Educ. Treat. Child. (2022) 45:193–210
https://doi.org/10.1007/s43494-021-00069-9

ORIGINAL ARTICLE

Effects of Hybrid Coaching on Middle School Teachers' Teaching Skills and Students' Academic Outcomes in General Education Settings

Ahmet Fidan · Elif Tekin-Iftar

Accepted: 24 November 2021 / Published online: 30 January 2022

Abstract We examined effects of hybrid coaching delivered face-to-face and via smartphone to train middle school general educators to use a simultaneous prompting procedure during instruction on academic core content with sixth-grade students with intellectual disability in general education classrooms. We also measured student outcomes. We used a multiple probe design across four student-teacher dyads in the study. Teachers acquired the steps of simultaneous prompting procedure with 100% accuracy, maintained the use of the prompting procedure over time, and generalized prompting for teaching new academic content to their students. Students acquired their targeted academic content, maintained the skills over time, and generalized the skills across different persons and settings. The results showed a functional relation of the intervention on the dependent variables. Social validity data collected from teachers and students were positive. Future research needs and implications of the findings are discussed.

A. Fidan
Faculty of Education, Department of Special Education, Sakarya University, 54300 Hendek, Sakarya, Turkey

A. Fidan (✉)
Sakarya Universitesi, Egitim Fakultesi, Ozel Egitim Bolumu, 54300 Hendek, Sakarya, Turkey
e-mail: afidan@sakarya.edu.tr

E. Tekin-Iftar
Research Institute for the Handicapped, Anadolu University, Tepebasi, 26470 Eskisehir, Turkey

Keywords professional development · hybrid coaching · simultaneous prompting · intellectual disability · inclusion · general education teachers

Inclusive education is a widely accepted educational policy in Turkey, where students with disabilities are primarily served in general education (GE) settings depend on the severity of their needs. In the 2018-2019 teaching year, 58% of the students with disabilities attended GE classrooms and 61% of them had the diagnosis of intellectual disability (ID; Ministry of National Education Strategy Development Presidency, MoNESDP, 2019). According to the full inclusion model in Turkey's education system, in most cases, students with disabilities are required to spend 100% of their daily school time in GE settings based on the educational assessment results. However, an individualized education program (IEP) team could also decide to exempt some students from some courses (e.g., math) and/or to provide one-on-one special education (SE) support services during some of their school hours. Access to the GE curriculum is one of the components of successful inclusion practices; however, educational programs of students with disabilities often are not linked strongly enough with the GE curriculum. Hence, these students may not experience enough academic gains from being included (Tekin-Iftar et al., 2017; Spooner et al., 2006).

Among other problems, the lack of academic gains may cause students with disabilities to drop out as they get older. The dropout rates of 16-to 24-year-old students with disabilities in the United States was almost two times higher than for students with typical development (mean 14.81% vs 6.47%; National Center for Education Statistics, 2020) between 2007-2019. In Turkey, 78% of middle-school graduates with typical development continued to their high school education in GE during the 2018-2019 teaching year, but only 36% of the middle-school graduates with ID continued to their high school education (MoNESDP, 2019).

Evidence-based practices (EBPs) are defined as practices that are shown to be effective through high-quality research studies and usually have positive impact on learning outcomes of students with disabilities (Vaughn & Dammann, 2001). The use of EBPs in classrooms may help to increase academic gains by creating a link between educational programs of students with disabilities and the GE curriculum. GE teachers who serve in K-12 settings have reported inadequate coursework about SE and EBPs, and little experience in inclusive settings to choose EBPs for their students (Akalin et al., 2014; Tekin-Iftar et al., 2017). Various professional organizations, independent institutions, universities, and centers (e.g., Council for Exceptional Children, National Autism Center, National Professional Development Center on Autism Spectrum Disorder, What Works Clearinghouse) have developed/published web portals or resources aiming to guide teachers and parents in selecting and using EBPs. Providing effective professional development (PD) can help teachers to address these questions. Furthermore, effective PD can be not only a reliable intervention option to select and implement EBPs for students with disabilities by GE teachers (e.g., Tekin-Iftar et al., 2017; Cooc, 2019) but also a promising opportunity to help close a research-to-practice gap that affects teachers' and students' success (Coogle et al., 2021; McLeskey et al., 2018).

PD is a systematic and practical learning activity designed to improve teachers' practices so that students with disabilities in their classrooms have better outcomes (Desimone, 2009; Sancar et al., 2021). Research in the last two decades, however, has suggested that didactic trainings during PD alone may not produce desired teachers' outcomes; coaching teachers after initial training may be necessary to increase the correct use of EBPs (Barnes et al., 2011; Hall et al., 2010; Snyder et al., 2011; Snyder et al., 2015). Coaching can be delivered in many different modes, such as side by side (Bethune & Ayers, 2020), delayed (Kretlow & Bartholomew, 2010), face-to-face (Tekin-Iftar et al., 2017), or distance (Tunc-Paftali & Tekin-Iftar, 2021). Performance feedback (PF) during coaching has commonly been used to improve the performance of teachers (Tekin-Iftar et al., 2017; Hemmeter et al., 2011). Scheeler et al. (2004) suggested the most influential component of PF was immediacy. PF can be provided in various forms such as written, graphic, or a combination of these (i.e., verbal + graphic) together (Kaufman et al., 2013). However, using these forms in immediate PF can be challenging for coaches as it requires extra time (Dennis & Horn, 2014). Furthermore, it may not be possible for the teacher to receive the feedback immediately after performance due to the school routines and requirements. Last, the measures (e.g., social distance, mobility restrictions) taken due to overcome the spread of viruses during COVID-19 pandemic has required developing and conducting alternative ways of providing PD that are not only effective but also user-friendly and acceptable by teachers (Choate et al., 2021; Ó Grádaigh et al., 2021). These challenges have provided an impetus for researchers to investigate the effects of "hybrid coaching models" to train teachers (Kaiser & Hemmeter, 2013; Powell & Diamond, 2013; Sailors & Price, 2015) including immobile and mobile technologies. During hybrid coaching, different types of PF can be delivered as alternatives for each other or in combination by considering the teachers' resources. Numerous studies showed PF can be delivered effectively with alternative forms of PF (e.g., written, graphic, video) using technology (e.g., e-mail, web-based video, Bug-in-Ear, one way FM radio) to overcome the issues related to time, settings, and cost of face-to-face coaching (Artman-Meeker et al., 2014; Barton et al., 2020; Coogle et al., 2018; Gage et al., 2017; Hemmeter et al., 2011; Hawkins & Heflin, 2011; Reinke et al., 2007). A hybrid coaching model for GE teachers can be designed to present the most important PF face-to-face immediately following in-class observation and then present written and graphic feedback reflecting the overall performance of the teacher in a delayed manner.

One potentially important EBP, simultaneous prompting (SP), was identified in a recent meta-analysis by Tekin-Iftar et al. (2019). SP consists of two types of trials: (a) daily probe trials and (b) training trials (Tekin-Iftar et al., 2019). Daily probe trials are used assess baseline performance, acquisition of a target skill once instruction begins, and maintenance from previous instruction. Once the teacher decides the need for instruction, training trials take place. A controlling prompt is provided during each training trial and the student does not have the opportunity to respond independently in training trials. The teacher needs to use the same prompt throughout the training trials. The teacher continues to conduct daily training trials until the criterion is met during daily probe trials. SP is an EBP used to teach a variety of discrete and chained skills to individuals with various types of disabilities from early childhood to adulthood by special educators and others (e.g., peers, parents), including GE teachers (Tunc-Paftali & Tekin-Iftar, 2021; Tekin-Iftar et al., 2017). Tekin-Iftar et al. (2017) investigated the use of the SP procedure by three GE teachers to teach academic content to middle school students with autism in inclusive classrooms. They provided PD to the teachers to teach the use of SP procedure. The teachers learned to utilize the SP procedure with a high degree of accuracy, and their students acquired targeted academic content. The authors indicated, however, that the teachers chose to present all trials in a massed (rather than distributed) trial format in their inclusive classrooms. A massed trial format can be defined as presenting teaching trials in a repetitive manner whereas the distributed trial format can be defined as embedding teaching trials for the target skills into naturally occurring activities throughout the session and or day. Social validity data showed that these teachers found delivering in massed trial format was much easier and convenient. At the same time, they also indicated that this may lead to more stigmatization in the classroom. Because the teachers pick a particular student and work with this student in a repetitive manner. Using a distributed trial format is a more inclusive model of instruction. The authors explained the distributed trial format to the teachers through the modeling procedures they used during PD. They reported that even though they explained and modeled the distributed trial format, they also presented a massed trial format to the teachers during both video and role-playing. Based on this experience, they suggested future researchers examine the effects of using modeling for both massed and distributed trial formats during PD sessions for preparing teachers to conduct a more inclusive model of instruction. Tekin-Iftar et al. (2019) also indicated that researchers predominantly have examined the effectiveness of SP procedure in SE classrooms, and there is a need to further examine the use of the SP procedure by GE teachers in inclusive settings. Finally, among the reviewed studies, the researchers most often conducted SP instructional trials in a 1:1 instructional arrangement; therefore, embedding SP instructional trials during the lecture needs to be investigated.

