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Promoting Transition Goals and Self-Determination Through Student Self-Directed Learning: The Self-Determined Learning Model of Instruction

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Abstract: This article describes the field-test results of the Self-Determined Learning Model of Instruction, a model of teaching designed to enable teachers to teach students to set goals, take action on those goals, and adjust their goals and plans as needed. Nineteen students, most of whom had intellectual disabilities, participated in the field test. Seventeen of the 19 students made dramatic changes from baseline to intervention conditions, at levels that exceeded teachers' expectations. Additionally, social validation data obtained from both the students and the participating teachers supported the utility of the model. The implications of the field test are discussed.

Available data suggest that people with mental retardation or other significant disabilities believe that they have little control over their lives or how to better their situations (Agran, 1997; Mithaug, Martin, Agran, & Rusch, 1988; Nirje, 1972; Ward, 1996; Wehmeyer, 1997). For example, decisions about the types of instructional and transition programs students receive have, largely, been made by others (Wehmeyer & Sands, 1998). Field, Hoffman, and Sawilowsky (1994) reported that, although 71 % of students in their sample attended their last IEP or transition planning meetings, 56% indicated they had not been told the purpose of the meeting, 76% had not prepared for the meeting, and 59% had not helped in any way to identify goals. Similarly, Van Reusen and Bos (1994) indicated that student involvement in transition planning is essentially nonexistent or passive (i.e., decisions are made by others).

Studies that examined quality of life outcomes for people with mental retardation and developmental disabilities also provide disappointing findings. Wehmeyer and Metzler (1995) reported that of nearly 5,000 people with mental retardation, 66% did not choose where they were living, 88% their current staff persons, 77% their roommates, and 56% their jobs. Jaskulski, Metzler, and Zierman (1990) indicated that 41% of their sample of more than 13,000 people with developmental disabilities did not choose their current living arrangement. Schriner, Roessler, and Berkobien (1993) found that 30 to 50% of individuals with mental retardation in their sample indicated they were dissatisfied with their working conditions.

Unfortunately, special education practices have traditionally done little to enable students to control their lives (Martin & Marshall, 1996). Special education and transition programs have relied on an educational model in which teachers have been given full responsibility for making essentially all of the major educational decisions for their students, thus denying students the opportunity to participate in their educational programs in any meaningful way (Sands & Wehmeyer, 1996; Wehmeyer & Sands, 1998). Making choices, taking risks, having control over outcomes, and assuming responsibility for personal action are highly valued societal goals (Wehmeyer, 1992), but instructional activities

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to promote and support such attitudes and abilities have rarely been included in transition programs for students with mental retardation or other significant disabilities (Agran & Hughes, 1998; Mithaug, Martin, & Agran 1987). Consequently, too many students become adults who are dependent on others for support and leave school not knowing how to determine what they like, what they want, or how to achieve their goals (Mithaug, 1996).

Self-Determination and Successful Adult Outcomes

The link between self-determination and positive adult outcomes is of interest to researchers and practitioners alike, and emerging evidence suggests that enhanced self-determination contributes to more positive outcomes (Wehmeyer, Agran, & Hughes, 1998; Wehmeyer & Metzler, 1995). Instruction in self-management skills has been used to positively change a broad variety of work, social, daily living, and problem-solving skills (see Agran, 1997 for a comprehensive review). Wehmeyer and Schwartz (1997) reported that students with mental retardation or learning disabilities who had higher levels of, self-determination, measured by a self-report assessment (Wehmeyer, 1996a), lived more independently, had higher rates of employment, earned higher wages, and managed their own money and transportation needs more independently than did peers with lower self-determination scores. Similarly, in a study of 50 adults with mental retardation, Wehmeyer and Schwartz (1998a) found that higher self-determination predicted a higher quality of life for participants.

Self-Determination and Transition Services

Promoting self-determination has received a great deal of attention in the special education literature over the past decade, and, as Wehmeyer and Schwartz (1997) noted, has achieved "best practice" status in the area of transition services. Several follow-up and follow-along studies have reported poor transition outcomes for students with disabilities (Blackorby & Wagner, 1996; Hasazi, Gordon, & Roe, 1985; Mithaug, Horiuchi, & Fanning, 1985; Sitlington, Frank, & Carson, 1993). These findings served as a catalyst to identify key elements to improve transition services, among them the promotion of self-determination (Field, Martin, Miller, Ward, & Wehmeyer, 1998). Educators by and large concur that self-determination is an important outcome. Wehmeyer, Agran, and Hughes (2000) found that 60% of more than 1,200 teachers working with adolescents with cognitive disabilities were familiar with the self-determination construct, and that between 90% and 98% of teachers indicated that related instruction in this area was either "moderately important" or "very important" for their students. Additionally, the majority of teachers ranked self-determination as "very helpful" for in-school and post-school success.

