THE EFFECTS OF INSTRUCTION AND FEEDBACK USING THE RICE-PLAY TOOL ON GRADUATE TRAINEES' USE OF RESEARCH-INFORMED PLAY PRACTICES AND PRESCHOOL STUDENTS' PERCENTAGE OF PLAY SKILLS OBSERVED

by

WHITNEY ELISE WARD

(Under the Direction of Georgette Morgan)

ABSTRACT

Meaningful play allows children to acquire new knowledge, observe peers, and generalize skills. Furthermore, it can significantly impact learning social skills and language development. Currently, there is a gap in literature regarding play practice feedback tools for staff members in special education classrooms. The purpose of this study was to examine the effects of instruction and feedback using the RICE-Play Tool on graduate trainees' use of research-informed play practices and preschool students' percentage of play observed. A multiple-probe design across four dyads of first-year master's students and preschool students with intellectual and developmental disabilities was used. Results show that didactic instruction with written and vocal feedback increased graduate trainees' use of research informed play practices to a mastery, indicating that RICE-P is an adequate and valuable research-informed play feedback tool. No demonstration of effect was shown for students' percentage of play observed.

INDEX WORDS: research-informed play practices, performance-based feedback, play evaluation tool, play skills, preschool children, intellectual disabilities

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WHITNEY ELISE WARD

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by

WHITNEY ELISE WARD

Major Professor: Georgette Morgan

Committee: Kevin Ayres
Jessica Torelli

Electronic Version Approved:

Ron Walcott
Vice Provost for Graduate Education and Dean of the Graduate School
The University of Georgia
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CHAPTER 1

Introduction

Importance of Play Skills

Play skills are an essential aspect of child development that provides natural opportunities to learn language and social skills (Ginsburg et al., 2007; Holmes & Willoughby, 2005). During play, children are immersed in meaningful interactions that provide foundational opportunities to increase communication and cognitive and social-emotional repertoires (Jung & Sainato, 2013). Moreover, child-driven play offers opportunities to practice decision-making and problem-solving skills (Ginsburg et al., 2007; Holmes & Willoughby, 2005). Overall, developing play skills allows children to generalize knowledge across settings, objects, and people (Jung & Sainato, 2013).

Importance of Play for Children with ASD and Intellectual Disabilities

Children with intellectual and developmental disabilities can demonstrate less variety in play behaviors as compared to their typically developing peers, which highlights the importance of contacting abundant play opportunities (Astramovich & Hamilton, 2015; Holmes & Willoughby, 2005; Messier et al., 2007). More specifically, limited interests and patterned behaviors are frequently exhibited in children diagnosed with Autism Spectrum Disorder (ASD), which may lead them to face difficulties with social interactions, skill acquisition, and functional play (Jung & Sainato, 2013; Kent et al., 2020). Because of these differences, play is often a goal for individuals diagnosed with intellectual disabilities and ASD (Astramovich & Hamilton, 2015; Pierucci et al., 2015).

Training Teachers on Play Skills in Early Childhood Development

There is a lack of adequately and consistently trained staff members in early childhood education settings, specifically in special education classrooms (Saluja et al., 2002; Schles & Robertson, 2019). Saluja et al. (2002) gathered demographics on a stratified sample of 1,902 early childhood teachers and found that 62% of the teachers attended workshops on early childhood topics, 31% took some type of college course relating to early childhood education but did not earn a college degree, and 31% earned a bachelor's degree in either early childhood education or child development. The demographics represented in this study (i.e., minimal training for early childhood teachers) may suggest that additional training and feedback for early childhood teachers could be beneficial.

While the importance of play has been demonstrated across the literature, there remains limited training and performance-based feedback opportunities for pre-service and in-service teachers regarding play skills, including modeling, prompting, and naturalistic instruction (Barton et al., 2013; Jung & Sainato, 2013). Placing teachers who are not adequately trained or given proper feedback in a special education classroom can lead to high-risk situations and poor outcomes (Rosenberg et al., 2007). Performance-based feedback is essential to improving and maintaining staff's use of effective practices, which can lead to enhanced student learning outcomes (Barton et al., 2020).

Vu & Buell (2015) examined the effects of in-service play training on teachers' beliefs and practices of meaningful play in the classroom and children's play involvement. Although the results of the study showed no change in teachers' self-reported beliefs about play, as they already believed in the importance of play skills, they did show that during direct observations, teachers took more of a leadership role or play partner role while engaging in play. Taking a

leadership role during play is more beneficial than taking on an onlooker role. Children's play involvement was evaluated pre and post-training, showing an increase in engagement regarding constructive and dramatic play as well as social levels of play. These results support the need for training early educators on play practices and the benefits of play when teaching children in preschool curriculums. Further, these results highlight that training and feedback can lead to teachers contriving meaningful and engaging play, which supports the growth of students' social skills and knowledge.

Barton et al. (2013) researched the effects of didactic training and feedback on preservice teachers' errors and correct prompts while teaching pretend play skills to children with disabilities. Study one specifically looked at how didactic training affected the implementation of a play intervention package. The play intervention package included the participant imitating the child, using least to most prompting, and reinforcing the child for engaging in target pretend play responses. After the didactic training, study one also looked at the effects of feedback on teachers' correct implementation of the play intervention package before, during, and after play sessions. Results showed that when teachers received didactic training alone, practices did not change. However, when didactic training was used with continuous feedback, the teachers' procedural fidelity of implementation increased.

Study two was a systematic replication of the first study by Barton et al. (2013) and supported the findings of study one. Additions to this replication included participants receiving more feedback than in study one, measuring the children's pretend play behaviors, and measuring the generalization of teaching across children. For most of the participants, the increase in procedural fidelity was immediate and maintained. The teachers generalized the correct implementation of the play intervention package across students. Results showed that

when teachers increased their procedural fidelity, the children immediately showed an increase in unprompted pretend play behaviors. These results demonstrate the importance of teachers receiving feedback and how it can positively impact student outcomes.

Barton et al. (2013) and Vu & Buell (2015) have shown that continuous performance-based feedback is beneficial; however, there continues to be limited literature on training and feedback tools that support pre-service and in-service teachers' use of research-informed play practices in the special education classroom setting. Elliott et al. (2024) created the research-informed classroom evaluation play tool (RICE-P) to evaluate pre- and in-service teachers' play practices during structured playtime. RICE-P gives supervisors and administrators a way to provide written behavior-specific feedback for trainees on target play practices. Play practices included in RICE-P are preparing a play area with items that are preferred for the student (Hoch et al., 2002; Koegel et al., 1987; Baker, 2000), modeling appropriate play at eye level with the student (Leaf et al., 2012; Ingersoll & Schreibman, 2006), contingent imitation of appropriate student behavior (Ingersoll & Schreibman, 2006), prompting student to imitate play modeled by the teacher (Ingersoll & Schreibman, 2006), setting up the environment to create natural motivation for communication (Hart & Risley, 1982; Kaiser & Hester, 1994), modeling language (Ingersoll, 2011; Chazin et al., 2021; Kaiser & Hester, 1994), explicitly prompting or reinforcing communication from the student (Hancock & Kaiser, 2002), and expanding communication initiated by the student (Hancock & Kaiser, 2022; Ingersoll, 2011; Kaiser & Hester, 1994). The purpose of Elliott et al. (2024) was to evaluate the technical adequacy of RICE-P. Results indicate that RICE-P consistently measured teachers' performance and was sensitive to increases and decreases in play practices across observations.

Evidence-Based Play Practices in RICE-P

Preferred Items and Activities

Hoch et al. (2002) researched the effects of magnitude and quality of reinforcement on choice responding in children with autism. Results indicate that modifying dimensions of reinforcement can influence choice responding, which can further be used to promote interactions with others rather than playing alone. Koegel et al. (1987) examined the influence of preferred activities on the social behavior of children diagnosed with ASD. The study found that when participants engaged in preferred activities, they exhibited low levels of social avoidance while interacting with adults. Baker et al. (2000) investigated the effects of incorporating thematic ritualistic behaviors into games on increasing social play interactions of children diagnosed with ASD. The results show that social interactions increased when participants learned to play the game that included their thematic ritualistic behaviors. Overall, these studies suggest that children with disabilities can develop appropriate play and social skills while engaging in preferred activities with preferred items.