The purpose of this study was to investigate the effects of PD with hybrid coaching to train GE teachers to implement a SP procedure when teaching academic skills to students with ID in a group instructional arrangement using a distributed trial format. Hybrid coaching consists of giving verbal feedback face-to-face following in-class observations and providing written and graphic feedback in a delayed manner from distance through a smartphone. We addressed the following questions:

1. Will PD with hybrid coaching result in accurate use of the SP procedure by middle school GE teachers in teaching academic skills to students with ID in inclusive settings?
2. Will teachers maintain accurate use of the SP procedure at 1, 2, and 4 weeks following the PD with hybrid coaching and generalize it in teaching new academic skills to the same students?
3. Will students with ID learn academic skills taught by their teachers via the SP procedure?
4. Will students with ID maintain the skills at 1, 2, and 4 weeks following instruction and generalize the acquired skills across persons and novel conditions?
5. What are the opinions of the middle school GE teachers and students with ID about the social validity of this study?

Method

Participants

Four middle school GE teachers (Turkish language teachers) and four students with ID from a middle school in northwest Turkey participated in this study. The first researcher visited the principal of the school

to explain the purpose of the study. The principal suggested he meet with GE teachers of different disciplines (e.g., language, math) who serve students with ID to identify volunteers to participate this study. The first researcher met with teachers to explain the purpose of the study. The Turkish language teachers volunteered to participate in the study and include their students with ID. The researchers paired the participants in teacher-student dyads. The teachers did not have a history with PD using coaching. Neither the teachers nor the students had a history with teaching or learning with SP procedure. Prior to the onset of the study, the researchers obtained permission from the University Institutional Review Board and written informed consents/assents from the participants.

Teachers

Four Turkish GE teachers who teach Turkish language for grades K-5 to 8 volunteered to participate in this study. All teachers had a bachelor's degree in teaching language. Teacher 1 was a 33-year-old female with 11 years of teaching experience. She had attended an 8-hour PD training about teaching methods for students with special needs. Teacher 2 was a 49-year-old male teacher with 6 years of teaching experience. He had attended a 3-day training about inclusion and teaching students with special needs. Teacher 3 was a 33-year-old female teacher with 10 years of teaching experience. Teacher 4 was a 34-year-old female teacher with 12 years of teaching experience. Neither Teacher 3 nor Teacher 4 had training about inclusion and teaching students with a disability. The prerequisites for participation in the study were (a) having a student with ID included in their classrooms, (b) being assigned to teach the participating student for at least two semesters, and (c) not using the SP procedure in their classrooms.

Students

Three Turkish and one Georgian sixth-grade students with ID participated in this study. They spent 100% of their school time in GE classrooms. During their diagnosis to determine cognitive functioning, the *Wechsler Intelligence Scale for Children-Revised* (WISC-R; Savasir & Sahin, 1995) was used for Students 1, 2, and 4; the *Leiter International Performance Test* (Leiter, 2005) was used for Student 3. Students' test scores on these instruments were not accessible to the researchers.

Student 1 was a 12-year-old male student with ID. He could follow verbal directions and had basic reading-writing skills. Student 2 was a 10-year-old male student with ID. His educational assessment findings suggested SE support service in language and speech skills, Turkish language, and math; however, he did not have access to support services due to a transportation problem. He could follow verbal directions and had basic reading skills. His teacher also reported that his writing skills needed to be improved. Student 3 was an 11-year-old male student with ID. He had migrated from Georgia and had not received Turkish citizenship during the course of study. Therefore, he was not receiving SE support services. He could follow verbal directions and had basic reading and writing skills. He also had significant limitations in recall and reading comprehension. Student 4 was a 12-year-old female student with ID. Her educational assessment findings suggested SE support service in language and speech skills, social studies, Turkish language, and math. She received support services in these areas from a private SE center. She could follow verbal directions and had basic reading and writing skills; she also had significant challenges in communicating and interacting with her peers and teachers in the classroom. The IEP of each participant in Turkish language course included at least two of the following objectives: "reading sentences correctly according to the rules," "reading and listening comprehension and expression," "developing reading and writing skills," "correct use of basic writing skills and punctuations," and "enriching vocabulary repertoire."

Research Staff

The first researcher was a 32-year-old male working on his doctoral degree in SE at the time of the study. He conducted all sessions and provided coaching to the teachers. (We sometimes refer to him as "coach" throughout the article, depending on the context.) He had 8 years of experience working with students with ID and autism. The second researcher had a PhD in SE, held the rank of full professor, and had nearly 30 years of experience as a researcher. Eight undergraduate students studying SE at the same university as the first researcher collected interobserver agreement (IOA) data in the study. (The first

researcher and an observer collected data simultaneously yet independently in each classroom.) To teach how to collect IOA data, the first researcher explained the procedures and modeled for the observers while they watched videos showing instructions with the SP procedure. They continued practicing data collection until they reached 100% accuracy.

Settings and Materials

This study took place in an urban, public middle school located in northwest Turkey. Nearly 750 students were enrolled in the school kindergarten through eighth grade. Two-thirds of the students were considered middle income and urban, the rest came from rural areas. Of these students, 2.9% had a diagnosis of at least one SE category.

Professional Development and Feedback Settings

The PD sessions (initial training) took place in-person with four teachers individually, three in either in the teachers' lounge or the school counselor's office at the school and one at the university. These settings were furnished with office furniture and materials. The coach and the participating teacher sat at a table in front of a laptop computer as they went through the PD protocol during a block of time devoted to planning. Other than two observers sitting away from each other to prevent any possible interaction, no one else was in these settings. PD materials included the researchers' prepared PowerPoint slides that provided a foundation for systematic instruction, an overview of the SP procedure, and an explanation of data collection. In addition, the teachers had access to hard copies of the slides and samples of data sheets.

Feedback sessions were conducted with the teachers once they started to deliver the SP procedure to the participating students at the one of the above-stated settings. The teacher and the first researcher sat at a table facing each other or next to each other; the ability to see the data collection sheets the researcher used to collect data during the teacher-provided intervention was ensured. The sessions were audiotaped for IOA analyses. The coach had a smartphone for sending written and graphic feedback.

Baseline and Instructional Sessions

All instructional sessions took place in the classroom of each teacher-student dyad during language classes. Students' desks (two students sat next to each other at a desk) were placed in three columns facing the teacher and the whiteboard. Participating students were the only student with special needs in their classrooms except for Student 2's classroom, in which a classmate was diagnosed as having emotional and behavioral disorders. The participating students were required to sit near the teacher. Each class was set up with basic classroom materials. Aside from the teacher and students in the classes, the researcher and the observer were the only people in the classrooms. During all sessions, the teachers had data sheets to record each student's responses and a list of the target stimuli to be taught in the study.

Experimental Design

A multiple probe design with probe trials across teacher-student dyads documented the effects of (1) PD with hybrid coaching to train four teachers to implement the SP procedure in teaching academic skills to their students with ID in the GE classrooms and (2) SP on learning of these academic skills by the students (Gast & Ledford, 2014).

There were two dependent variables in the study: (1) the language teacher's ability to use the SP procedure accurately to teach academic skills to their students with ID and (2) acquisition of the targeted academic skills from the language course by the students with ID. The researchers modified the task analyses developed by Tekin-Iftar et al. (2017) to record the teachers' instructional behaviors during baseline and intervention sessions. The criterion for teachers was 100% accuracy in using the SP procedure across three consecutive probe sessions.

The researchers worked with the teachers to identify target behaviors for each student. They selected five target behaviors from the unit of the language course that the teachers were going to teach in the coming weeks. The coach and the teachers reviewed IEPs of the students. One of the IEP objectives for all students was to answer inferential questions with accuracy after reading a passage or being exposed to information. They identified questions from the unit associated with this objective. The target behaviors

of each student are presented in Table 1. Although all teachers in this study taught identical units at the same time, the focus of instruction for each student varied according to the unit of instruction the teacher would be covering at the time that intervention occurred for each dyad. The criterion was 100% correct responding to target skills during daily probe sessions (see Table 1).

There also were two independent variables in the study: (1) PD with hybrid coaching sessions to prepare teachers to use the SP procedure and (2) the SP procedure to teach academic skills to students with ID. The first independent variable was tested on teachers' behaviors, and the second independent variable was tested on students' behaviors.

General Procedure

Baseline Sessions

The researchers conducted two different types of baseline sessions: (a) baseline sessions for the teachers and (b) baseline sessions for the students with ID.