There is wide concurrence that skills associated with becoming more self-determined (e.g., setting goals, problem-solving, decision-making, self-management) are important for a successful transition from school to adult life. Nevertheless, this concurrence does not necessarily translate into increased instructional activities to promote the self-determination of students with disabilities. Individualized Education Program goals and objectives rarely include goals to promote self-determination (Agran, Snow, & Swaner, 1999; Wehmeyer, Agran, et al., in press; Wehmeyer & Schwartz, 1998b). Although self-determination is a valued transition outcome, it appears to receive little instructional emphasis.

The Self-Determined Learning Model of Instruction

The present study reports the findings of a field test of the *Self-Determined Learning Model of Instruction,* a teaching model described subsequently. The study was conducted through a transition outreach project funded by the Office of Special Education Programs and occurred in parallel with a larger field-test of the model (Wehmeyer, Palmer, Agran, Mithaug, & Martin, in press). The present study utilized single-subject methodology instead of the quasi-experimental design employed in the wider field test. The single-subject design enabled us to evaluate the efficacy of the model with students with more significant cognitive disabilities.

The *Self-Determined Learning Model of Instruction* was developed based on the *Adaptability*

Instruction Model forwarded by Mithaug et al. (1987). The *Adaptability Instruction Model* was supported by several U.S. Department of Education grants, and has been well described in the transition literature (see Bigge, 1991; Clark & Kolstoe, 1995; Gajar, Goodman, & McAfee, 1993; Heward, 1996; McDonnell, Mathot-Buckner, & Ferguson, 1996; Mithaug et al., 1987). *The Self-Determined Learning Model of Instruction is* a model of teaching designed to enable teachers to teach students to become self-regulated problem-solvers, to self-direct instruction toward self-selected goals, and to gain enhanced self-determination. A detailed description of the model is available from Mithaug, Wehmeyer, Agran, Martin, and Palmer (1998) or Wehmeyer, Palmer, et al. (in press). The purpose of the present study was to evaluate the efficacy of the model as a means for educators to teach students transition-related goals and to examine the degree to which students who received instruction using the model benefited in terms of self-determination and goal orientation outcomes.

Method

Students

Nineteen students categorized as having a disability and served through special education services participated in the study. Twelve students were male and seven were female. Three of the students were middle school students, eight were high school students, and eight were served through a public-school post-secondary education program. Special Education classifications included two identified as having learning disabilities and 13 as having mental retardation. One student was identified as having a learning disability and cerebral palsy, and five students were identified as having multiple disabilities that included mental retardation and at least one of the following disabilities: blindness, cerebral palsy, orthopedic impairments, or diabetes. Table I summarizes information about the students' characteristics. Teachers identified students who they believed needed to become more self-determined. All students were involved in transition programs in their respective schools, and 14 students were engaged in community activities as part of their IEP-mandated programs.

Settings

Students were served at different settings, with the exception of two students (Jacob and Jerry). Thirteen students received transition • instruction at various job sites. Four students were engaged in work training on the campus of a local university. Job placements included landscaping and serving as a groundskeeper, housekeeping at the university hotel, working at a laundry, and doing warehouse inventory work. One student worked at two training sites: the university warehouse and a local business, stocking inventory.

Ten students worked at local businesses in their respective communities. Training sites included a kitchen at a middle school, a retail office-supply business, a farming supply store, a pet store, and a local motel. Other sites included an educational center, the Red Cross, a fast food restaurant, and another university's physical education complex and campus recycling program. Three of these 10 students received intervention in their vocational classrooms in addition to their work sites. One student was also monitored while he was riding the bus to and from his work site. The remaining six students received instruction at .their respective schools. Four students were located in their self-contained classroom during the study, one was in a self-contained transition classroom, and one was in a general education computer lab.