Imitation

One of the main methods through which children acquire new behaviors is imitation, which is a necessary skill for learning through observation (Ledford and Wolery, 2011). Contingent imitation of children's appropriate play behavior, as well as prompting imitation, have proven to increase unprompted appropriate play behaviors. More specifically, Ingersoll & Schreibman (2006) researched the effects of reciprocal imitation training on the development of immediate object imitation of children with ASD. Results showed an increase in the participants' imitation skills as well as skills related to language, play, and joint attention.

Modeling and Prompting Play

Modeling appropriate play behavior while being at eye level with children proves to be impactful in teaching play skills (Ingersoll & Schreibman, 2006). When more than a model is needed, systematic prompting can be used to increase play behaviors. Barton et al. (2019) researched the effects of the system of least prompts and contingent reinforcement on the diversity of play behavior and play sequences of children with ASD. Results showed that systematic prompting and contingent reinforcement of appropriate play behaviors increased the children's diversity of play and play sequences.

Modeling, Prompting, and Reinforcing Communication

Children with disabilities often struggle to develop spoken language (Ingersoll, 2011). Modeling language can have a positive impact by teaching children to communicate through observational learning (Chazin et al., 2021); however, some children need extra support. When teaching children to communicate, it is essential to set up the environment to create natural motivation to communicate (Hart & Risley, 1982; Kaiser & Hester, 1994). Once the motivation is present, explicitly prompting children to communicate allows them to engage in the desired target behavior and contact reinforcement (Hancock & Kaiser, 2002). As supported by research on milieu teaching, reinforcing and expanding communication leads to an increase in communication (Hancock & Kaiser, 2002).

Current Study

There is a lack of literature on training pre-service and in-service teachers' use of research-informed play practices in the special education classroom setting. While RICE-P is a tool for which there is emerging evidence on the technical adequacy, there is not yet a study investigating the use of the tool with performance feedback as well as teacher play performance immediately after instruction. There is also not yet a study that assesses the students' change in

the percentage of play observed. The purpose of this study is to fill the gap by exploring six research questions. First, this study aims to examine the effects of instruction and feedback using RICE-P (Elliot et al., 2024) on the play practices used by graduate trainees in a special education classroom. Second, to assess the change in level of students' percentage of play skills observed following graduate trainees' use of research-informed play practices. Third, to examine if the graduate trainees' use of research-informed play practices generalizes across students and settings. Fourth, to assess if increases in graduate trainees' use of research-informed play practices maintain in 2–5-week follow-up assessments. Lastly, to examine social validity by answering two research questions. The first is to analyze how acceptable graduate trainees find vocal and written feedback delivered using RICE-P. The second is to assess if the changes in trainee and student behavior are valuable and observable to other relevant stakeholders.

CHAPTER 2

METHODS

Participants

Recruitment

All trainee participants were recruited through an email informing them of the overall goal of the research study, which is to evaluate trainee play skills. Twelve master's level students attending a southeastern university consented to participate in this study. Seven were chosen as potential participants due to meeting all inclusion criteria. Four master's level students were randomly selected because more participants met inclusion criteria than we had the resources to include. Thus, we used an online list randomizer to select participants to reduce selection bias. Four Pre-K students participated in the study, and four out of the five students enrolled in the special education classroom at the start of the study. The fifth student had plans to move to another Pre-K classroom, therefore he was not included in the study. The online list randomizer was also used to pair dyads together.

Inclusion Criteria

To take part in this study, trainees had to (a) work at least two days a week in a preschool special education classroom, (b) be a first-year ABA graduate student, and (c) score less than 60% on RICE-P in the screening assessment. To participate in this study, Pre-K students had to (a) have a diagnosis or educational classification of developmental disability, (b) score less than 75% on an initial play observation, and (c) attend the Pre-K classroom that the trainee participants worked in.

Participant Demographics

A participant demographics questionnaire was used to collect information about each master's level student. See Appendix A for the questionnaire. Prior to starting this study, all trainees received a foundational Pre-K classroom training that included a section on playing with students. They also received instruction during a required university course that included reading a chapter on play and completing comprehension assignments related to the reading.

Dyad 1 included trainee 1 and student 1. Trainee 1 was a 24-year-old White female who earned her B.S. in Psychology. Student 1 was a 5-year-old Black male with no reported history of structured play intervention. Student 1 met the eligibility criteria for special education and related services under the categories of autism and speech or language impairment.

Dyad 2 included trainee 2 and student 2. Trainee 2 was a 22-year-old White female who earned her B.S. in Psychology. Student 2 was a 3-year-old White male with no reported history of structured play intervention. Student 2 had a medical diagnosis of Chromodomain Helicase DNA-binding 8 and autism spectrum disorder level not specified.

Dyad 3 included trainee 3 and student 3. Trainee 3 was a 22-year-old White female who earned her B.S. in Psychology. Student 3 was a 5-year-old Black male with no reported history of structured play intervention. Student 3 met the eligibility criteria for special education and related services under the categories of autism and speech or language impairment. Dyad 3 was withdrawn from the study during baseline following 4 sessions of data collection for Trainee 3 and 10 sessions of data collection for Student 3 due to inconsistent and extended absences as well as Trainee 3 no longer meeting the inclusion criterion of being scheduled two days in a preschool special education classroom.

Dyad 4 included trainee 4 and student 4. Trainee 4 was a 22-year-old Asian American

female who earned her B.S. in Applied Behavior Analysis. Student 4 was a 2-year-old White male with no reported history of structured play intervention. Student 4 had a medical diagnosis of level 2 autism spectrum disorder.

Generalization probes were conducted with each trainee and Student 5. Student 5 was a 5-year-old Black female with no reported history of structured play intervention. Student 5 met the eligibility criteria for special education and related services under the categories of significant developmental delay and speech or language impairment.

Setting and Materials

Baseline, intervention, and maintenance sessions for teacher play performance and student play observations were conducted in a special education classroom operated by a local southeastern university. The classroom was used as a practicum site to train graduate students studying to become special education teachers or behavior analysts. These observations were conducted in a 6 ft by 6 ft play center. The classroom was a 30 ft by 28 ft room containing two play centers filled with toys and rugs, art on the wall, academic posters, three work tables with two chairs at each table, a whole group table, and three teachers' desks. The classroom also contained a projector to show the class schedule, play songs, and share PowerPoints for group activities. Other students and staff members not involved in the study followed the typical schedule or conducted other research.

During intervention, didactic instruction and feedback were given to trainees in a university classroom in the same building as the Pre-K classroom. The classroom contained tables, chairs, whiteboards, a desk, and a projector. During these sessions, the only other people present, besides the trainee and researcher, were periodically classroom staff members collecting procedural fidelity.

Generalization sessions for teacher play performance observations were conducted in a clinic that served clients diagnosed with autism spectrum disorder or other developmental disabilities and focused on research. The clinic was operated by the same local southeastern university and was also used to train graduate students studying to become special education teachers or behavior analysts. The clinic classroom, where generalization sessions were conducted, was a 25 ft by 23 ft room containing two worktables, an indoor swing, a trampoline, toys, art on the walls, two whiteboards, and chairs. The clinic classroom had two cameras placed in opposite corners of the ceiling to record all instructional sessions. Other clients and staff members, not involved in the study, were either working with different clients, doing other tasks, or conducting other research.

Due to the special education classroom moving to a new location, the settings changed near the end of this study. Trainee 2's 4-week maintenance probe, Trainee 3's last two data points in the feedback condition, and the 2-week maintenance probe were conducted in the new setting. Student 2's last two data points and Student 4's last eight data points were also conducted in the new classroom. The special education classroom moved to the clinic classroom previously described. Although the location was changed, the objects (e.g., play centers, tables, chairs, toys, projector, etc.) in the original special education classroom remained the same. During these sessions, staff members followed the typical schedule or conducted other research.