Baseline Sessions for Teachers The researchers assessed the teachers' delivery of instruction using the steps of the SP procedure to teach academic skills to their students with ID as usual in baseline sessions. There were six class periods (40-min each) for the sixth-grade language course weekly. These class periods were distributed across four days as follows: 80-min class blocks for two days and two-40 min individual class blocks for two days. The coach provided a task direction (e.g., "…, please teach your student the fact from your unit as you always do.") prior to class and left the classroom after observing and thanking the teacher. The researchers considered each of the teacher's teaching attempts with the participating student as a teaching trial. The researchers set the number of possible teacher responses per session at five steps per trial (e.g., five opportunities to provide an attentional cue, a task direction, a prompt, or a consequence). During these teaching trials, two independent observers sitting away from each other in the classroom collected data on the occurrence of the steps of the SP procedure presented in Tekin-Iftar et al. (2017). Three types of responses were possible in baseline sessions: (a) correct response, (b) incorrect response, and (c) no response. The researchers defined correct responses as performance of any of the steps of SP instruction, and they defined incorrect and no responses as either incorrectly performing or not performing the steps of SP instruction, respectively. The observers collected data using a plus (+)

Table.1 Target Behaviors and Expected Responses for the Students

Students	Target Skills	Expected Response
Student 1 and 4	What are the characteristics of a "good" person?	Valuing people, showing respect, keeping one's word
	What can we do to live in a safe environment?	Obey the rules, value people, show respect
	Why do people have to migrate?	War, poverty, climate changes
	Tell three courtesy phrases!	Please, excuse me, thank you
	What are the plural suffixes? Give two examples!	"-ler" and "-lar", example for "–ler" , example for "–lar"
Student 2	What are the characteristics of a "good" person?	Being respectful, keeping one's word, being benevolent
	What are our duties toward our mother?	Showing love and respect, listening to her warnings, helping her when needed
	Why do people have to migrate?	War, unemployment, climate changes
	Tell three of courtesy phrases!	Please, excuse me, thank you
	What are the plural suffixes? Give two examples!	"-ler" and "-lar", example for "–ler", example for "–lar"
Student 3	What are the characteristics of a "good" person?	Being respectful, keeping one's word, being benevolent
	What kind of deeds have a lasting impact/are not forgotten?	Favors, friendships, charities
	Why do people have to migrate?	War, unemployment, climate changes
	Tell three courtesy phrases!	Please, excuse me, thank you
	What are the plural suffixes? Give two examples!	"-ler" and "-lar", example for "–ler", example for "–lar"

Note. "ler","lar" = Plural suffixes in Turkish.

to indicate that the teacher delivered a step correctly and a minus (-) to indicate that the teacher delivered a step incorrectly or failed to perform a step. They collected data for five teaching attempts (counted as trials) during teaching blocks and then terminated the sessions. The researchers calculated the percentage of correct responses out of the number of possible responses to plot the data on the graph.

Baseline Sessions for Students The first researcher conducted baseline sessions with the students individually, as the teachers did not receive PD (initial training) explaining how to follow baseline session protocol. He conducted baseline sessions to assess the students' pre-intervention performance on targeted academic skills during pull-out time outside of the class period. The researchers defined three types of responses during these sessions. They defined correct responses as answering the question correctly, incorrect responses as answering the question incorrectly, and no responses (also counted as incorrect responses) as not responding within 4 seconds after the task direction was presented. Each baseline session consisted of five trials (one trial per target skill). During baseline sessions, the researcher delivered an attentional cue to the student, "… are you ready?" After securing the student's attention, he delivered the task direction, "…, what are the characteristics of a 'good' person?" He waited 4 seconds for the student's response. Correct responses resulted in verbal reinforcement (i.e., praise), and incorrect or no responses resulted in ignoring the response or failure to respond. The researcher waited at least 4 seconds before presenting the next trial. He collected data using a plus (+) to indicate that the student responded correctly within 4 seconds and a minus (-) to indicate that the student responded incorrectly or did not respond within 4 seconds. Then, he calculated the percentage of correct responses and plotted them on the graph. An observer was ready during these sessions to collect IOA data.

Instructional Sessions

The researchers conducted two different types of instructional sessions: (1) PD sessions (consisting of initial training and coaching) for the teachers and (2) SP sessions for the students with ID.

Professional Development Sessions After the baseline condition, the coach provided PD using behavioral skills training on the SP procedure for the four language teachers individually in a time-lagged manner. The researchers determined the sequence of exposure to PD sessions in accordance with the baseline performance of the teachers (from the lowest to the highest). First, the researcher provided background information through a PowerPoint presentation about systematic instruction as well as a description of the SP procedure (e.g., prompting, reinforcement, trial, instructional and probe sessions) in nontechnical terms. Then, he showed video examples of how to conduct the SP procedure (both probe and instructional trials) during a group teaching arrangement in class. While watching the coach-prepared video examples with the teachers, the coach explained the steps of the SP procedure (e.g., "The teacher used a verbal prompt here."). Then, he modeled how to deliver probe and instructional trials, including the academic skills to be taught in the study. After that, the coach conducted guided practice by shifting the role of being a teacher and student. The coach asked the teacher to act as a student and provided instruction via the SP procedure as he talked about the teaching behaviors he modeled. Then, the coach acted as a student and while the teacher delivered the SP procedure, taking into consideration the information provided earlier and the coach's modeling behaviors. Finally, the coach provided feedback to each teacher until they reached 100% accuracy on implementing the SP procedure. The PD sessions lasted for a mean of 45 min (range = 40-50 min) across the teachers.

Coaching Sessions Following PD (initial training), the teachers began delivering instruction with the SP procedure. As mentioned earlier, there were six class blocks for the language course per week. During each instructional session using the SP procedure, the teacher conducted one trial for each of five target skills. Therefore, the teacher delivered five probe trials and then five instructional trials. The teachers only conducted instructional trials during the first session of intervention. For the remaining sessions, the teachers conducted daily probe trials prior to instructional trials throughout the intervention. Prior to intervention, the coach and the teacher came together individually in a time lagged manner, where they shared their opinions and observations and decided to use

verbal prompts (all students had verbal expressive responses) as the controlling prompts. To collect data, the coach and an observer observed both probe and instructional sessions. While they collected data for the correct and incorrect responses of the teacher and student, the teacher collected data for the participating student's responses throughout the intervention.

During a 10-min recess at the end of probe and instructional trial sessions, the coach provided verbal feedback. While providing verbal feedback, the teacher and coach sat next to or facing each other, and the coach shared his data collection sheets for that session. The coach audiotaped these sessions with his smartphone for treatment integrity and IOA analysis. Each feedback session consisted of positive opening statements (e.g., "You have completed both probe and instructional trials although this is your first practice. This is a very good start.") and telling which session he was going to discuss. The coach provided descriptive feedback about the components and quality of the instruction (e.g., trial presentation type, trial presentation quality). Then he provided positive and corrective feedback for the probe and instructional trials. He first provided positive feedback (e.g., "You provided a prompt followed by a task direction; that was great.") for the steps that the teacher completed with accuracy, then provided feedback for the steps that needed to be improved (e.g., "You did not reinforce your student's correct response. Please pay attention to this in your next trials."). At the end of these sessions, the coach provided information about the participating student's performance on the targeted skills and the correlation between the teacher's and student's outcomes (e.g., "As you can see, once you started to use SP procedure accurately, the correct responses of your students also increased."), and the teacher expressed his or her comments or questions. These sessions usually took 4 to 5 min. In addition to the verbal feedback, the coach provided written and graphic (radar charts and line graphs) feedback to the teachers about their behaviors during probe and instructional sessions, as well as the participating student's performance at the end of every other third session (i.e., two times per week). Figure 1 represents a sample of the radar charts used in the study. The coach created a text document and provided written and graphic feedback for the performance of the teacher and student during daily probe trials and instructional trials. He delivered this file to the teachers via WhatsApp, and they received them via their smartphones. If they had any questions or comments, they also delivered them through their smartphones, in either audio, written, or visual form. The coach presented two radar charts: a 6-zone radar chart for the performance of the teacher in daily probe sessions (see Panel A in Fig. 1) and a 7-zone radar chart for instructional sessions (see Panel B in Fig. 1). Zones on radar charts represented the steps of the session that the teacher was expected to perform, so they display what steps the teacher acquired and maintained to date. Coaching sessions continued in a time-lagged