Dependent Measures

The target behaviors identified by participating students were related to their transition goals. Each student, with the assistance of his or her teacher and using the student's IEP as a springboard, targeted a behavior on which he or she wanted to focus (see Table 1). The targeted behaviors included work, social, academic, and community living skills. In general, the students' employers identified the work skills the students needed to perform to succeed in their specified jobs and listed tasks to be completed with sequential steps for each task. Several students opted to work on social skills that would benefit their success as employees

TABLE 1

Participant Characteristics

Student	*Grade*	*Age*	*Classification*[1]	*IQ Score*	*Medications*	*Dependent Variables*
Cory	12	17	Learning disability	FS 78[2]	None reported	Following directions'
Dean	12	17	Intellectual disability	FS 73[2]	None reported	Following directions
Curtis	12	17	Learning disability	FS 90[2]	None reported	Following directions
Jerry	8	14	Intellectual disability Significant hearing and communication deficits	FS 42[2]	None reported	Academic skills
Jacob	8	15	Multiple disabilities Cerebral palsy/motor impairments	FS 40[2]	None reported	Academic skills
Andy	8	14	Intellectual disability	FS 42[2]	None reported	Following instructions
Shaun	PH[4]	19	Intellectual disability	FS 64[2]	None reported	Improve job task performance
Lewis	PH[4]	20	Intellectual disability	Comp 63[3]	None reported	Respond appropriately to criticism
Paul	11	17	Multiple disabilities Blindness and orthopedic impairments	FS 50[2]	None reported	Make transportation arrangements
John	11	17	Intellectual disability	FS 54[2]	None reported	Complete job task
Jack	9	14	Multiple disabilities Cerebral palsy/motor impairments	Comp 76[3]	None reported	Improve personal hygiene skills
Kip	11	17	Intellectual disability	FS 60[2]	None reported	Improve budgeting skills
Mary	PH[4]	18	Intellectual disability	FS 67[2]	None reported	Improve conversational skills
Tanya	PH[4]	19	Intellectual disability	FS 55[2]	None reported	Use time card appropriately
Angie	PH[4]	21	Intellectual disability	FS 66[2]	None reported	Improve conversational skills
Ariel	PH[4]	21	Multiple disabilities Diabetes	Comp 37[3]	Insulin	Improve conversational skills
Andrea	PH[4]	19	Intellectual disability	Comp 44[3]	None reported	Complete job task
Valerie	PH[4]	19	Intellectual disability	Comp 41[3]	None reported	Improve conversational skills
Nedra,	10	16	Multiple disabilities Cerebral palsy/motor impairments	FS 54[2]	None reported	Improve computer skills

[1]Based on Utah classification guidelines
[2]Weschler Intelligence Scale for Children III
[3] Stanford-Binet
[4] Post-high school

in the community. These included such skills as facing the person with whom the student was speaking, making eye contact, and using appropriate greetings. Several students selected community living skills, including instruction in effective personal hygiene habits, budgeting skills, and telephone communication skills. One student who was blind learned to call the local special transportation service to schedule appointments to be transported to work, church, and social events in the community. Another student who enjoyed cooking chose to learn the steps in food preparation and serving.

Some students selected employment-related academic skills as their target goals. Several students worked on improving their alphabetizing skills and increasing the speed of task completion. One student chose to develop computer skills that could be used in a job search.. She also memorized the spelling of tier full name, date of birth, address, social security number, and phone number - all pertinent information when applying for employment.

Observation and Recording Procedures

Six teachers and eight paraprofessionals collected data on a regular basis throughout the baseline, training, and post-training conditions of the study. Based on student work and class schedules, the data were collected from two to five times a week, depending on the .opportunity the student had to perform the target behavior. The type of data collected differed, based on the target behavior. Cory, Curtis, and Dean earned a "+" or "-" at the end of each school day based on the degree to which they followed directions given by the teacher or paraprofessional during that day. Jacob's and Jerry's data collection consisted of recording, on a daily basis, the ratio of correct responses to possible responses when presented with word cards for alphabetizing. Once they mastered accuracy in sequencing the letters, they were timed in order to increase their speed. Andy's teacher recorded data with relation to food preparation tasks. John, Mary, Ariel, Valerie, Tanya, Shaun, Andrea, Lewis, and Angie all had job coaches who collected baseline data at each student's job site daily, according to the criteria set in their transition plans. Paul's teacher collected baseline data by observing him perform the 11-step procedure outlined for contacting the specialized bus service in his city. Data were collected daily by Nedra's special education teacher in the general education classroom according to the steps outlined in her behavioral objective. Jack and Kip's teacher recorded their data daily according to their behavioral objectives.

Observer training. Teachers who were observers participated in two training sessions prior to baseline data collection. In the first training session, they were introduced to the *Self-Determined Learning Model of Instruction* with its phases and learning strategies. The second training session involved reading the definitions of objectives for each student and identifying and practicing the observation recording procedures. Teachers were shown a number of different data collection forms and chose the form they preferred for each student. In some cases, teachers opted to develop their own data collection forms. The paraprofessional observers completed only the second training session. In all, six training sessions were conducted at various sites before baseline data collection. On-site training observations were conducted until observers met an 80% reliability criterion for two consecutive observation sessions.