Trainee 4's post-intervention generalization probe was also conducted in a new setting. It was conducted in a 16 ft by 9 ft red padded room that had been transformed into an additional play area for the special education classroom students. This room was in the same building as the new special education classroom. There was a camera to record, a table, a chair, a basketball and hoop, building blocks, and smaller toys such as farm animals, fake food, puzzle pieces, and

stuffed animals. During Trainee 4's generalization probe, Dyad 4 were the only two people present, and the session was recorded with the camera.

All sessions were conducted Monday through Friday between 9 a.m. and 3 p.m. Trainees were observed 1-4 times per week, depending on their scheduled practicum hours. See Appendix B for all materials used during each condition of this study.

Dependent Variables & Response Definitions

The primary dependent variable is the trainees' use of research-informed play practices as measured using the RICE-P. During 15 min play observations, we used partial-interval recording to mark the occurrence of each play practice during a 3 min interval. See Table 1 for response definitions for each play practice measured. The secondary dependent variable is the percentage of students' play skills observed, measured using the Student Play Observation Tool. During 15 min play observations, we used partial-interval recording to mark the occurrence of each play skill during a 3 min interval. See Table 2 for response definitions for each play practice measured.

Table 1

Response Definitions for Play Practices Measured in RICE-P.

Target Research Informed Practice for Play	Definition
Has engaging toys	Play area contains at least 3 toys that are preferred by the student.
Models play	The teacher sits where the student can see them and demonstrates appropriate play with toys (eye level).
Prompts student to imitate play	The teacher contingently imitates the student as they engage in appropriate behaviors (play,

	babble, etc.)
Imitates appropriate student actions	The teacher prompts the student to imitate appropriate play/actions modeled by the teacher.
Prompts student to take play turns	The teacher prompts the student to engage in cooperative or associate play (i.e., taking turns for 2 volleys, collaborative play)
Creates natural motivation for communication	The teacher sets up the environment to create natural motivation for communication
Talks about what child is attending to	The teacher models language for the student by talking about what the child is attending to or doing (also model with device if they use device).
Prompts and reinforces communication use	Explicitly prompts, reinforces, or acknowledges (i.e., when item is not available) communication and language by the student.
Responds to communication and models expansion	When the student engages in communication, the teacher responds while modeling an expanded version of that communication.

Table 2

Response Definitions for Play Practices Measured in the Student Play Observation.

Play Measures	Definition
Student engages in functional play	Student uses a toy in the way it is intended to be used (e.g., pushing a toy train)
Student engages in object substitution	Student uses a toy or object like it is a different toy or object (e.g., using a toy pot as a hat)
Student engages in parallel play	Student is within 1-3 ft of a peer and is engaged in a different toy/activity
Student engages in associative play	Student is within 1-3 ft of a peer and is engaged in the same or similar toy/activity (e.g., borrowing or lending toys)
Student engages in cooperative play with	Student is engaged in the same activity in

peer(s)	interdependent or shared play
Student imitates peer(s) play behavior	Student engages in the same play behavior as a peer, the behaviors have formal similarity, and the student's behavior follows the modeled behavior within 10 seconds
Student engages in communication	Student exchanges PECS, uses a SGD, gestures, or speech to communicate with a peer or nearby adult

Independent Variable

The independent variable is an instructional package that includes didactic instruction and written and vocal feedback using RICE-P. RICE-P is based on research that includes observation and measurement of the quantity of play and communication practices of teachers. See Appendix C for the RICE-Play Tool.

Interobserver Agreement

Data for all conditions were collected from both live observations and video-recorded observations. Interobserver agreement was calculated using point-by-point agreement for each interval. The interval was defined as agreement if both data collectors scored the same answer (i.e., Yes, No, or N/A). If the data collectors scored different answers, it was defined as disagreement.

Four data collectors were involved throughout the study. Data collectors 1 and 4 were second-year master's level students earning their degree in applied behavior analysis. Data collector 1 was a White 23-year-old female with a bachelor's degree in psychology and the primary researcher. Data Collector 4 was a 30-year-old Hispanic and African American female with a bachelor's degree in psychology and worked in the Pre-K classroom. Data collector 2 was a 33-year-old Black female who was an assistant clinical professor of special education and was

the faculty advisor of the research project. Data collector 3 was a 28-year-old Hispanic female who was a doctoral-level student earning her degree in special education with a focus on applied behavior analysis. She was the Pre-K classroom lead.

Prior to baseline, all data collectors attended IOA training sessions, including instruction, modeling, rehearsal, and feedback on data collection using RICE-P. Competency for each data collector was evaluated based on performance in rehearsal with a mastery criterion of 80% interobserver agreement. Agreement was calculated using point-by-point agreement. Each data collector met this goal before collecting data. During data collection, data collectors had discrepancy meetings when agreement was below 80%.

For Trainee 1, IOA was collected for 38% of baseline sessions (M = 79%), 100% of didactic instruction (M = 80%), 33% of post-didactic instruction sessions (M = 83%), 67% of feedback sessions (M = 70%), 33% of generalization sessions (M = 95%), and 50% of maintenance sessions (M = 85%). For Student 1, IOA was collected for 36% of baseline sessions (M = 84%), 33% of post-didactic instruction sessions (M = 90%), and 36% of feedback sessions (M = 91%).

For Trainee 2, IOA was collected for 38% of baseline sessions (M = 84%), 100% of post-didactic instruction sessions (M = 95%), 43% of didactic instruction condition sessions (M = 87 %), 50% of feedback sessions (M = 94%), 33% of generalization sessions (M = 85%), and 50% of maintenance sessions (M = 95%). For Student 2, IOA was collected for 36% of baseline sessions (M = 83%), 31% of post-didactic instruction sessions (M = 90%), and 36% of feedback sessions (M = 91%).

For Trainee 4, IOA was collected for 53% of baseline sessions (M = 79%), 100% of didactic instruction (M = 100%), 40% of post-didactic instruction sessions (M = 87%), 33% of

feedback sessions (*M* = 93%), 33% of generalization sessions (*M* = 83%), and 100% of maintenance sessions (*M* = 90%). For Student 4, IOA was collected for 30% of baseline sessions (*M* = 87%), 50% of post-didactic instruction sessions (*M* = 90%), and 33% of feedback sessions (*M* = 83%).

Procedural Fidelity

Procedural fidelity was collected across all conditions by classroom staff members, who were also applied behavior analysis master's students using the checklist task analysis data sheets in Appendices E, F, G, and H.

For Trainee 1, procedural fidelity was collected for 38% of baseline sessions, 100% of didactic instruction, 67% of post-didactic instruction sessions, 33% of feedback sessions, 33% of generalization sessions, and 50% of maintenance sessions with a mean fidelity of 80% for didactic instruction and 100% across baseline, didactic instruction condition, feedback, generalization, and maintenance sessions. For Student 1, procedural fidelity was collected for 36% of baseline sessions, 33% of post-didactic instruction sessions, and 36% of feedback and post-feedback sessions, with a mean fidelity of 100% across every condition.

For Trainee 2, procedural fidelity was collected for 50% of baseline sessions, 100% of didactic instruction, 43% of post-didactic instruction sessions, 50% of feedback sessions, 33% of generalization sessions, and 50% of maintenance sessions with a mean fidelity of 95% for didactic instruction and 100% across baseline, didactic instruction condition, feedback, generalization, and maintenance sessions. For Student 2, procedural fidelity was collected for 36% of baseline sessions, 31% of post-didactic instruction sessions, and 36% of feedback and post-feedback sessions, with a mean fidelity of 100% across every condition.

For Trainee 4, procedural fidelity was collected for 41% of baseline sessions, 100% of

didactic instruction, 40% of post-didactic instruction sessions, 33% of feedback sessions, 33% of generalization sessions, and 100% of maintenance sessions with a mean fidelity of 100% across all conditions. For Student 4, procedural fidelity was collected for 35% of baseline sessions, 50% of post-didactic instruction sessions, and 36% of feedback and post-feedback sessions, with a mean fidelity of 100% across every condition.