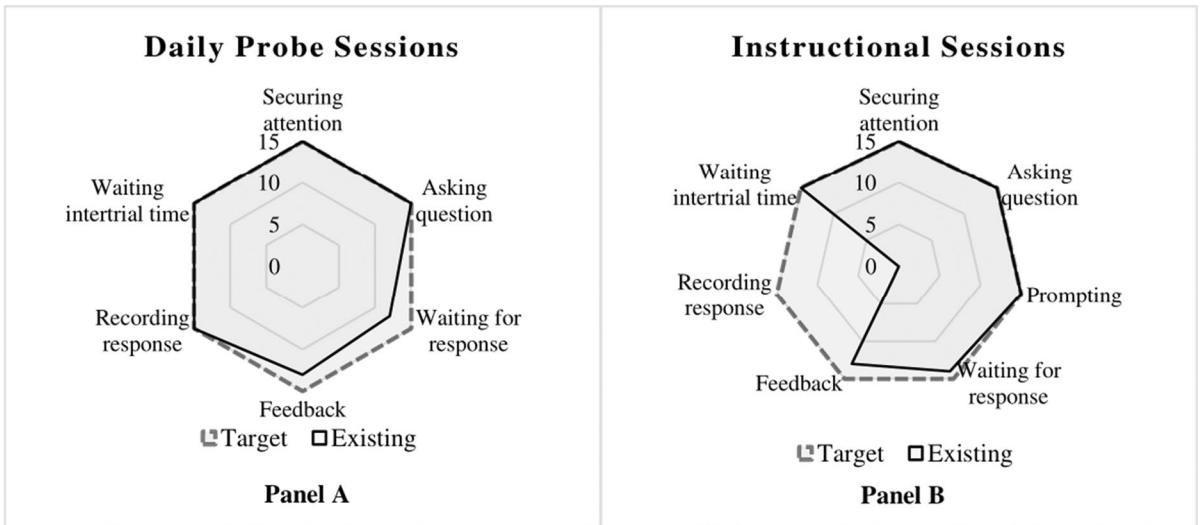


Fig. 1 Sample Radar Charts for Teachers Performance in Probe & Instructional Sessions

manner until each teacher met the criterion. If the teacher met criterion but the participating student did not, the researchers asked the teacher to teach the student with the SP procedure until the student met the criterion. The criteria for both were 100% accuracy across three consecutive daily probe sessions (see Fig. 1).

Simultaneous Prompting Sessions The teachers conducted daily probe and instructional sessions to teach five academic skills to their students with ID. During daily probe sessions, the teachers used the same protocol used in baseline sessions with students to assess acquisition of the target behaviors. The teachers collected data on the student's responses, and the researchers plotted the student's data on the graphs. The criterion was 100% correct responses for all students for at least three consecutive probe sessions. In addition to collecting student response data, the coach also collected data on the teacher behaviors, using the same data collection procedure as used during baseline sessions for the teachers. After probe trials, the teacher conducted SP training trials to teach the target behaviors to the students. The teacher secured the student's attention (e.g., "…, today I will ask some questions to you to answer, but this time I will tell the answer. I want you to repeat my answer. Shall we start?") and verbally reinforced his affirmative response (e.g., "Perfect!"). Then the teacher delivered the task direction (e.g., "What are the characteristics of a 'good' person?") and followed with the controlling prompt (e.g., "Being respectful, keeping one's word, being benevolent."). The teacher then waited 4 seconds for a response. A correct response resulted in verbal reinforcement and (e.g., "Great job!"); following an incorrect or no response, the teacher re-provided the controlling prompt and waited 4 seconds for a response. The teacher collected data on the student's behaviors during these sessions; however, prompted responses during instructional trials did not count toward criterion and were not graphed. The coach and an observer collected data for the IOA analysis.

Maintenance and Generalization

Maintenance and Generalization Sessions for Teachers Maintenance sessions occurred at 1, 2, and 4 weeks following intervention. The first researcher provided the data collection sheet indicating the presentation schedule of the trials to the teachers and asked them to conduct one probe and one instructional session. The teachers conducted the sessions in the same manner as SP sessions. This allowed the researchers to determine maintenance on the teachers' ability to conduct both probe and instructional trials in the SP procedure.

The first researcher assessed generalization of the SP procedure across content in a pretest-posttest manner. He asked the teachers to select five target behaviors from the unit they were currently teaching and conduct one daily probe and one SP instructional session to teach them. There were five trials in these sessions as well. The researcher and an observer collected data for teachers during maintenance and generalization sessions.

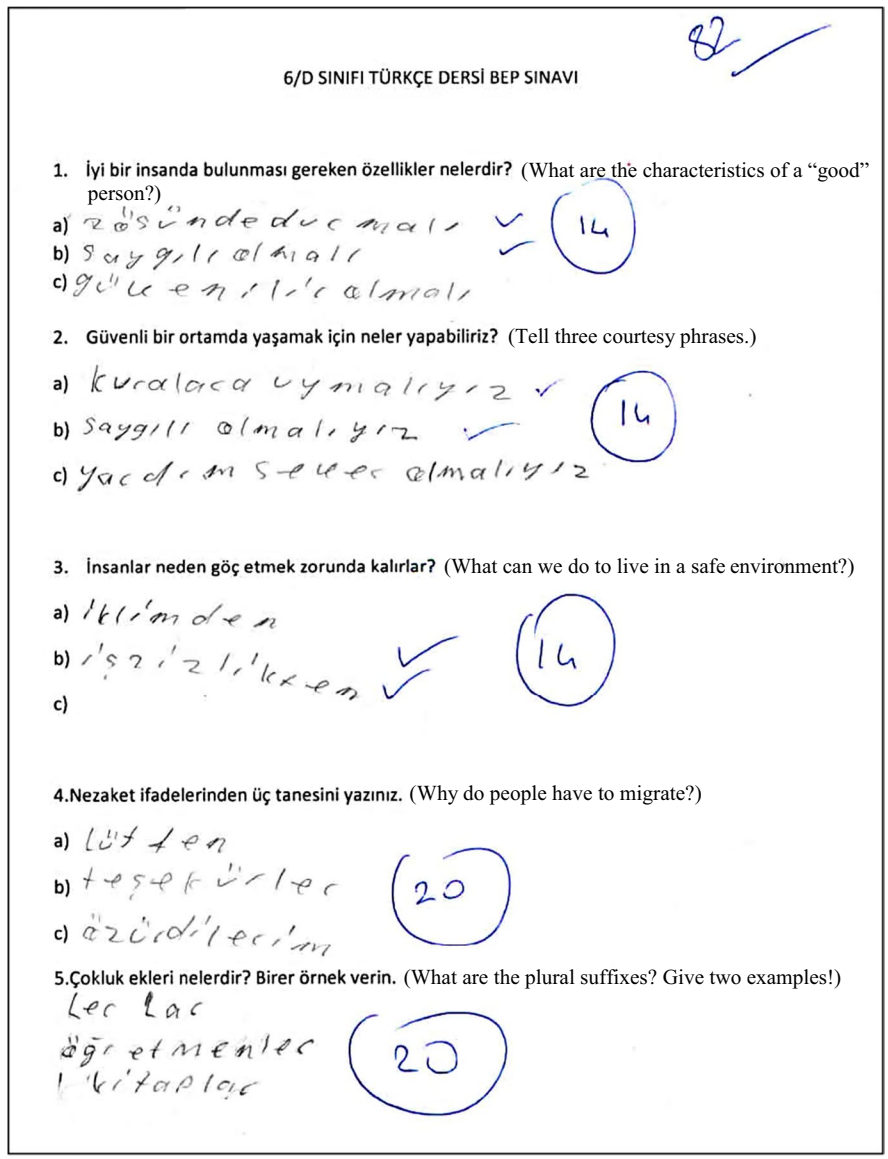
Maintenance and Generalization Sessions for Students The teachers conducted maintenance sessions with the same procedures as baseline sessions 1, 2, and 4 weeks after intervention. They secured the students' attention to ask some questions to see whether they remembered the answers to these questions they had acquired. Then, the teachers delivered the task direction, "…, tell me what are the characteristics of a 'good' person?" They waited 4 seconds for the student's response. Correct responses resulted in verbal reinforcement (i.e., praise), and incorrect or no responses resulted in no feedback. The teacher waited for a 4-s interval between the trials and collected the data as during baseline sessions.

The researchers assessed generalization of the acquired target skills in two different ways. Generalization across person was assessed in a pre-post test manner. The researchers conducted pre- and post-generalization probe sessions just like baseline sessions using the same academic skills taught to them during intervention. There were five trials during these sessions. In the second generalization assessment, the teachers prepared the students' final exam papers asking the questions about the targeted academic skills taught to them during intervention. Figure 2 displays a sample for a graded exam paper. The teacher conducted a class-wide exam; however, the teacher adapted the exam paper of the participating students to include their targeted academic skills. There were bullets under each question to remind the students about how many items they were expected to list for each question. Prior to the exam, the teachers

provided verbal directions: "…, I have your exam paper. I asked the questions that we studied together. Please write your answers to each question." There were five questions, each one with a score of 20. The researcher and an observer collected data for students during maintenance and generalization sessions.