Interobserver agreement. Agreement data across observers were calculated across approximately 30% of the sessions. A point-by-point comparison was used to calculate inter-observer agreement throughout the investigation. Agreement was computed by dividing the number of agreements by the number of agreements plus disagreements and multiplying by 100. The range of inter-observer agreements across baseline sessions was 83%-100%, with a mean of 99%. During training and post-training, the inter-observer agreement mean was 100%.

Goal Attainment Scaling

During the baseline data collection phase, teachers were asked to complete a Goal Attainment Scale (GAS) for each student. The model is designed to allow for frequent adjustment to either goals or actions to achieve goals and, as such, the "success" of the model

cannot be determined until the student has satisfactorily achieved his or her self-selected goal. The GAS has been used to measure goal attainment and to determine program effectiveness (Kiresuk & Lund, 1976). It involves establishing goals and specifying a range of outcomes or behaviors that indicate progress in achieving these goals (Carr, 1979). After each student identified a goal by working through the first phase of the model, the teacher met with a project staff member to identify five possible goal outcomes for each goal using a five-point continuum ranging from the most unfavorable possible outcome to the most favorable possible outcome. Such goal outcomes are individually determined and can be described in quantifiable (e.g., percent correct attempts) or in less quantified terms (e.g., arrives to school with hair combed). Each point on the five-point scale is assigned a value, beginning with -2 for the least favorable outcome, -1 for the less (not least) favorable outcome, 0 points for an acceptable outcome, +1 for a favorable outcome, and +2 for the most favorable outcome.

At the end of the instructional period (e.g., after students had received instruction using the model), teachers selected the outcome that best described the student's progress on the goal. Using a raw-score conversion key for Goal Attainment Scaling developed by Cardillo (1994), raw scores were converted to standardized T-scores to standardized scores to allow for comparisons between goal areas across subjects, independent of the particular goal area. When interpreting scores from the GAS, it is important to note that the converted mean T-score value of 50 represents an acceptable outcome, where an "acceptable" outcome means that students learned the goal or skills *to the level expected by the teacher.* Standardized scores of 40 or below indicate that the student did not achieve an acceptable outcome, and scores of 60 and above indicate that the student's progress exceeded expectations. GAS scores for students who worked on more than one goal were calculated by averaging the standardized scores from the two goals. At the conclusion of the training period, teachers were asked to report their perceptions of the effects of the model on student performance. Specifically, they were asked to detail the student's progress and changes made by the student. Additional data from students were obtained based on the students' responses to worksheets developed to assist in the implementation of the model. The students responded to three questions: "What has changed?, Did I do what I said I would?, and What do I like about it (model)?" Additionally, anecdotal information from students was secured.

Social Validation

The Self-Determined Learning Model of Instruction

The *Self-Determined Learning Model of Instruction* is designed to provide educators a model with which to teach students to become casual agents in their lives. The model involves teaching students a self-regulated problem-solving process in which students set their own goals based on an examination of their preferences, wants, and instructional needs; develop and implement action plans to enable them to achieve their goals; and then self-evaluate their progress toward achieving the goals in order to regulate their learning and revise their goals or action plans as needed. The model is based on the premise that self-determined people persistently regulate their problem solving to achieve their goals. To live and work successfully in the community, students need to learn to address problems as they occur. The model enables the teachers to teach students to utilize a specified problem-solving sequence - a means-end chain - so that they can achieve their goals. There are three instructional phases in the model. Each phase presents a problem to be solved by the student. For each of these problems, there is a series of four questions that students pose and answer. To answer the questions in this sequence, students must regulate their own problem solving by setting goals to meet needs, constructing plans to meet goals, and adjusting actions to complete plans. Thus, each instructional phase poses a problem the student must solve (e.g., What is my goal?, What is my plan?, and What

have I learned?) by, in turn, solving a series of problems posed by the questions in each phase. The four questions differ from phase to phase, but represent identical steps in the problem-solving sequence. That is, students answering the questions must: (1) identify the problem, (2) identify potential solutions to the problem, (3) identify barriers to solving the problem, and (4) identify consequences of each solution. These steps are the fundamental steps in any problem-solving process, and they form the means-end problem-solving sequence represented by the *Student Questions* in each phase and enable the student to solve the problem posed in each instructional phase.