Research Design

A multiple probe across dyads was used to evaluate the effect of the intervention package on the research-informed play practices of graduate trainees and preschool students' percentage of play skills observed. Dyads were randomly assigned to tiers using an online list randomizer to reduce selection bias. Phase change decisions were based on the primary dependent variable (i.e., trainees' play performance). After data in all tiers were stable, dyad 1 began the first part of the intervention (didactic instruction). The phase change criterion for the remaining dyads to begin the first part of the intervention was stability of the primary dependent variable of the current and previous tier. The phase change criterion for the remaining dyads to begin the second part of the intervention (performance feedback) was also stability of the primary dependent variable of the current and previous tier. The mastery criterion for intervention was 80% accuracy and scoring a three or higher on each play target performance across three consecutive sessions.

Procedures

General Procedures

Teacher Play Performance Observations. During observations, the dyad being observed were the only two people inside the play center. The other staff members and students either followed the typical classroom schedule or conducted other research. The researcher, IOA data collector, and staff member collecting procedural fidelity were outside the center observing

the dyad. The researcher did not give any clear signal for when the observations began. The researcher used the RICE-P and 15 min observation sessions to evaluate graduate trainees' use of research-informed play practices. Partial interval recording was used with five 3 min intervals. For each 3 min interval, the researcher marked if the target performance occurred or did not occur (or was not applicable) for all five intervals. Following the observation, each target performance was rated on a scale from 0-5 using the feedback form on the final page of the RICE P tool, see Appendix C. The trainee received one point for every interval they engaged in each target play performance during the observation.

Student Play Observations. During this observation, the two students (i.e., the student participant being observed and another student) were the only people inside the play center. The second student, who was not observed in that session, was rotated between students who were available at the time of the session. The other staff members and students either followed the typical classroom schedule or conducted other research. One staff member was at the entrance of the play center to redirect students if they attempted to leave, respond to if they communicated (i.e., vocalized or PECS), or manage if they engaged in problem behavior (i.e., aggression and self-injurious behavior). The researcher, IOA data collector, and staff member collecting procedural fidelity were outside the center observing the students. The researcher did not give any clear signal of when the observation began. The researcher used the Student Play Observation Tool and 15 min observation sessions to evaluate Pre-K students' percentage of play skills observed. Partial interval recording was used with five 3 min intervals. For each 3 min interval, the researcher marked if the target performance occurred or did not occur (or was not applicable) for all five intervals. During all conditions (i.e., baseline, intervention, and post-intervention), the researcher did not give students any attention, instruction, or feedback.

Baseline

All teacher play performance observations and student play observations were consistent with what is described in the general procedures. During baseline sessions, the researcher did not give any feedback to trainees in the teacher play performance observations.

Intervention

Instruction. Once baseline data stabilized, the researcher presented a 20-30 min instructional didactic session 1:1 to the trainee. On the trainees' scheduled practicum day, they were pulled into the empty university classroom for the presentation. The researcher described and modeled each research-informed play practice included in RICE-P in a PowerPoint presentation format. See Appendix I for the presentation slides presented during this condition. The researcher answered any questions the trainee asked but did not provide any feedback during this condition. See Appendix F for the procedural fidelity data sheet used during the presentation. After completing the instructional component, the researcher observed the dyad in the Pre-K classroom until the data stabilized.

Written/Vocal Feedback. During this condition, written and vocal feedback, using RICE-P, was given immediately following each observation. For the first session in the written/verbal feedback condition, trainees were given feedback from their previous session in the instruction condition before the teacher play performance observation. Following all observations in this condition, the researcher thanked the trainee and finalized the data. Immediately after, the researcher met with the trainee in an empty university classroom. If the trainee scored 0-2 on a target play practice, the researcher gave behavior-specific feedback and modeled the target play practice (e.g., Try to expand the student's communication more often. For example, when he asked to play with the bus, you could say, "Of course we can play with the

big yellow bus. Students ride the bus to school"). If the trainee scored 3-5 on target play practices, the researcher gave behavior-specific praise (e.g., You did a great job imitating his appropriate play behavior of racing a car down the track).

Generalization

During the generalization condition, trainees played with Student 5 for 15 min sessions in the clinic classroom. Play sessions were conducted whenever the trainee was naturally scheduled to work with Student 5 and were not part of the students' typical playtime. During generalization sessions, people present included the trainee, Student 5, and in some cases, another clinic staff member. If another person was in the room, they did not give attention to the trainee or Student 5. Sessions were recorded and then coded at a later date. The researcher and IOA data collector watched the recorded videos and evaluated the play practices of graduate trainees using RICE-P. Trainees were given no feedback during generalization. The probe sessions were collected intermittently (i.e., once throughout each condition).

Maintenance

Maintenance data were taken three and five weeks following the removal of intervention for Trainee 1, two and four weeks following the removal of intervention for Trainee 2, and two weeks following the removal of intervention for Trainee 4. The procedures for data collection of the primary and secondary dependent variable during this condition were identical to what is described for the baseline condition. The researcher did not give any feedback to trainees during maintenance.

Social Validity

To evaluate the value of change in teacher play behavior, blind observers reviewed recorded teacher play performance observation sessions pre and post-intervention following

Trainee 4 mastering (i.e., after Trainee 4's third data point in the feedback condition). The criteria for being a reviewer were (a) the individual must be a board-certified behavior analyst (BCBA) and (b) have at least one year of teaching experience in a preschool or elementary special education classroom. Blind observer 1 was a White 23-year-old male with 1.5 years of experience in elementary special education classrooms. Blind observer 2 was a White 28-year-old female with 5 years of experience in elementary special education classrooms.

The primary researcher met with blind observers individually in an empty university classroom. Pre and post-intervention recorded sessions were randomly divided between the two blind observers, who were unaware of which videos were pre and post-intervention. The primary researcher played recorded sessions for the blind reviewers, and they watched the full 15 min sessions. For every session reviewed, blind observers filled out a questionnaire that included a Reviewer Play Rating Scale following watching the full session. They did this for each recorded session randomly assigned to them. See Appendix J for the teacher play performance social validity questionnaire used by blind observers. Blind observers also reviewed recorded student play observation sessions pre and post-intervention following Trainee 4 mastering. The procedures were the same as when the blind observers reviewed the teacher play performance observation sessions. See Appendix K for the student play social validity questionnaire used by blind observers.

A social validity questionnaire was provided to trainees to evaluate the importance of goals and acceptability of procedures during the study. Trainees completed the questionnaire following the last mastery data point in the feedback intervention condition for Trainee 4. See Appendix L for the social validity questionnaire for master's level participants.

CHAPTER 3

RESULTS

Figure 1 displays the results of trainees' RICE-P percentage scores and target play performance scores for all observations. Trainees 1, 2, and 4 met the mastery criterion of earning an 80% or higher on RICE-P percentage score and scoring a three or higher on each play target performance across 3 consecutive sessions. Figure 2 displays the results of students' percentage of play skills observed.

Teacher Performance Observations

For all trainees, there was a functional relation between instruction and feedback using the RICE-Play Feedback Tool and the increased level of graduate trainees' use of research-informed play practices.