Interobserver Agreement and Treatment Integrity

Eight observers collected IOA data for all experimental conditions with the teachers and students. The researchers calculated IOA data for at least 33% of each experimental conditions using a point-by-point method (Billingsley et al., 1980). Moreover, an observer also graded the students' exam papers administered for generalization assessment. The researchers obtained IOA coefficients of 100% for Teachers 1 and 4 during baseline sessions and 95.2% (range = 85.7-100%) and 96.42% (85.7 -100%) agreement for Teachers 2 and 3, respectively. During daily probe sessions, IOA data showed 100% agreement for Teachers 1 and 2, 93.3% (range = 83.3-100%) for Teacher 3, and 94.44% (range = 83%) for Teacher 4. The researchers obtained 94.3%


6/D SINIFI TÜRKÇE DERSİ BEP SINAVI

1. İyi bir insanda bulunması gereken özellikler nelerdir? (What are the characteristics of a "good" person?)
a) [illegible]
b) Saygılı olmalı
c) gülümseyen olmalı

2. Güvenli bir ortamda yaşamak için neler yapabiliriz? (Tell three courtesy phrases.)
a) kurallara uymalıyız
b) Saygılı olmalıyız
c) yardımsever olmalıyız

3. İnsanlar neden göç etmek zorunda kalırlar? (What can we do to live in a safe environment?)
a) iklimden
b) işsizlikten
c)

4.Nezaket ifadelerinden üç tanesini yazınız. (Why do people have to migrate?)
a) lütfen
b) teşekkürler
c) özürdilerim

5.Çokluk ekleri nelerdir? Birer örnek verin. (What are the plural suffixes? Give two examples!)
ler lar
öğretmenler
kitaplar

Fig. 2 A Sample for Graded Exam Paper for Generalization

(range = 82.9-100%) agreement for Teacher 1, 100% agreement for Teacher 2, and 99% (range = 97.1-100%) and 97.1% (range = 91.4-100%) agreement during instruction sessions for Teacher 3 and 4, respectively. The researchers obtained 100% agreement during maintenance and generalization sessions for all teachers. IOA data for all students showed 100% agreement during baseline, maintenance, and generalization sessions. IOA data showed 66.7% (range = 40-100%) agreement for Student 1, 95% (range = 80-100%) for Student 2, and 100% agreement for Students 3 and 4 during daily probe sessions. The researchers obtained 86.7% (range = 80-100%), 95% (range = 80-100%), and 93.3% (range = 80-100%) agreement for Students 1, 2, and 4 and 100% agreement for Student 3 during instruction.

Treatment integrity for the SP procedure was the dependent variable for the GE teachers in this study. An observer collected IOA data during 100% of PD sessions, and treatment integrity for conducting the PD was 100% across the teachers based on the following formula: "observed teacher behaviors/planned teacher behaviors X 100" (Billingsley et al., 1980). In addition, an observer collected IOA data for at least 33% of feedback sessions using audiotaped, written, and graphic products. They found that the coach implemented feedback sessions with 100% integrity across the teachers.

Social Validity

The first researcher interviewed the teachers and students about the social validity of the goals, procedures, and outcomes of the study. The teachers' and students' social validity questionnaires included 10 and 9 questions, respectively. The researcher audiotaped the interviews, then transcribed them descriptively to analyze the data.

Results

Effectiveness Findings

Effectiveness of Professional Development on Teachers' Outcomes

In evaluating the effectiveness of PD with hybrid coaching to prepare the teachers to use the SP procedure, the researchers plotted the treatment integrity data as the dependent variable. Figure 3 displays the accurate use of the SP procedure during baseline, intervention, maintenance, and generalization sessions across the four teachers. During baseline conditions, Teacher 1 had a mean of 0.6% accuracy (range = 0-3%), Teacher 2 had a mean of 13.4% accuracy (range = 0-31%), Teacher 3 had a mean of 14.5% accuracy (range = 0-51%), and Teacher 4 a mean of 18.2% accuracy (range = 0-49%). Following PD, all teachers reached the criterion and maintained it with 100% accuracy. Teacher 1 and Teacher 3 reached criteria in four sessions, Teacher 2 reached criteria in six sessions, and Teacher 4 reached criteria in three sessions. Teacher 1 needed a total of six verbal feedback statements (3 corrective and 3 positive) and two graphic feedback instances (1 corrective and 1 positive), Teacher 2 needed a total of eight verbal feedback statements (4 corrective and 4 positive) and two graphic feedback instances (1 corrective and 1 positive), Teacher 3 required a total of five verbal feedback statements (2 corrective and 3 positive) provided right after her class and two graphic feedback instances (1 corrective and 1 positive), and, finally, Teacher 4 needed a total of five verbal feedback statements (2 corrective and 3 positive) and two graphic feedback instances (1 corrective and 1 positive) two times in one week toward criterion. Regarding generalization, none of the teachers provided any correct responses during the pretest generalization probe sessions, but all demonstrated the steps of SP procedure 100% accuracy during the posttest probe sessions.

Effectiveness of the Simultaneous Prompting Procedure on Students' Outcomes

In evaluating the effectiveness of the SP procedure on the students' acquisition of their target behaviors, the researchers plotted the percentages of correct responses in daily probe sessions during the SP instruction condition. Figure 4 shows the percentages of correct responses of the four participating students on the targeted academic skills during baseline, intervention, maintenance, and generalization sessions. None of the students performed any correct responses during baseline condition. After instruction with SP, Student 1 reached the criterion on his target behaviors in 12 sessions and maintained with a mean of 93% accuracy (range = 80-100%), and Students 2 and 4 reached the criterion in 8 and 4 sessions, respectively, and maintained their acquired target behaviors with 100% accuracy. Student 3 did not make any correct responses

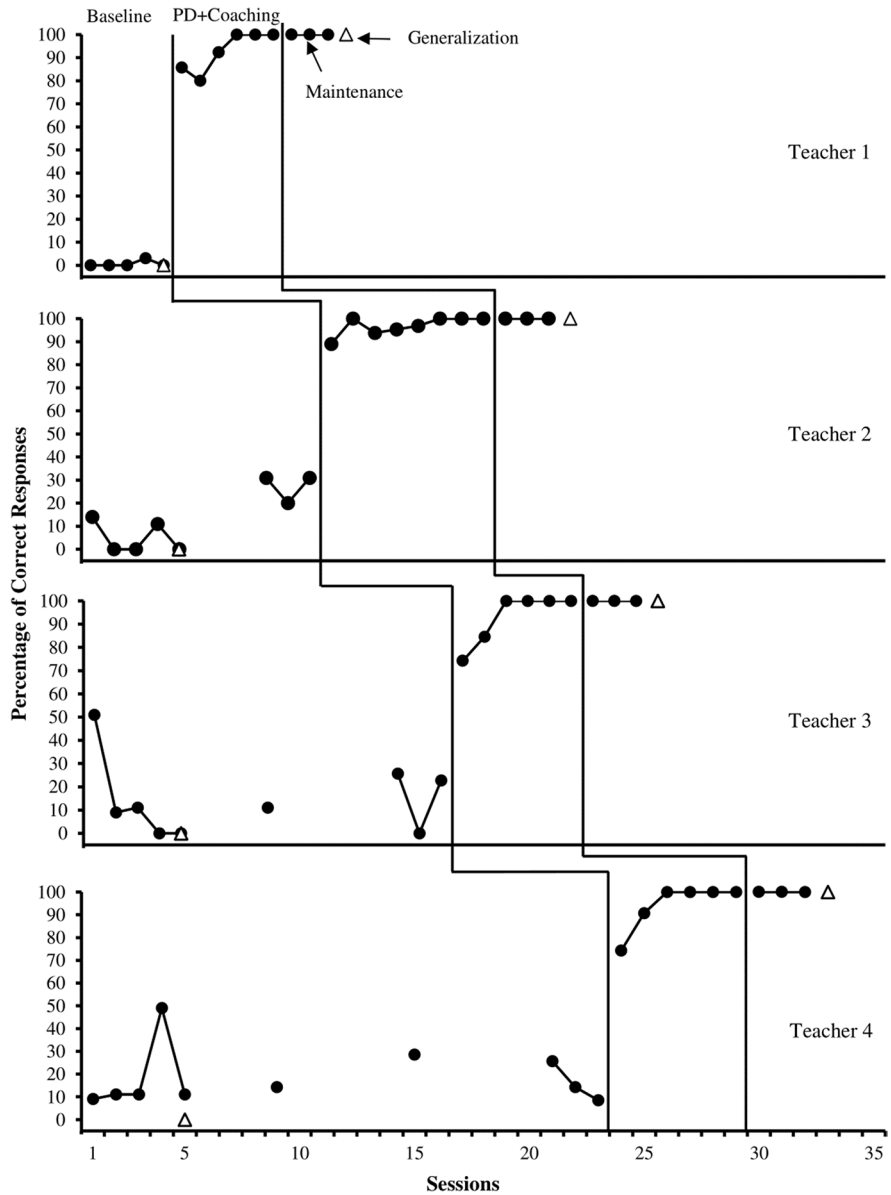


Fig. 3 The Percentage of Correct Responses of Teachers During Baseline, Intervention, Maintenance and Generalization Sessions

during baseline condition. Figure 4 shows that he did not show any progress during the first five intervention sessions. A modification was done after the researcher had a discussion with the teacher. The number of target skills were reduced to 3 from 5, each having only two responses. As shown in Fig. 4, the trend and level of his data started to increase. He reached the criterion in six sessions and maintained with 100% accuracy. Regarding the generalization assessment, none of the students performed any correct responses for generalization across persons during the pretest. Except for Student 1 (85% accuracy), the remaining students had 100% accuracy during the posttest. Moreover, Students 1 through 4 were graded with a score of 88%, 85%, 55%, and 82% correct responses on their final exams, respectively.