Because the model itself is designed for teachers to implement, the language of the *Student Questions* is, intentionally, not written to be understandable by every student nor does the model assume that students have life experiences that enable them to fully answer each question. The *Student Questions* are written in first-person voice in a relatively simple format with the intention that they are the starting point for discussion between the teacher and the student. Some students will learn and use all 12 questions as they are written. Other students will need to have the questions rephrased to be more understandable. Still other students, due to the intensity of their instructional needs, may need to have the teacher paraphrase the questions for them.

The first time a teacher uses the model with a student, the initial step in the implementation process is to read the question with or to the student, discuss what the question means, and then, if necessary, change the wording to enable that student to better understand that intent of the question. Such wording changes must, however, be made such that the problem-solving intent of the question remains intact. For example, changing *Student Question 1* from "What do I want to learn?" to "What is my goal?" changes the nature of the question. The model includes *Teacher's Objectives* associated with each student question provide direction for possible wording changes. It is perhaps less important that actual changes in the words occur than that of the students taking ownership over the process and adopting the questions as their own, instead of having questions imposed on them. Going through this process once as the student progresses through the model should result in a set of questions that a student accepts as his or her own.

The *Teacher Objectives* within the model are just that - the objectives a teacher will be trying to accomplish by implementing the model. In each instructional phase, the objectives are linked directly to the *Student Questions*. These objectives can be met by utilizing strategies provided in an *Educational Supports* section of the model. The *Educational Supports* are not actually a part of the model, per se, but are what Joyce and Weil (1980) refer to as the model's *syntax* - how the model is implemented. However, because the implementation of this model requires teachers to teach students to self-direct learning, we believe it is important to identify some strategies and supports that could be used to successfully implement the model. The majority of these supports are derived from the self-management literature. As previously indicated, student-directed learning strategies involve teaching students to modify and regulate their own behavior. A variety of strategies, like permanent prompts (antecedent cue regulation), self-instruction, self-monitoring, self-evaluation, self-reinforcement, and goal setting, have been used to teach students, including students with significant disabilities, how to manage their own behavior.

Emphasis in the model on the use of instructional strategies and educational supports that are student-directed provides another means of teaching students to teach themselves. As we have already indicated, teaching students to use the *Student Questions* will teach them a self-regulated problem solving strategy. Concurrently, teaching students to use various student-directed learning strategies provides students with another layer of skills that enable them to become the casual agent in their lives.

Experimental Design and Conditions

Efficacy of the *Self-Determined Learning Model of Instruction* was evaluated in a delayed multiple baseline design across three groups. Because administrative and logistical variables precluded the concurrent collection of baseline

data, this design was selected, as it allows for inclusion of new baseline data (i.e., groups) as they become available (Watson & Workman, 1981). The experimental conditions included baseline, training, and post-training. In the . first phase of the model students answered four questions (What do I want to learn?, What do I know about it now?, What must change for me to learn what I don't know?, What can I do to make this happen?) that resulted in the identification of instructional goals. After students had worked through the first phase and identified transition-related goals on which they wanted to work, baseline data collection occurred. To assist with the implementation of the model, project personnel developed several worksheets designed to assist students through the first two phases of the model (e.g., leading up to the implementation of the action plan). Teachers or paraprofessionals worked with students to assist them when necessary with completing the worksheets. Teachers and paraprofessionals were provided with scripts that guided them through the training condition.

Baseline. In the baseline data collection phase, the student's performance of target behaviors related to the self-selected goal was observed. No feedback or reinforcement was provided during this data collection phase. Movement into the next experimental condition was predicated on the stability of the entire group, based on the group's mean performance.

Training. The training phase involved continued instruction using *the Self-Determined Learning Model of Instruction;* specifically, implementation of Phases 2 and 3 of the model. During the Phase 2 of the model, students addressed four questions (What can I do to learn what I don't know?, What could keep me from taking action?, What can I do to remove these barriers?, and When will I take action?) that enabled them to create and implement action plans to achieve their self-selected goals. During this process, students worked with teachers to identify specific instructional strategies that could be implemented to achieve their goals. As such, teachers worked with students in the formation of their action plans to identify student-directed learning strategies that would be useful to achieving their goals. Once strategies were identified, students were taught how to use the specific strategy selected or, as was the case with some students, two student-directed learning strategies. Strategies learned by students included self-instruction, self-monitoring, self-evaluation, problem-solving skills, and antecedent cue regulation (picture cues). Then, students fully implemented their action plans, including utilizing the student-directed learning strategies they had learned and worked through questions in the Phase 3 of the model as progress warranted (i.e., What actions have I taken?, What barriers have been removed?, What has changed about what I don't know?, and Do I know what I want to know?). For all students, teachers and paraprofessionals provided praise and corrective feedback as needed throughout post-training.

