement of peers in interventional activities is required to increase the level of inclusiveness and the intervention efficacy (Chou & Park, 2021).

5. Conclusions

The effectiveness of this three-phased TRIO model in promoting transition-related problem-solving and career development of junior high school students with IDD was confirmed by the result of this study. Educational professionals can apply this model to facilitate self-directed learning. In the first phase, career paths were explored by introducing and analyzing different aspects of students' lives and individual roles to connect the current state to possible future direction. In the TRIO instruction, the problem-solving process was instructed considering individual and environmental factors. Teachers facilitated the discussion of students' envisions and their lives and had students brainstorm what they could do or learn currently. Self-determination-related skills such as goal-setting and decision-making were instructed. Additionally, the instruction on the circle of support was given in the first phase of the TRIO model to understand their support networks (family/friends/teachers/people in the community/service providers) and their help and benefits in career and transition planning. The importance of social support was validated in literature (Almalky, 2020; Damianidou et al., 2018; Dean et al., 2019; Eide & Roysamb, 2002; Fraker et al, 2018; Morningstar & Wehmeyer, 2008). In the second phase, students were instructed to set up a future goal and complete a career blueprint with action plans to reach the self-set goals. The goals students set in the second phase were not necessarily associated with a particular occupation but rather with skills or knowledge to have/learn in preparation for a better post-secondary life. Since the TRIO model was designed for early middle school of junior high school students, in the third phase, career preparation was not instructed for specific occupations. Instead, in the TRIO model, an intervention on how to problem-solve issues related to their current and future lives was provided so that they could be equipped with transition knowledge and skills required for the different phases of life. In the final intervention phase, students discussed their blueprints with people in their support network. Teachers encouraged exchanging thoughts between students and people in the circle of support, helping students explain their expectations for their plans and how to manage differences and mutual agreements.

There are limitations in this study. First, we employed the Career Planning and Development Questionnaire, which was developed specifically for this intervention. Even though the Cronbach alpha of the total and each scale validated the reliability of this measurement, the generalizability of the intervention results might be confined. Second, the sample size may not be large enough to represent the different levels of support and functional levels of intellectual and developmental disabilities. In future investigations, it is necessary to modify the TRIO instructional model to validate the intervention effects.

Funding: This research was funded by the National Science and Technology Council of Taiwan, Grant No. 107-2410-H-033-030.

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Conflicts of Interest: The author declares no conflict of interest.