Social Validity Findings

Teachers' and Students' Opinions

All four teachers reported that they needed PD to teach their students with ID. They stated that they

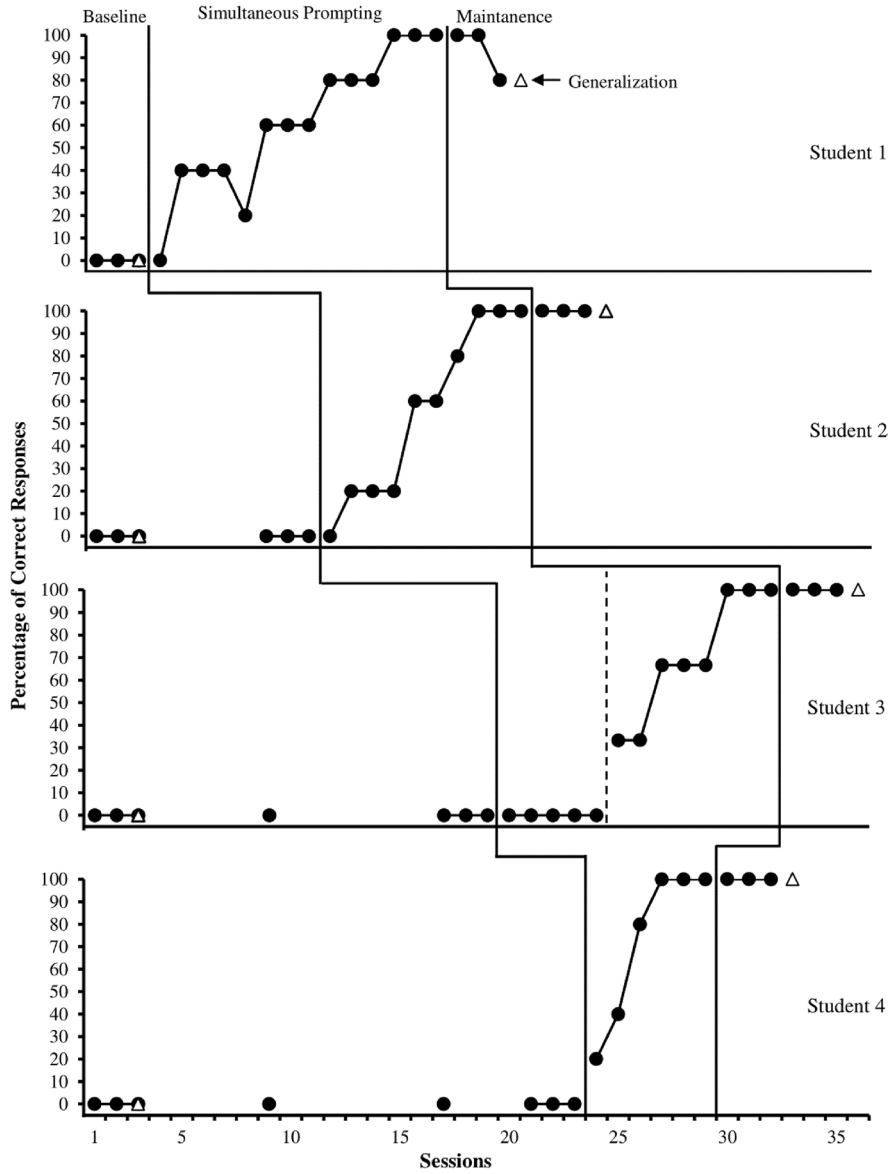


Fig. 4 The Percentage of Correct Responses of Students During Baseline, Simultaneous Prompting, Maintenance and Generalization Sessions

felt themselves inadequate in teaching students with disabilities. They also stated that they liked using the SP procedure. Two teachers stated that they had to change their plans about trial presentation format and use massed trial format; however, they stated that although they did not like it, they had to use massed trial format as other students in the classroom learned their targets more quickly so the teachers had to work with them another topic. At the same time, they stated that their students got bored with a massed trial format. All teachers stated that the most-liked parts of the study were having interactive teaching trials with their students, seeing that their students can learn the same academic skills as their peers, and teaching targets from the GE curriculum. Teachers indicated that they would use the SP procedure to teach other students in the future and suggest other teachers use it in their classrooms. All teachers reported that, in addition to initial training, receiving feedback for their teaching behaviors was helpful and effective for them. When asked their opinions about the feedback (e.g., types, quality), they stated that verbal feedback was directive, instructive, and helpful for them to improve their behaviors, and written and graphic feedback was

consistent with the verbal feedback and was quite reinforcing for them.

All four students reported that they liked the way their teachers taught them and learned easily during the study. They indicated that learning the objectives was important, and they were able to respond to the questions in their final exam. Two students also stated that they used the information they learned during the study in their daily lives. They expressed that learning this way was fun and enjoyable. They indicated that they liked their teachers asking questions, and there was nothing that they did not like during the study. Except for one student who was indecisive, all students responded positively when asked about whether they would like their teachers to teach them this way throughout the semester.

Discussion

The researchers designed this study to examine the effects of PD with hybrid coaching to prepare teachers to implement the SP procedure in teaching core academic skills from the language curriculum to middle school students with ID. The study was also designed to evaluate the SP procedure in teaching academic skills to students with ID in inclusive settings. We also examined maintenance and generalization effects of PD with hybrid coaching in teachers' behaviors and the SP procedure in students with ID. Last, we assessed the social validity of both interventions in the study. The PD with hybrid coaching was effective in training teachers to use the SP procedure accurately, and the students acquired their targeted academic behaviors from their language course. The teachers maintained their acquired skills over time and generalized the use of the SP procedure in teaching new objectives to their students. In addition, the students maintained and generalized the acquired academic skills over time and across persons and novel conditions. The results showed a functional relation of the intervention on the dependent variables. Last, social validity findings were promising. Considering all these promising findings, this study suggests a model for preparing GE teachers to use the SP and other EBPs while teaching students with ID and demonstrates SP as an effective procedure for teaching academic skills to students with ID in GE settings.

The findings of the study regarding the effectiveness of PD on training teachers to use EBPs are consistent with previous studies using varied PD delivery forms (i.e., face-to-face, distance; Tekin-Iftar et al., 2017; Tunc-Paftali & Tekin-Iftar, 2021; Cornelius et al., 2020) and feedback delivery forms (i.e., face-to-face, distance, verbal, written, video or graphic; Tekin-Iftar et al., 2017; Tunc-Paftali & Tekin-Iftar, 2021; McLeod et al., 2019). In addition to enriching the current literature, this study also adds new findings about effects of hybrid coaching that consists of verbal feedback and delayed written and graphic feedback for the overall performance. Moreover, the maintenance and generalization effects of PD are consistent with the previous studies (e.g., Tunc-Paftali & Tekin-Iftar, 2021). Like previous studies, SP was effective for teaching academic skills to students with ID (e.g., Heinrich et al., 2016). As in this study, participants of the previous studies were able to maintain the acquired academic skills over time and generalize them across new situations. Moreover, the social validity findings of the study are also consistent with the previous studies regarding the PD intervention and the SP procedure (Tekin-Iftar et al., 2017; Tunc-Paftali & Tekin-Iftar, 2021). Hence, it can be argued that this study supports and enhances the literature on PD activities preparing teachers to use EBPs and on the effectiveness of the SP procedure.

There are several points worth discussing in teaching in inclusive settings. The teachers reported a possible decrease in teaching time to be devoted to other students and the existence of behavior problems in the classrooms as main concerns (VanTassel-Baska & Stambaugh, 2005). Although the teachers in this study shared similar concerns prior to intervention, they reported that they did not have any problems in terms of distributing teaching time across students and behavior management problems in their classes at the end. Based on this experience, the teachers indicated that they could use the SP procedure with all students. This declaration made us think that by preparing the GE teachers, the teacher could use EBPs to ensure access of students with disabilities to the GE curriculum and provide quality instruction in inclusive settings. The use of EBPs may decrease the school dropout rate among students with ID by improving the success of those students, thereby making them want to stay in the system. Also, as students

participate in the lessons willingly, they may be more eager to attend school and learn.

None of the teachers implemented the steps of the SP procedure systematically during baseline conditions, but some teachers performed the steps of the SP procedure with almost 50% accuracy. The researchers conducted uncontrolled baseline sessions and tried to collect data by observing typical teaching attempts of the teachers. There were some overlapping behaviors between these attempts and the steps of SP procedure (e.g., asking question, securing student's attention). The performance of the teachers seemed to be better in some sessions since the data collectors captured these behaviors during their observation periods.