Mastery criterion for attainment of the target behavior identified in the goal was set at 80% for two sessions. Data collection begun during the baseline phase continued through the training phase.

Post-training. As described previously, during the third phase of the *Self-Determined Learning Model of Instruction,* students engaged *in* a series of self-evaluation activities to determine if they have made progress in achieving their goals and, if necessary, to revise their goals or action plans as needed. When the student determined that he or she had achieved mastery of the target behavior, evidenced by two sessions at 80% accuracy or higher, they moved into the post-training phase until the completion of the study.

Results

Baseline

Figure 1 displays the mean group performance data. Group 1 had a performance baseline mean of 56% (e.g., percent frequency during which student performed target behavior to criteria set *in* goal) with a range of 33% to 83% accuracy. The baseline mean of Group 2 was 17% with a range of 0 to 50%, while Group 3's mean baseline was 54% with a range of 17% to 100%. Three students established baseline data above 80% before any intervention (see Table 2 for overall individual performance). One student was in Group I and two students were in Group 3. Their respective teachers indicated,, nevertheless,

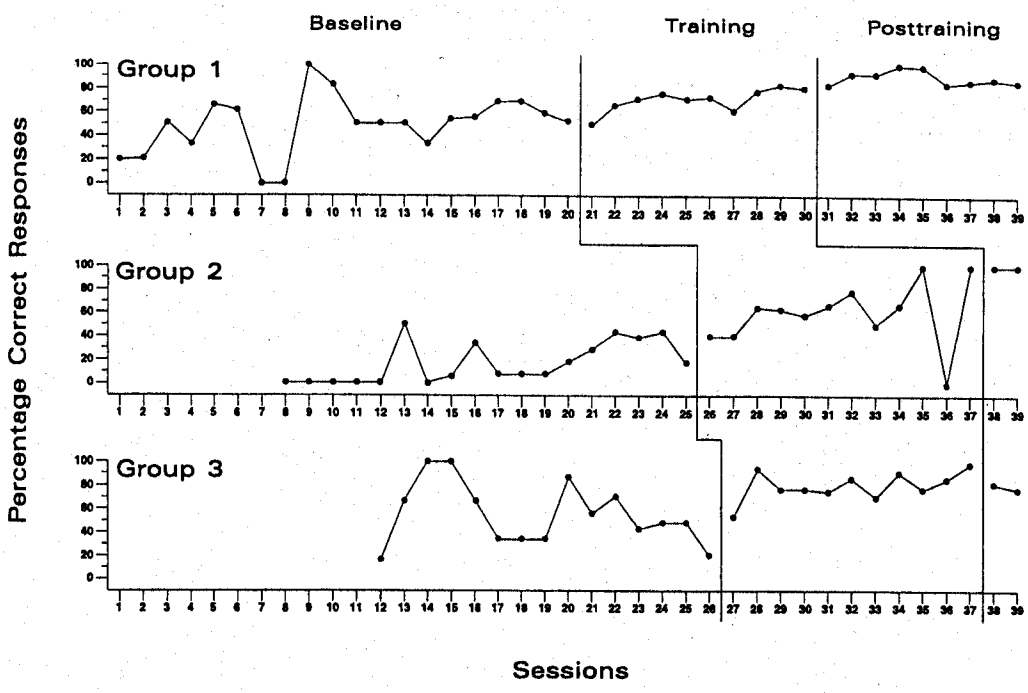

Figure 1. Mean group performance.

that they expected these students to benefit from the intervention in terms of reinforcing the identified target behaviors as well as teaching the students the self-regulated problem-solving process in the model or the specific student-directed educational support, which they believed the student would generalize and use in other settings on other occasions. Further, teachers wanted to encourage students to develop greater consistency in performing the target behaviors they self-identified.