References

1. Agran, M., & Wehmeyer, M. L. (2000). Promoting transition goals and self-determination through student self-directed learning: The self-determined learning model of intervention. *Education and Training in Mental Retardation and Developmental Disabilities*, *35*, 351–364.
2. Almalky, H. A. (2020). Employment outcomes for individuals with intellectual and developmental disabilities: A literature review. *Children and Youth Services Review*, *109*, 104656.
3. Carter, E. W., Lane, K. L., Pierson, M. R. & Stang, K. K. (2008). Promoting self-determination for transition-age youth: Views of high school general and special educators. *Exceptional Children*, *75*, 55–70. https://doi.org/10.1177/001440290807500103
4. Carter, E. W., Moss, C. K., Hoffman, A., Chung, Y., & Sisco, L. G. (2011). Efficacy and social validity of peer support arrangements for adolescents with disabilities. *Exceptional Children*, *78*, 107–125. https://doi.org/10.1177/001440291107800107
5. Chou, Y., & Park, H. (2021). Examining the moderating role of inclusiveness and social support in promoting social problem-solving among youth with autism spectrum disorder. *Education and Training in Autism and Developmental Disabilities, 56*(3), 280–292.
6. Damianidou, D., Arthur-Kelly, M., Lyons, G., & Wehmeyer, M. L. (2018). Technology use to support employment-related outcomes for people with intellectual and developmental disability: An updated meta-analysis. *International journal of developmental disabilities*, *65*(4), 220–230. https://doi.org/10.1080/20473869.2018.1439819
7. Damianidou, D., Foggett, J., Wehmeyer, M. L., & Arthur-Kelly, M. (2019). Features of employment-related technology for people with intellectual and developmental disabilities: A thematic analysis. *Journal of applied research in intellectual disabilities*, *32*(5), 1149–1162. https://doi.org/10.1111/jar.12604
8. Dean, E. E., Shogren, K. A., Wehmeyer, M. L., Almire, B., & Mellenbruch, R. (2019). Career design and development for adults with intellectual disability: A program evaluation. *Advances in Neurodevelopmental Disorders*, *3*, 111–118.
9. Eide, A. H., & Roysamb, E. (2002). The relationship between level of disability, psychological problems, social activity, and social networks. *Rehabilitation Psychology, 47*, 1165–1183. https://doi.org/10.1186/s12889-017-4308-6.
10. Fraker, T. M., Cobb, J., Hemmeter, J., Luecking, R. G., & Mamun, A. (2018). Three-year effects of the youth transition demonstration projects. *Social Security Bulletin, 78*(3), 19–41.
11. Hatfield, M., Falkmer, M., Falkmer, T., & Ciccarelli, M. (2017). Effectiveness of the BOOST-A™ online transition planning program for adolescents on the autism spectrum: A quasi-randomized controlled trial. *Child & Adolescent Psychiatry & Mental Health*, *11*, 1–12. http://doi.org/10.1186/s13034-017-0191-2.
12. Lee, Y., Wehmeyer, M. L., Palmer, S. B., Williams-Diehm, K., Davies, D. K., & Stock, S. E. (2011). The effect of student-directed transition planning with a computer-based reading support program on the self-determination of students with disabilities. *The Journal of Special Education*, *45*(2), 104–117. http://doi.org/10.1177/0022466909358916
13. Morningstar, M. E., Bassett, D. S., Kochhar-Bryant, C., Cashman, J., & Wehmeyer, M. L. (2012). Aligning transition services with secondary education reform: A position statement of the division on career development and transition. *Career Development and Transition for Exceptional Individuals, 35,* 132–142. https://doi.org/10.1177/2165143412454915
14. Morningstar, M., & Wehmeyer, M. (2008). The role of families in enhancing transition outcomes for youth with learning disabilities.(G. Blalock, J. Patton, P. Kohler, & D. Bassett, Eds.), In *Transition and students with learning disabilities: Facilitating the movement from school to adult life,* 2nd ed. Austin, TX, USA: ProEd Publishers, pp. 79–103.
15. Powers, L. E., Geenen, S., Powers, J., Pommier-Satya, S., Turner, A., Dalton, L., Swand, P. (2012). My life: Effects of a longitudinal, randomized study of self-determination enhancement on the transition outcomes of youth in foster care and special education. *Children and Youth Services Review*, *34*(11), 2179–2187. https://doi.org/10.1016/j.childyouth.2012.07.018
16. Schalock, R. L., Gardner, J. F., & Bradley, V. J. (2007). Quality of life for people with intellectual and other developmental disabilities: Applications across individuals, organizations, communities, and systems. Washington, DC, USA: American Association on Intellectual and Developmental Disabilities.
17. Shogren, K. A., & Plotner, A. (2012). Transition planning for students with intellectual disability, autism or other disabilities: Data from the National Longitudinal Transition Study-2. *Intellectual and Developmental Disabilities, 50*, 16–30. https://doi.org/10.1352/1934-9556-50.1.16
18. Shogren, K. A., & Turnbull, R. (2010). Public policy and outcomes for persons with intellectual disability: Extending and expanding the public policy framework of the 11th edition of Intellectual disability: Definition, classification and systems of supports. *Intellectual and Developmental Disabilities, 48*, 375–386. https://doi.org/10.1352/1934-9556-48.5.375.
19. Wehman, P., Taylor, J., Brooke, V., Avellone, L., Whittenburg, H., Ham, W., & Carr, S. (2018). Toward competitive employment for persons with intellectual and developmental disabilities: What progress have we made and where do we need to go. *Research and Practice for Persons with Severe Disabilities*, *43*(3), 131–144.

20. Wehmeyer, M. L., Palmer, S. B., Smith, S. J., Parent, W., Davies, D. K., & Stock, S. (2006). Technology use by people with intellectual and developmental disabilities to support employment activities: A single- subject design meta-analysis. *Journal of Vocational Rehabilitation, 24*, 81–86.
21. Wehmeyer, M. L., Palmer, S. B., Soukup, J. H., Garner, N. W., & Lawrence, M. (2007). Self-determination and student transition planning knowledge and skills: Predicting involvement. *Exceptionality, 15,* 31–44. https://doi.org/10.1080/09362830709336924