The opinions of teachers about PD with hybrid coaching are positive overall, but teachers differed regarding which components were most valuable. Two teachers (Teacher 2 and 3) found the PD session (initial training) the most useful component for them, whereas the remaining two teachers reported they benefited the most from face-to-face verbal feedback. All teachers indicated that written and graphic feedback sent through smartphones was the least beneficial feedback. Written and graphic feedback were sent to teachers less frequently, at a longer delay (after every 2-3 days), in more general way (coach summarized their overall performance), and with the same content delivered through face-to-face feedback sessions. Hence, these characteristics of written and graphic feedback would have lessened their impact on teachers; however, teachers found the delivery mode of written and graphic feedback was highly convenient for them. They used WhatsApp messaging in their usual communication in the school system. Therefore, researchers and school systems can design PD activities by using these simple and low-cost technologies. Teachers needed very limited corrective feedback while conducting probe sessions. Most feedback was provided on for monitoring student response, waiting for response interval, and presenting the appropriate behavioral consequence; however, all teachers needed feedback during the first four instructional sessions during the study. The most needed feedback during the instructional session was about the step for "presenting behavioral consequence." The possible reasons of requiring minimal feedback can be explained by the comprehensiveness of initial training provided to them. PD sessions lasted no more than 50 min and, when considering this fact and initial performance of the teachers, the effects of the PD session is highly remarkable.

The acquisition of the steps of the SP procedure was faster in teachers; however, except Student 4, participating students needed more time to learn their targets. Therefore, although the teachers met the criteria, the researchers asked them to continue to teach their students until the students learned their targeted academic skills. Meanwhile, the rest of the students in the classrooms already acquired their targets from the same unit. Therefore, two teachers chose to use massed trials instead of distributed trials to teach targeted academic skills to their student with ID while teaching new skills from the next teaching unit to rest of the classroom. During the social validity interview, they indicated they did not like providing massed trials and preferred to use a distributed trial format in the future. Besides this exception, all teachers were able to teach their students with a distributed trial format. This is one of the strengths of this study, compared to the study by Tekin-Iftar et al. (2017) in which the teachers were not able to deliver teaching via distributed trial format. As recommended by Tekin-Iftar et al. (2017), in this study, the researchers provided modeling for the strategies in a real classroom using both massed and distributed formats during PD sessions. This implementation led the teachers to use a more inclusive model of instruction.

Research have shown that GE teachers think that the reason for poor performance is due to students' deficits (Hardman & Dawson, 2008). Prior to the study, the participating teachers held the same kind of perception, but this study provides an objection to this sort of thinking. At this point, we need to pay attention to the "least dangerous assumption" (Donnellan, 1984), which means, if a student does not do well, the quality of instruction should be questioned before focusing on the student's ability to learn. In the interview for the social validity assessment, teachers indicated that started to see that the quality of instruction, and not the student's characteristics, was the problem. This study made us think that, as the teachers became empowered through PD, they became closer to adopting the "least dangerous assumption."

Research investigating the effectiveness of PD usually has focused on teachers' outcomes; however, the main rationale behind PD activities is to increase students' performance (Dennis & Horn, 2014;

Ingvarson et al., 2005; Kalinowski et al., 2019). PD studies for teachers need to explore the link between teacher behaviors and target student outcomes (Cooc, 2019). The study showed that the SP procedure used by GE teachers was effective in teaching core academic skills to middle school students with ID in inclusive settings. Tekin-Iftar et al. (2019) suggested investigating effects of SP in inclusive settings with older students because most previous studies were conducted with either preschool or primary school students in SE classes. Therefore, this study extends our current knowledge; under new circumstances (i.e., middle school students), the SP procedure was also found to be effective. It is also important to note that we assessed the acquired academic skills via a final exam with essay questions. The students' scores were quite impressive, suggesting that the students did not simply memorize the content, but learned skills that they could use flexibly.

Teachers are expected to educate a diverse population of children with a wide range of academic needs. Because teachers were able to implement an EBP (the SP procedure in the study) with a high degree of accuracy after being exposed to a PD lasting a relatively short amount of time with cost-effective coaching, providing PD on an ongoing basis to GE teachers would be a valuable option for achieving quality instruction in inclusive settings. One way to ensure this could be focusing on the leadership skills of SE teachers. SE teachers in GE schools could be a convenient resource for conducting PD activities at schools. Researchers should design studies investigating SE leadership skills in designing PD activities and effects of those PD activities on GE teachers' and students' outcomes.

Limitations and Future Research

This study has some limitations. First, the teachers delivered only verbal prompt to their students. This may have reduced the opportunities of the students to acquire their target skills through other learning opportunities (e.g., reading text including target skills and related pictures). Second, the researchers used behavioral skills training consisting of description, modeling, rehearsal, and feedback. The use of all of these components made it unclear which was responsible for changes in teacher behavior; researchers should examine which component is the most crucial and responsible for this change in the future research. Third, the presence of the researcher and the observer in all sessions may have an effect on the motivation of the teacher positively or negatively. Further studies may choose to observe only some of the sessions. Fourth, the researcher conducted the social validity interviews himself. This may have caused the participants to answer more favorably. Future studies may use different interviewer or methods for the social validity assessment. Finally, after initial training, the coach delivered different forms of feedback (i.e., verbal, and written and graphic feedback). Although the hybrid model involving all three forms of feedback was effective, future comparison studies can investigate the effectiveness and efficiency of different combination of PF to determine the most effective hybrid model in improving the teaching behaviors of the GE teachers.

Implications for Practitioners

This study showed that the GE teachers could implement an EBP (i.e., the SP procedure) successfully when hybrid coaching including initial training and feedback composed of verbal, written and graphical feedback was presented. Moreover, it is also shown that the students of these teachers were able to acquire their target skills from the GE curriculum via the SP procedure. This study also showed that the GE teachers could implement specialized instruction (e.g., delivering distributed trials) to their students with disabilities in a more inclusive mode. Therefore, GE schools are recommended to establish PD activities to improve their teachers' teaching behaviors in inclusive settings and learning outcomes of their students with disabilities. Finally, in case of any disaster (i.e., big fire, earthquake) or pandemic (i.e., COVID-19) schools need to establish and/or strengthen hybrid systems due to possible school locked down to provide continuous services remotely to meet the unique and often complex learning needs of students with disabilities as well as needs of their teachers.

References

Akalin, S., Demir, S., Sucuoglu, B., Bakkaloglu, H., & Iscen, F. (2014). The needs of inclusive preschool teachers about inclusive practices. *Eurasian Journal of Educational Research, 54*, 39–60.

Artman-Meeker, K., Hemmeter, M. L., & Snyder, P. (2014). Effects of distance coaching on teachers' use of pyramid model practices: A pilot study. *Infants & Young Children, 27*(4), 325–344. https://doi.org/10.1097/IYC.0000000000000016

Barnes, C. S., Dunning, J. L., & Rehfeldt, R. A. (2011). An evaluation of strategies for training staff to implement the Picture Exchange Communication System. *Research in Autism Spectrum Disorders, 5*(4), 1574–1583. https://doi.org/10.1016/j.rasd.2011.03.003

Barton, E. E., Velez, M., Pokorski, E. A., & Domingo, M. (2020). The effects of email performance-based feedback delivered to teaching teams: A systematic replication. *Journal of Early Intervention, 42*(2), 143–162. https://doi.org/10.1177/1053815119872451

Bethune, K. S., & Ayers, A. (2020). The effects of coaching on professionals in related disciplines: Using differential reinforcement in treatment sessions. *Education and Treatment of Children, 43*(2), 109–122. https://doi.org/10.1007/s43494-020-00013-3

Billingsley, F., White, O. R., & Munson, R. (1980). Procedural reliability: A rationale and an example. *Behavioral Assessment, 2*, 229–241.