Training

During the training condition, there was a marked increase in student performance of target behaviors as they learned and mastered the learning strategies and applied those strategies to achieve their goals. The mean number sessions needed by students to achieve 80% mastery on their respective student-directed learning strategy was 3.68. Some students achieved mastery in two sessions while others mastered in eight sessions. Three of the 19 students did not achieve the goal of 80% or better for correct strategy use, although they received training for 10, 13, and 15 sessions. It should be noted that within the *Self-Determined Learning Model of Instruction,* students would typically change some aspect of their efforts, either a goal or the action plan, if they did not make sufficient progress. However, the time constraints associated with the conduct of the study precluded these three students from revising their goals or changing their action plans; for purposes of the study, we are reporting the progress they made. In each case, however, teachers worked with the students after the study period ended to complete the self-regulated problem-solving process used by the model (e.g., revised goal or action plan). Each of the three groups had one student who did not achieve mastery on the use of the instructional strategy. However, since Group 2 was smaller *(n = 4)* than the other two groups (Group 1 included eight students and Group 3 included seven), the score of that single individual had a greater impact on Group 2's mean.

TABLE 2

Performance Results

Student	Baseline Mean	Training Mean	Posttraining Mean	Student Goal
Jack	50	56	98	55
Kip	51	66	57	50
Jacob	59	97	100	90
Jerry	91	91	99	100
Andy	63	77	90	50
Nedra	36	63	87	70
Paul	34	78	89	80
John	62	86	96	80
Andrea	18	49	100	40
Lewis	28	80	Did not complete	60
Valerie	20	29	Did not complete	50
Ariel	0	75	100	65
Angie	0	74	40	80
Shaun	93	88	97	80
Tanya	0	71	100	75
Mary	100	87	100	80
Curtis	93	98	100	80
Dean	50	36	39	70
Cory	43	86	100	80

Post-Training

As was mentioned earlier, when a student's daily mean score reached 80% or better for two consecutive days after training, the student moved into the post-training condition. Group I remained in post-training for nine .sessions and maintained a mean of 90% and a mean range of 83%-100%. During this condition, all but one of the students functioned at 95% or higher most sessions. One student of the eight in this group did not achieve the mastery level of 80%, although he exceeded his baseline data level consistently. During the post training condition, Group 2 was reduced to two students with both mastering the target behaviors during training since one student did not achieve mastery and another was absent during post-training due to an illness. This group remained in post-training for eight sessions, during which time they maintained a group mean of 100%. Due to an extended school year, data were collected on Group 2 for five sessions beyond the data collection period for Groups 1 and 3. Throughout those sessions, the students maintained a mean of 100%. Group 3's data ended with a post-training condition mean of 79% and a mean range of 76% to 81 % across sessions. One student in this group dropped from mastery level in training to 40% in post-training. Another student never did achieve the target performance level and maintained a mean of 37% during post-training, which marked a 37% increase from her baseline performance. Group 3 experienced a 25% increase in the correct performance of the target behaviors from baseline through the post-training condition. Table 2 shows the combined performance for all 19 students.

Goal Attainment Scale

The mean GAS score for the total sample was 60, indicating that, on the average, students exceeded teachers expectations for achievement of their goals (see Table 3). Twenty-one percent of the standardized GAS scores equaled 50, indicating that students attained a satisfactory level of achievement, while 68% of the scores were higher than 50. In all, over two-thirds of the students exceeded expectations of their teachers in relation to goal attainment. Only 10% of the students *(n* = 2) were rated as the least favorable outcome, essentially indicating no progress on the goal. Thus, 89% *(n* = 17) of the participants achieved their personal goals at or above the teacher-rated expected outcome levels.

Social Validation

Of the six teachers participating in the study, four completed the social validation forms for .13 students. All forms included feedback regarding the status of guiding students through the three

TABLE 3

Goal Attainment Scaling of Student Goals

GAS Score	Percentage of Participants
30 (-2 S.D.)	10
40 (-1 S.D.)	0
50 (Mean)	21
60 (+1 S.D.)	16
70 (+2 S.D.)	52

phases of the *Self-Determined Learning Model of Instruction.* All teachers indicated that students appeared to like the process, were willing to work toward achieving their own goals. enjoyed being in charge of their learning. and liked being responsible for their own decisions and actions. One teacher recommended that educators discuss with students the most important skills needed to promote self-determination for successful community employment and adult living. Another suggested that adequate time must be allowed to work with students in the goal-setting process. Of the 19 student participants, 12 provided feedback on their perceptions of the value of the model. All 12 indicated that the model increased their skill proficiency or independence, and 5 indicated it improved their self-confidence. All 12 also reported they did what they said they would do. Last, all said they liked the process. Reasons given included appreciation for the problem-solving process, having the opportunity to talk to their teachers about themselves, making their. own choices, and learning new skills based on those decisions.