Trainee 1

During baseline sessions, Trainee 1's responses ranged from 50%–66% for the RICE-P percentage score and 2-6 for the target play performance score. Baseline sessions were at a mid-level with little variability and a slight decreasing trend. There was a clear and immediate increase in the RICE-P percentage score level from baseline to post-didactic instruction sessions. Responses ranged from 85%-86% for the RICE-P percentage score and 6-7 for the target play performance score throughout post-didactic instruction sessions. Although data were not at mastery criteria, they were at a relatively high level with a stable trend and little to no variability. There was another clear and immediate increase in the RICE-P percentage score and target play performance score between post-didactic instruction sessions and feedback sessions. Responding

Figure 1

Graduate Trainees' Research-Informed Play Skills

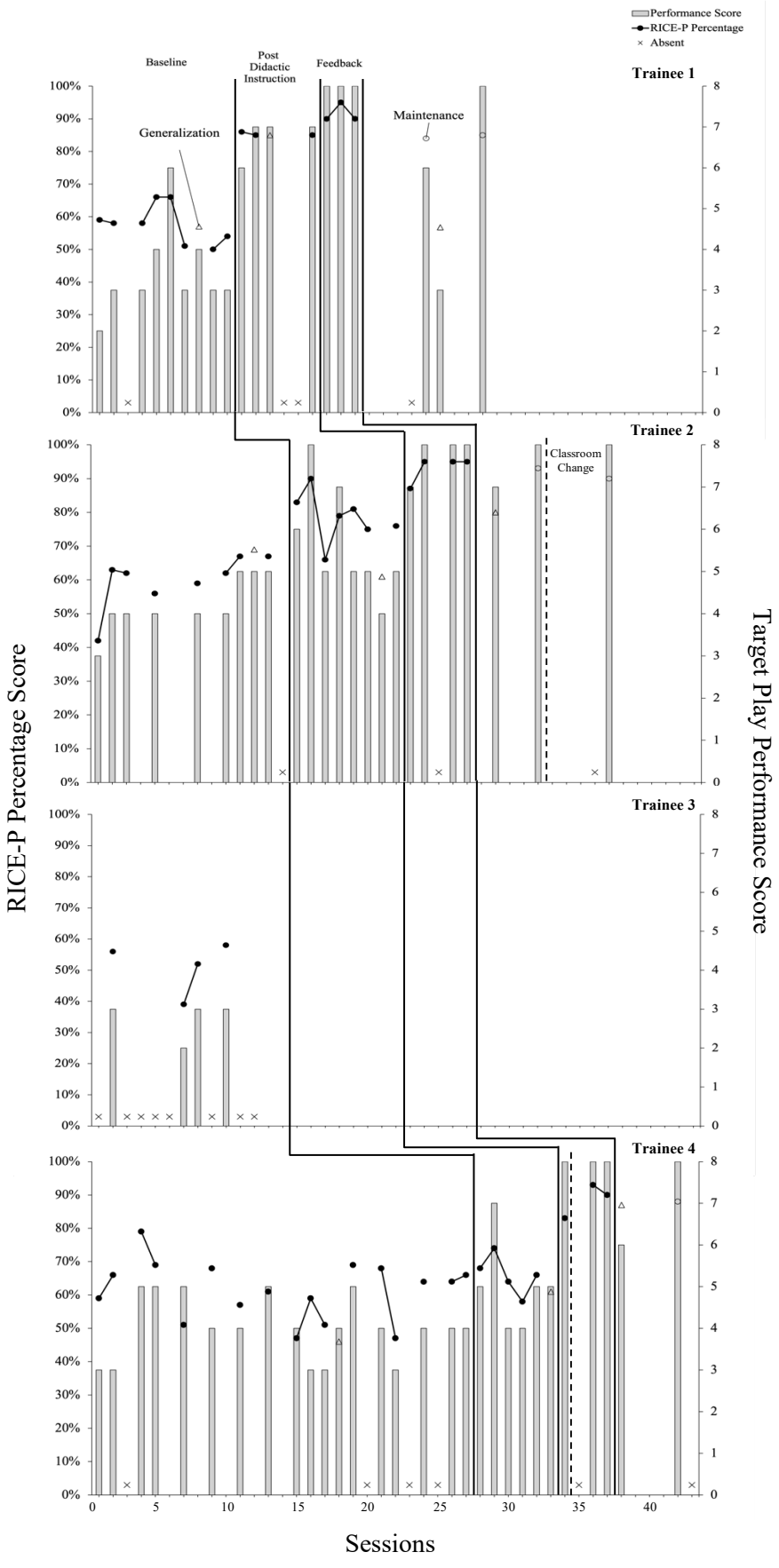
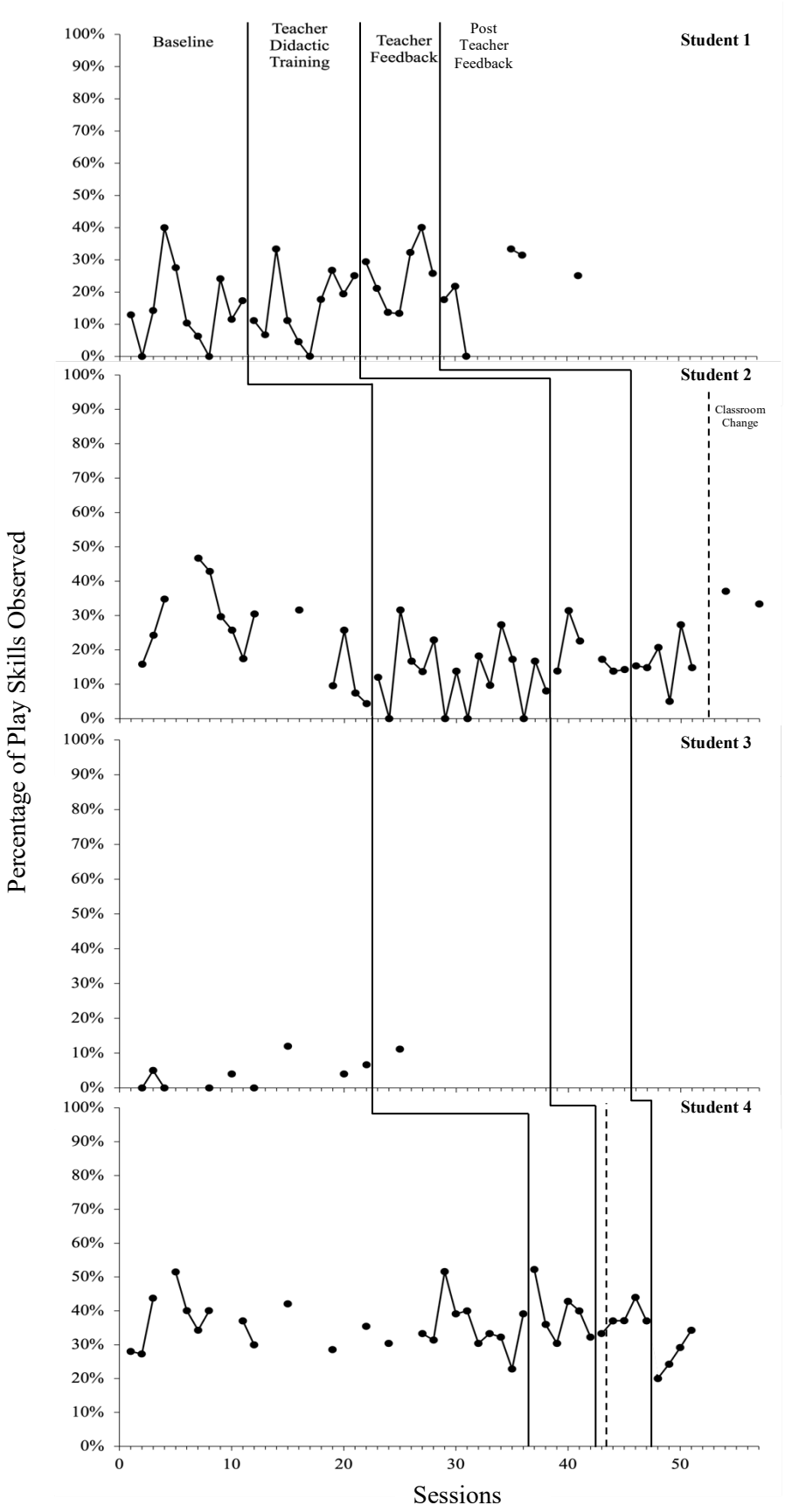


Figure 2

Students' Percentage of Play Skills Observed



ranged from 90%-95% for the RICE-P percentage score and remained at 8 for the target play performance score throughout feedback sessions. Data were stable and at a high level, and Trainee 1 mastered in three sessions.

Trainee 2

Trainee 2 had relatively stable data with responses ranging from 42%-67% for the RICE-P percentage score and 3-5 for the target play performance score. Baseline sessions were at a mid-level with a slight increasing trend. There was a clear and immediate increase in the RICE-P percentage score level and target play performance score from baseline sessions to post-didactic instruction sessions. During post-didactic instruction sessions, responding ranged from 66%-90% for the RICE-P percentage score and 4-8 for the target play performance score. Data were at a higher level in post-didactic sessions than in baseline sessions, with some variability. Following the first data point in the feedback sessions, there was an increase in level for both the RICE-P percentage score and target play performance score. Responding ranged from 87%-95% for the RICE-P percentage score and remained 7-8 for the target play performance score throughout feedback sessions. Data were stable, and Trainee 2 mastered in four sessions.