Choate, K., Goldhaber, D., & Theobald, R. (2021). The effects of COVID-19 on teacher preparation. *Phi Delta Kappan, 102*, (7), 52–57. https://doi.org/10.1177/00317217211007340

Cooc, N. (2019). Teaching students with special needs: International trends in school capacity and the need for teacher professional development. *Teaching and Teacher Education, 83*, 27–41. https://doi.org/10.1016/j.tate.2019.03.021

Coogle, C. G., Ottley, J. R., Rahn, N. L., & Storie, S. (2018). Bug-in-ear eCoaching: Impacts on novice early childhood special education teachers. *Journal of Early Intervention, 40*, 87–103. https://doi.org/10.1177/1053815117748692

Coogle, C. G., Storie, S., Ottley, J. R., Rahn, N. L., & Kurowski-Burt, A. (2021). Technology-enhanced performance-based feedback to support teacher practice and child outcomes. *Topics in Early Childhood Special Education, 41*(2), 72–85. https://doi.org/10.1177/0271121419838624

Cornelius, K. E., Rosenberg, M. S., & Sandmel, K. N. (2020). Examining the impact of professional development and coaching on mentoring of novice special educators. *Action in Teacher Education, 42*(3), 253–270. https://doi.org/10.1080/01626620.2019.1638847

Dennis, L., & Horn, E. (2014). The effects of professional development on preschool teachers' instructional behaviors during storybook reading. *Early Child Development and Care, 184*(8), 1160–1177. https://doi.org/10.1080/03004430.2013.853055

Desimone, L. M. (2009). Improving impact studies of teachers' professional development: Toward better conceptualizations and measures. *Educational Researcher, 38*(3), 181–199. https://doi.org/10.3102/0013189X08331140

Donnellan, A. M. (1984). The criterion of the least dangerous assumption. *Behavioral Disorders, 9*(2), 141–150. https://doi.org/10.1177/019874298400900201

Gage, N. A., MacSuga-Gage, A. S., & Crews, E. (2017). Increasing teachers' use of behavior-specific praise using a multitiered system for professional development. *Journal of Positive Behavior Interventions, 19*(4), 239–251. https://doi.org/10.1177/1098300717693568

Gast, D.L., & Ledford, J.R. (2014). *Single case research methodology: Applications in special education and behavioral sciences* (2nd ed.). Routledge.

Hall, L. J., Grundon, G. S., Pope, C., & Romero, A. B. (2010). Training paraprofessionals to use behavioral strategies when educating learners with autism spectrum disorders across environments. *Behavioral Interventions: Theory & Practice in Residential & Community-Based Clinical Programs, 25*(1), 37–51. https://doi.org/10.1002/bin.294

Hardman, M. L., & Dawson, S. (2008). The impact of federal public policy on curriculum and instruction for students with disabilities in the general classroom. *Preventing School Failure: Alternative Education for Children and Youth, 52*(2), 5–11. https://doi.org/10.3200/PSFL.52.2.5-11

Hawkins, S. M., & Heflin, L. J. (2011). Increasing secondary teachers' behavior-specific praise using a video self-modeling and visual performance feedback intervention. *Journal of Positive Behavior Interventions, 13*(2), 97–108. https://doi.org/10.1177/1098300709358110

Heinrich, S., Collins, B. C., Knight, V., & Spriggs, A. D. (2016). Embedded simultaneous prompting procedure to teach STEM content to high school students with moderate disabilities in an inclusive setting. *Education and Training in Autism and Developmental Disabilities, 51*(1), 41–54.

Hemmeter, M. L., Snyder, P., Kinder, K., & Artman, K. (2011). Impact of performance feedback delivered via electronic mail on preschool teachers' use of descriptive praise. *Early Childhood Research Quarterly, 26*(1), 96–109. https://doi.org/10.1016/j.ecresq.2010.05.004

Ingvarson, L., Meiers, M., & Beavis, A. (2005). Factors affecting the impact of professional development programs on teachers' knowledge, practice, student outcomes & efficacy. *Education Policy Analysis Archives, 13*(10), 1–26.

Kaiser, A. P., & Hemmeter, M. L. (2013). Treatment fidelity in early childhood special education research: Introduction to the special issue. *Journal of Early Intervention, 35*(2), 79–84. https://doi.org/10.1177/1053815113515181

Kalinowski, E., Gronostaj, A., & Vock, M. (2019). Effective professional development for teachers to foster students' academic language proficiency across the curriculum: A systematic review. *AERA Open, 5*(1), 1–23. https://doi.org/10.1177/2332858419828691

Kaufman, D., Codding, R. S., Markus, K. A., Tryon, G. S., & Kyse, E. N. (2013). Effects of verbal and written performance feedback on treatment adherence: Practical application of two delivery formats. *Journal of Educational and Psychological Consultation, 23*(4), 264–299. https://doi.org/10.1080/10474412.2013.845494

Kretlow, A. G., & Bartholomew, C. C. (2010). Using coaching to improve the fidelity of evidence-based practices: A review of studies. *Teacher Education and Special Education, 33*(4), 279–299. https://doi.org/10.1177/0888406410371643

Leiter, R. (2005). *Uluslararasi Leiter performans testi.* (F. Onen, Trans.). Devlet Kitaplari Mudurlugu Basimevi (Original work published 1979).

McLeod, R. H., Kim, S., & Resua, K. A. (2019). The effects of coaching with video and email feedback on preservice teachers' use of recommended practices. *Topics in Early Childhood Special Education, 38*(4), 192–203. https://doi.org/10.1177/0271121418763531

McLeskey, J., Billingsley, B., & Ziegler, D. (2018). Using high-leverage practices in teacher preparation to reduce the research-to-practice gap in inclusive settings. *Australasian Journal of Special and Inclusive Education, 42*(1), 3–16. https://doi.org/10.1017/jsi.2018.3

Ministry of National Education Strategy Development Presidency. (2019). *National education statistics formal education 2018-2019*. http://sgb.meb.gov.tr/meb_iys_dosyalar/2019_09/30102730_meb_istatistikleri_orgun_egitim_2018_2019.pdf

National Center for Education Statistics. (2020). *Status dropout rates*. https://nces.ed.gov/programs/coe/indicator/coj

Ó Grádaigh, S., Connolly, C., Mac Mahon, B., Agnew, A., & Poole, W. (2021). An investigation of emergency virtual observation (EVO) in initial teacher education, in Australia and Ireland during the COVID-19 pandemic. *Irish Educational Studies, 1-8*. https://doi.org/10.1080/03323315.2021.1916561

Powell, D. R., & Diamond, K. E. (2013). Implementation fidelity of a coaching-based professional development program for improving head start teachers' literacy and language instruction. *Journal of Early Intervention, 35*(2), 102–128. https://doi.org/10.1080/03323315.2021.1916561

Reinke, W. M., Lewis-Palmer, T., & Martin, E. (2007). The effect of visual performance feedback on teacher use of behavior-specific praise. *Behavior Modification, 31*(3), 247–263. https://doi.org/10.1177/0145445506288967

Sailors, M., & Price, L. (2015). Support for the improvement of practices through intensive coaching (SIPIC): A model of coaching for improving reading instruction and reading achievement. *Teaching and Teacher Education, 45*, 115–127. https://doi.org/10.1016/j.tate.2014.09.008

Sancar, R., Atal, D., & Deryakulu, D. (2021). A new framework for teachers' professional development. *Teaching and Teacher Education, 101*, 103305. https://doi.org/10.1016/j.tate.2021.103305

Savasir, I., & Sahin, N. (1995). *Wechsler cocuklar icin zeka ölcegi (WISC-R) el kitabi.* [The manual for wechsler intelligence scale for children-revised (WISC-R)]. Turk Psikologlar Dernegi Yayinlari (Turkish Psychological Association).

Scheeler, M. C., Ruhl, K. L., & McAfee, J. K. (2004). Providing performance feedback to teachers: A review. *Teacher Education and Special Education, 27*(4), 396–407. https://doi.org/10.1177/088840640402700407

Snyder, P. A., Hemmeter, M. L., & Fox, L. (2015). Supporting implementation of evidence-based practices through practice-based coaching. *Topics in Early Childhood Special Education, 35*(3), 133–143. https://doi.org/10.1177/0271121415594925

Snyder, P., Hemmeter, M. L., & McLaughlin, T. (2011). Professional development in early childhood intervention: Where we stand on the silver anniversary of PL 99-457. *Journal of Early Intervention, 33*(4), 357–370. https://doi.org/10.1177/1053815111428336

Spooner, F., Dymond, S. K., Smith, A., & Kennedy, C. H. (2006). What we know and need to know about accessing the general curriculum for students with significant cognitive disabilities. *Research and Practice for Persons with Severe Disabilities, 31*(4), 277–283. https://doi.org/10.1177/154079690603100401

Tekin-Iftar, E., Collins, B. C., Spooner, F., & Olcay-Gul, S. (2017). Coaching teachers to use a simultaneous prompting procedure to teach core content to students with autism. *Teacher Education and Special Education, 40*(3), 225–245. https://doi.org/10.1177/0888406417703751

Tekin-Iftar, E., Olcay-Gul, S., & Collins, B. C. (2019). Descriptive analysis and meta analysis of studies investigating the effectiveness of simultaneous prompting procedure. *Exceptional Children, 85*(3), 309–328. https://doi.org/10.1177/0014402918795702

Tunc-Paftali, A., & Tekin-Iftar, E. (2021). E-coaching preschool teachers to use simultaneous prompting to teach children with autism spectrum disorder. *Teacher Education and Special Education, 44*(3), 255–273. https://doi.org/10.1177/0888406420925014

VanTassel-Baska, J., & Stambaugh, T. (2005). Challenges and possibilities for serving gifted learners in the regular classroom. *Theory into Practice, 44*(3), 211–217. https://doi.org/10.1207/s15430421tip4403_5

Vaughn, S., & Dammann, J. E. (2001). Science and sanity in special education. *Behavioral Disorders, 27*(1), 21–29. https://doi.org/10.1177/019874290102700107