Discussion

The findings indicated that all but two of the participants improved their performance of target behaviors after receiving instruction in following the three phases of the *Self-Determined Learning Model of Instruction.* For most of the participants, dramatic changes in performance were evident between baseline and intervention conditions and maintained in the post-training condition. Although the delayed multiple baseline design across groups employed in the present study did not identify functional relationships between independent and dependent variables for individual participants, the design provides some measure of experimental control by providing evidence that the level of mean performance across groups improved only when the intervention was introduced. Consistent with multiple baseline designs across subjects, differential levels of responding for groups across experimental conditions suggest that it was the model that was responsible for the reported behavior changes. As presented in Table 2, data on individual performance support this finding, with most of the participants improving their performance during the intervention condition from baseline levels. In addition, findings from the Goal Attainment Scaling process, in which all but two students met or exceeded the expectations of teachers in achieving transition-related goals, support indications that the model was effective and that students with cognitive and other disabilities can successfully self-directed learning toward transition-related goals. The primary purpose of the *Self-Determined Learning Model of Instruction* is to enable teachers to teach students to become casual agents in their lives. Although there is no way to know if their unexpected skill gains were directly due to the effects of the teaching being in control of their own learning, general consensus indicates that individuals are more motivated to change their behavior (learn) when they have a direct and active role in the learning and educational process (Wehmeyer, Agran, et al., 1998). The findings of this study support this consensus.

As noted above, 89% of their goals were at or above the expected level of outcome as rated by their teachers. This is in spite of the fact that most of the participants, like many students with disabilities, had limited prior experience with self-regulation, goal setting, and problem solving. Students who receive instruction using the model need not have any prerequisite level or previous experience with these processes. The model provides a process by which students can gain problem solving, decision-making, goal setting, and self-regulation skills in the course of working toward educationally valuable goals and objectives. This is illustrated in the current study by the fact that 17 of the 19 participants were classified as having either intellectual or multiple disabilities and the target behaviors included a range of functional, academic, social, community, living, and work skills. Available published data suggest that students with intellectual disabilities are provided little systematic instruction to promote self-determination (Agran et al., 1999; Wehmeyer, Agran, et al., in press), and the present study's findings support advocacy and research efforts to promote the self-determination of persons with significant disabilities. Indeed, the model was found effective across students with a variety of disabling conditions.

Several limitations to this study will warrant consideration and will influence interpretation of the results. First, as indicated previously, the delayed multiple baseline design across groups design employed in the study limited the experimental control of the study. Although the findings suggest that the groups' mean levels of performance increased, contingent on the introduction of the intervention, the specific effects of the intervention on individual performance cannot be experimentally supported. By definition, the design does not allow for the concurrent measure of baseline performance from the beginning of the study. Nevertheless, the stability of the data across groups and the finding that the behavior change occurred after the implementation of the process suggests that the intervention produced this change. Second, time constraints precluded inclusion of a maintenance condition. Performance data obtained in the post training condition suggest that a partial. withdrawal of intervention components did not decrease responding, but the durability of the reported behavior could not be determined. Needless to say, future investigations of the effects of this model will necessitate the collection of maintenance data over an extended period. Third, the findings suggest that instruction in following the model enhanced the students' competency in goal setting, ting, self-regulation, and self-evaluation. Nevertheless, we do not know to what extent the students' self-determination was enhanced; that is, did the instruction they received provide them with an enhanced sense of autonomy and self-efficacy?. Self-determination is a complex construct, comprised of many variables (Wehmeyer, 1996b). The skills the students acquired in this study can aid in an increased sense of control over their lives and transition services, but there is no way to know how and if the students' sense of self-determination was promoted. In a wider field-test of the model with students with mild cognitive impairments (primarily learning disabilities). Wehmeyer, Palmer, et al. (in press) did document significantly higher self-determination scores after intervention using the model. However, what we can advance is the model allowed students to set their own goals, determine ways to achieve these goals, and evaluate how successful they were, all of which encourage students to think and act on their own and, presumably, enhance their self-determination (Agran, 1997; Mithaug et al., 1998). Despite the above .limitations, the present findings are of interest for several reasons. Although there is much interest about self-determination, there are relatively few data-based investigations in the transition literature on the effects of strategies to promote self-determination. Much of what is written is descriptive or opinion-based, not empirical. The present study provides empirical documentation of the value of teaching students to become more self-determined. Furthermore, relatively few of the empirical investigations that have been published involved students with intellectual and multiple disabilities. Given the emphasis in the individuals with Disabilities Education Act Amendments of 1997 (PL 105-17) on active student involvement and engagement in learning, it is important to identify ways in which all students, including students with cognitive and multiple disabilities, can be actively involved in their transition programs and learning experiences.

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