Trainee 4

During baseline sessions, Trainee 4 data were moderately stable, with responding ranging from 47%-79% for RICE-P percentage score and 3-5 for target play performance score. Baseline sessions were at a mid to high level with a stable trend. Post-didactic sessions were similar to baseline sessions. There was no notable increase in the level of the RICE-P percentage scores nor the target play performance scores from baseline to post-didactic instruction sessions. During post-didactic instruction sessions, responding ranged from 58%-74% for the RICE-P percentage score and 4-7 for the target play performance score. Data were stable and at a mid to high level

in post-didactic sessions. There was an immediate increase in level from the last data point in the post-didactic condition to the first data point in the feedback condition for both the RICE-P percentage score and target play performance score. Responding ranged from 83%-93% for the RICE-P percentage score and was consistently at 8 for the target play performance score throughout feedback sessions. Data were stable with a slightly increasing trend, and Trainee 4 mastered in three sessions.

Students' Percentage of Play Skills Observed

There was no functional relation between graduate trainees' use of research-informed play practices and the percentage of play skills observed for all students.

Student 1

Throughout baseline, following teacher didactic instruction, and teacher feedback sessions, there was variability with an overall low level of responding from Student 1. For the percentage of play skills observed, baseline sessions ranged from 0%-40%, post-teacher didactic instruction sessions ranged from 0%-33%, and teacher feedback sessions ranged from 0%-40%.

Student 2

For student 2, there was also a lot of variability with low to mid-levels of responding throughout baseline, post-teacher didactic instruction, and teacher feedback sessions. For the percentage of play skills observed, baseline sessions ranged from 4%-47%, post-teacher didactic instruction sessions ranged from 0%-32%, and teacher feedback sessions ranged from 5%-33%.

Student 4

During baseline, post-teacher didactic instruction, and teacher feedback sessions, Student 4 responded with some variability at a low to mid-level. For the percentage of play skills observed, Student 4's baseline sessions ranged from 23%-52%, post-teacher didactic instruction

sessions ranged from 30%-52%, and teacher feedback sessions ranged from 20%-44%.

Generalization

Results may suggest that trainees generalized play practices across settings and students. However, no strong conclusions can be drawn due to intermittent data collection per condition.

Trainee 1

During the baseline condition, Trainee 1 scored 57% for RICE-P percentage and 4 for target play performance for the first generalization probe. This was comparable to the RICE-P percentage and target play performance scores for other baseline sessions. For the generalization probe during post-didactic sessions, Trainee 1 scored 85% for RICE-P and 7 target play performance. This indicates that her scores during the post-didactic instruction condition were generalized. However, her scores lowered once the feedback intervention was removed, suggesting the skills did not generalize. Post-intervention, Trainee 1 scored 57% on RICE-P and 3 on target play performance, which is comparable to her baseline generalization probe when she scored 57% on RICE-P and 4 on target play performance.

Trainee 2

Trainee 2 scored 69% for RICE-P percentage and 5 for target play performance for the generalization probe during baseline condition. During the post-didactic instruction condition, Trainee 2 scored 61% for RICE-P and 4 for target play performance for the generalization probe. The generalization probe was at a lower level in the post-didactic instruction condition compared to the baseline. Following the removal of feedback intervention, Trainee 2 scored 80% for RICE-P and 7 for target play performance. These probes suggest that generalization occurred across settings and students. However, we cannot draw strong conclusions on a functional relation because we only collected intermittent generalization probes (i.e., 1 per condition).

Trainee 4

During the baseline condition, Trainee 4 scored 46% for RICE-P and 4 on target play performance for the generalization probe. This probe was at a similar level as other baseline sessions. The generalization probe for the post-didactic instruction condition was higher than in the baseline condition. Trainee 4 scored 61% for RICE-P and 5 for target play performance. Trainee 4 scored 87% for RICE-P and 6 for target play performance post-feedback. This generalization probe was notably higher than the baseline and post-didactic instruction generalization probes. Although the target play performance was not at mastery level, the RICE-P percentage score was at mastery level, suggesting that generalization occurred across settings and students. As previously discussed, we cannot make strong conclusions on a functional relation due to intermittent generalization probes.

Maintenance

All trainees maintained high RICE-P percentage scores and target play performance scores at either mastery levels or levels higher than compared to baseline.

Trainee 1

Due to a student participant's absence, Trainee 1 was probed for maintenance 3 weeks and 5 weeks following the removal of intervention. Trainee 1 scored 84% for RICE-P and 6 for target play performance for the 3-week maintenance probe. Trainee 1 maintained a high RICE-P percentage score but did not maintain a mastery target play performance score. For the 5-week maintenance probe, Trainee 1 scored 85% for RICE-P and 8 for target play performance. Trainee 1 maintained a high RICE-P percentage score and a high target play performance score for the second maintenance probe.

Trainee 2

Trainee 2 was probed for maintenance 2 weeks and 4 weeks following the removal of intervention. For the 2-week maintenance probe, Trainee 2 maintained a high level of responding with 93% for the RICE-P percentage score and 8 for the target play performance score. For the 4-week probe, Trainee 2 scored 90% for RICE-P and 8 for target play performance. Again, this shows that she maintained high levels of RICE-P percentage score and target play performance score.

Trainee 4

Trainee 4 was probed for maintenance 2 weeks following the removal of intervention due to time constraints of the study. Trainee 4 maintained a high level of responding for RICE-P and target play performance, scoring 88% and 8, respectively.

Social Validity

Blind Observers

For results of the value of change in teacher play behavior, see Appendix M Table 3. Results suggest that all graduate trainees more consistently engaged in play skills at the highest quality (i.e., consistently) during post-intervention sessions compared to pre-intervention sessions. Notably, all trainees received either a 5 (“Strongly Disagree”) or a 4 (“Disagree”) during pre-intervention sessions when asked, “The trainee explicitly prompted and reinforced communication and language by the student.” During post-intervention sessions, for the same question, all trainees received either a 1 (“Strongly Agree”) or 2 (“Agree”), indicating the value of change in teacher play behavior. All trainees received either a 1 (“Very Good”) or a 2 (“Good”) for their post-intervention sessions when asked, “Overall, I would rate the quality of the trainees’ play practice as…”

See Appendix N Table 4 for social validity results regarding student play pre- and post-intervention. Results indicated that Student 1 more consistently engaged in high levels of play skills during post-intervention sessions, while Student 2 and Student 4 more consistently engaged in high levels of play during pre-intervention sessions. Although no value of change was reported in student behavior for Student 2 and Student 4, these results support the variable data shown in the students' percentage of play graph (Figure 2).

Trainees

For results of trainees' acceptability of the study, see Appendix O Table 5. Results indicate that Trainee 1, Trainee 2, and Trainee 4 found the goals and outcomes of the study acceptable. The lowest score, a score of 2 ("Agree"), was reported by Trainee 2 in response to two questions, including "This intervention helped me improve on prompting students to imitate my appropriate play skills" and "This intervention helped me improve on modeling language for the student by talking about what the child was attending to or doing."

CHAPTER 4

DISCUSSION

Past research has found that play skills are an essential aspect of child development (Ginsburg et al., 2007) and have demonstrated that continuous performance-based feedback is beneficial when training staff members (Barton et al., 2013; Vu & Buell., 2015). However, there is a lack of tools and resources that train teachers' use of research-informed play practices using written and vocal feedback. In the present study, trainees' RICE-P percentage scores and target play performance scores during immediate feedback sessions align with previous findings that performance-based feedback increases target behaviors. The purpose of this study was to first fill the gap in the literature by examining the effect of instruction and feedback using RICE-P (Elliott et al., 2024) on the play practices used by graduate trainees in a special education classroom. Second, to assess the change in level of the students' percentage of play skills observed. Results show a functional relation between instruction and feedback using the RICE-Play Feedback Tool and the increased levels of graduate trainees' use of research-informed play practices. Results also display no change in level of students' percentage of play skill observed.

Elliott et al. (2024) evaluated the technical adequacy of RICE-P. This current study extends Elliott et al. (2024) by using a multiple probe design to demonstrate a functional relationship between didactic instruction with vocal and written feedback using RICE-P and high levels of research-informed target play practices. Using the multiple probe design resulted in three demonstrations of effect for instruction and feedback using the RICE-Play Feedback Tool across master's level participants (i.e., Trainee 1, Trainee 2, and Trainee 4). However, there was

no demonstration of effect regarding student participants' percentage of play skills observed.

The findings of this study hold several implications. First, when evaluating the effect of instruction and feedback using RICE-P on the increased level of graduate trainees' use of research-informed play practices, these results suggest that RICE-P is an adequate and valuable research-informed play feedback tool. All participants showed a clear and immediate increase in engagement in target play practices once vocal and written feedback were introduced. Furthermore, results indicate that didactic instruction is most effective when paired with vocal and written feedback. Although Trainee 1 and Trainee 2 showed increased engagement in target play performances with didactic instruction only, they did not master until vocal and written feedback were added. Trainee 4 remained at levels similar to baseline after didactic instruction only and mastered once vocal and written feedback were introduced. These results align with the findings of Barton et al. (2013).

While assessing if there was a functional relation between graduate trainees' use of research-informed play practices and the increased level of students' percentage of play skills observed, results indicate that all students needed more support. We believe the lack of demonstration of effect for students' percentage of play skills observed could be due to a few reasons. One is that the dependent variable is universal intervention, and our student participants have shown a history of needing targeted or intensive interventions/curricula. Another reason could be that student participants received a low dosage of intervention due to their trainees only working and running sessions 2 days a week. Our students' history has typically shown they require 100-200 opportunities to master new skills and behaviors. During this study, they only had a range of 34-44 opportunities to learn. Finally, students were paired with different peers throughout observation sessions, and preferred peers may have played a role in the percentage of

play observed. For example, anecdotally, some students did not play with certain peers as much due to loud noises and disruptive behavior.

When analyzing the generalization of play performance, results indicate that some teachers may need performance-based feedback across settings and students to engage in high levels of research-informed play practices. Although no trainees scored at a mastery level for RICE-P nor target play performance (i.e., 80% or higher for RICE-P percentage score and 8 for target play performance score) throughout generalization probes, Trainee 2 and Trainee 4 both scored higher for RICE-P and target play performance in their post-intervention generalization probes than in their baseline generalization probes. These results suggest that Trainee 2's and Trainee 4's research-informed play skills may have generalized. However, we only collected intermittent generalization probes, so we could not draw strong conclusions about functional relations.

Results from evaluating to what extent increases in graduate trainees' use of research-informed play practices maintained in 2–5-week follow-up assessments suggest that most effects were strong. All data, except for one data point (i.e., Trainee 1's 3-week maintenance probe), showed clear improvements relative to baseline and intervention. During Trainee 1's 3-week probe, she maintained a high score for RICE-P, but her target play performance score was comparable to baseline. Due to this data point being the only one to show no improvement in target play performance when compared to the baseline, we cannot draw the conclusion that continuous feedback is needed. Extended maintenance would be necessary to draw a concrete conclusion. During Trainee 1's 5-week probe, she scored at mastery level for RICE-P and target play performance. Trainee 2 and Trainee 4 maintained high and mastery levels of responding for RICE-P and target play performance scores during their maintenance probes.

When assessing if graduate trainees' change in behavior was valuable to other relevant stakeholders, results suggest that change in behavior was socially significant. When asked, "Which video would you report the participant engages in play skills at the highest quality (i.e., consistently)" blind observers chose the post-intervention sessions over the pre-intervention sessions for each participant. This demonstrates the adequacy of change in behavior using written and vocal feedback through RICE-P. Results from evaluating if students' change in behavior was acceptable to other relevant stakeholders suggested there was no significant change for Student 2 and Student 4. The lack of value of behavior change supports the variability in data for the percentage of student play observed.

Lastly, results from the social validity questionnaire for master's level participants suggest that the didactic instruction and vocal and written feedback using RICE-P were helpful and socially significant to participants. All trainees reported a 1 ("Strongly Agree") when asked, "This intervention was socially significant." They found the intervention acceptable as they all scored either 1 ("Strongly Agree") or 2 ("Agree") on all questions about the study increasing their engagement in research-informed play skills.

Limitations

Despite these implications, there were some limitations to this study. One limitation is attrition. As mentioned, Dyad 3 was dropped from the study due to absences. Attrition can be a threat, as it may impact internal validity; however, we still had three demonstrations of effect due to originally having four dyads, and we reported all of Dyad 3's data, which were stable.

Another notable limitation of this study was that most teachers' play performance observations throughout baseline, post-didactic instruction, and feedback sessions were scored in person. In contrast, all generalization probes were recorded without the researcher present and

scored at a later date. Reactivity could have played a role in the difference between RICE-P percentage scores and target play performance scores during sessions when the researcher was live coding compared to sessions when the dyad was alone in the room.

Another limitation is that student participants received a low dosage of intervention, as previously discussed. Ideally, we would not only increase students' dosage of intervention, but we would also measure students' percentage of play skills observed over a longer period. Time constraints of the study could also be a limitation as we could not conduct a 4-week maintenance probe for Trainee 4.

Future Research

Future research may consider replicating this study with a shorter observation period (i.e., 2-min intervals instead of 3-min intervals). It is important to note that play performance should still be adequately captured during shorter observation periods. Anecdotally, classroom leads expressed how this intervention might be easier to implement if observation sessions were shorter, as initial observations were done for 15 min. Future replicators might also consider programming in a higher dosage of intervention for student participants and measuring the effects for a longer period. Measuring generalization more frequently across conditions would also be beneficial and worth investigating, as we only probed for generalization once during each condition. According to Ledford & Gast (2018), there must be at least three generalization probes in each condition to confidently draw conclusions about generalization.

Overall, this study fills a gap in the literature by demonstrating that RICE-P is a valuable feedback tool for training teachers on research-informed play practices. The vocal and written feedback given through RICE-P provides administrators and lead teachers a tool that helps them prepare staff members to engage in meaningful play with students. To our knowledge, outside of

Elliott et al. (2024), a tool like this has not been previously created nor evaluated. Furthermore, this study shows that didactic instruction paired with vocal and written feedback increases target play performances. The findings of this study suggest that didactic instruction, along with vocal and written feedback using RICE-P, are effective and can offer valuable support in training and equipping staff members in classroom settings.

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Appendix A

Participant Demographics Questionnaire

All answers for the participant demographics questions were free response.

1. What is your age?
2. What is your gender?
3. What is your race?
4. What is your bachelor's degree in?
5. Have you had any prior experience with play skills training? If yes, what?

Appendix B

Materials Used During the Study

Screening/Baseline

- Toys (e.g. wooden blocks, letter magnets, ABC wheel, dinosaurs, trains, balls)
- iPad mini & tripod
- RICE-Play Tool and Feedback Form (Primary/ IOA)
- Timer
- Baseline Procedural Fidelity
- Secondary Dependent Variable Data Sheet (Primary/ IOA)
- Secondary Dependent Variable Procedural Fidelity
- Participant Demographic questionnaire

Intervention

- Toys
- Play & Social Interaction- Didactic Instruction
- Didactic Instruction Procedural Fidelity
- RICE-Play Tool and Feedback Form (Primary/ IOA)
- Timer
- Intervention Procedural Fidelity
- Secondary Dependent Variable Data Sheet (Primary/ IOA)
- Secondary Dependent Variable Procedural Fidelity

Generalization/Maintenance

- Toys
- RICE-Play Tool and Feedback Form (Prim/ IOA)
- Timer
- Baseline Procedural Fidelity
- Secondary Dependent Variable Data Sheet (Primary/ IOA)
- Secondary Dependent Variable Procedural Fidelity

Appendix C

Rice-Play Tool

Presence of Best Practices: Structured Play Time

Instructions for use: For each 3 minute interval, mark if the target performance occurred or did not occur (or was not applicable). Repeat until all five intervals are complete. During this time, you will score based on the student that the teacher is with, not all the other students in play. If the teacher switches to playing with a new student, the questions now apply for that student. For the purpose of this tool, "prompt", refers to administering a controlling prompt, meaning the prompt actually occasions the target behavior. Communication, as used in this tool, does not refer to only vocal communication, rather can include gestures, AAC usage, etc.

Play								
Yes	**No**	**Not Applicable**	**I1**	**I2**	**I3**	**I4**	**I5**	**Other**
Play area contains at least 3 toys that are preferred by the student.	Play area only contains non-preferred items.		Yes No	Yes No	Yes No	Yes No	Yes No	Observation or formal preference assessment data. (Hoch et al., 2002; Koegel et al., 1987; Baker, 2000)
The teacher sits where the student can see them and demonstrates appropriate play with toys (eye level).	Only watches the child play, never demonstrates appropriate play in front of the child.	The student consistently plays with toys in an age appropriate manner.	Yes No N/A	Yes No N/A	Yes No N/A	Yes No N/A	Yes No N/A	Observation (Leaf et al., 2012; Leaf et al., 2015; Ingersoll & Schreibman, 2006).
The teacher contingently imitates the student as they engage in appropriate behaviors (play, babble, etc.)	The teacher does not imitate the child's appropriate behaviors.	The student engages in no appropriate behaviors for the teacher to imitate.	Yes No N/A	Yes No N/A	Yes No N/A	Yes No N/A	Yes No N/A	Observation (Ingersoll & Schreibman, 2006) *Measure of Quantity*
The teacher prompts the student to imitate appropriate play/actions modeled by the teacher.	The teacher never provides prompts to the student to imitate actions or play. The teacher does not provide the controlling prompt to elicit the target behavior.	The student consistently plays with toys in an age appropriate manner.	Yes No N/A	Yes No N/A	Yes No N/A	Yes No N/A	Yes No N/A	Observation (Ingersoll & Schreibman, 2006) *Measure of Quantity*
Teacher prompts the student to engage in cooperative or associate play (i.e., taking turns for 2 volleys, collaborative play)	The teacher only engages in play parallel to the student.	The student is not yet demonstrating any independent play.	Yes No N/A	Yes No N/A	Yes No N/A	Yes No N/A	Yes No N/A	Observation (Therrien & Light, 2018; Raulston et al., 2020) *Measure of Quantity*
Communication								
Yes	**No**	**Not Applicable**	**I1**	**I2**	**I3**	**I4**	**I5**	**Other**

Sets up the environment to create natural motivation for communication	The environment is set up such that the student never wants or needs to communicate, interact, or engage.		Yes No	Yes No	Yes No	Yes No	Yes No	Observation (Hart & Risley, 1982; Kaiser & Hester, 1994)
Models language for the student by talking about what the child is attending to or doing (also model with device if they use device).	Does not model language for the student or talks about things the student is not attending to.		Yes No	Yes No	Yes No	Yes No	Yes No	Observation (Ingersoll, 2011; Chazin et al., 2021; Kaiser & Hester, 1994) *Measure of Quantity*
Explicitly prompts, reinforces, or acknowledges (i.e., when item is not available) communication and language by the student.	The teacher never presents any directions or opportunities to engage in communication. If a prompt is needed, the teacher does not provide a controlling prompt to elicit the target mand.		Yes No	Yes No	Yes No	Yes No	Yes No	Observation (Hancock & Kaiser, 2002; Ingersoll, 2011) *Measure of Quantity*
When the student engages in communication, the teacher responds while modeling an expanded version of that communication.	The teacher does not vocally respond when a student engages in communication.	The student engages in no communication to expand upon.	Yes No N/A	Yes No N/A	Yes No N/A	Yes No N/A	Yes No N/A	Observation (Hancock & Kaiser, 2002; Ingersoll, 2011; Kaiser & Hester, 1994)

Research Informed Classroom Evaluation (Play): Feedback Form

Target Research Informed Practice for Play Time:	**Never**					**Often**
Has engaging toys	0	1	2	3	4	5
Models play	0	1	2	3	4	5
Imitates appropriate student actions	0	1	2	3	4	5
Prompts student to imitate play	0	1	2	3	4	5
Prompts student to take play turns	0	1	2	3	4	5
Creates natural motivation for communication	0	1	2	3	4	5
Talks about what child is attending to	0	1	2	3	4	5
Prompts and reinforces communication use	0	1	2	3	4	5
Responds to communication and models expansion	0	1	2	3	4	5

Things to continue doing:	Ways to improve:

Appendix D

Student Play Observation Data Sheet

Data Collector: Date:

Participant/ Session:

Circle Yes, No, or N/A to indicate whether the participant engaged in the target performance.

Target Performance	Yes	No	N/A	I1	I2	I3	I4	I5	References
Student engages in functional play	Student uses a toy in the way it is intended to be used (e.g. pushing a toy train)	Student does not play or show interest with any toys	Play area does not contain at least 3 non-preferred items	Yes No N/A	Yes No N/A	Yes No N/A	Yes No N/A	Yes No N/A	(Jung & Sainato, 2013; Barton et al., 2019)
Student engages in object substitution	Student uses a toy or object like it is a different toy or object	Student does not play or show interest with any toys	Play area does not contain at least 3 non-preferred items	Yes No N/A	Yes No N/A	Yes No N/A	Yes No N/A	Yes No N/A	(Barton et al., 2019)
Student engages in parallel play	Student is within 1 -3 ft of a peer and is engaged in a different toy/activity	The student is not yet demonstrating any independent play	Peer is not playing with any items	Yes No N/A	Yes No N/A	Yes No N/A	Yes No N/A	Yes No N/A	(Holmes & Willoughby, 2005)
Student engages in associative play	Student is within 1-3 ft of a peer and is engaged in the same or similar toy/activity (e.g., borrowing or lending toys)	Students do not interact with each other and do not borrow or lend toys The student only engages in parallel play	The student is not yet demonstrating any independent play Peer is not playing with any items	Yes No N/A	Yes No N/A	Yes No N/A	Yes No N/A	Yes No N/A	(Dyer & Giovannni, 2006)
Student engages in cooperative play with peer(s)	Student is engaged in the same activity in interdependent or shared play	The student only engages in parallel or associate play	The student is not yet demonstrating any independent play Peer is not playing with any items	Yes No N/A	Yes No N/A	Yes No N/A	Yes No N/A	Yes No N/A	(Macdonald et al., 2009)
Student imitates peer(s) play behavior	Student engages in the same play behavior as a peer, the behaviors have formal similarity, and the student's behavior follows the modeled behavior within 10 seconds	Student never imitates action or play of another student.	Peer does not engage in a play behavior for the student to imitate	Yes No N/A	Yes No N/A	Yes No N/A	Yes No N/A	Yes No N/A	(Cooper et al., 2020)
Student engages in communication	Student exchanges pecs, uses a SGD, gestures, or speech	Student does not engage in communication		Yes No	Yes No	Yes No	Yes No	Yes No	

Appendix E

Teacher Play Performance Procedural Fidelity Sheet

Data Collector: Date:

Researcher: Participant/ Session:

Procedural Fidelity

Steps	Correct (+), Incorrect (-), or N/A
Trainer observed trainee in the Pre-K classroom for the whole 15 min session while playing with their designated student in centers.	
Trainer used the RICE-Play Tool to evaluate trainee's play practices.	
For each 3-minute interval, the observer marked if the target performance occurred or did not occur (or was not applicable).	
Trainer completely filled out the RICE-Play Evaluation Tool (i.e., last page of observation form).	
Trainer did not give any feedback during or after the observation session.	

Appendix F

Teacher Didactic Instruction Procedural Fidelity Sheet

Presentation Intervention Procedural Fidelity

Steps	Correct (+), Incorrect (-), or N/A
Trainer met privately with the trainee and went through the entire presentation.	
Trainer described specific exemplar and non-exemplar of each target performance.	
Trainer modeled specific exemplar and non-exemplar of each target performance.	
The trainer answered any questions the trainee had and responded to trainee comments.	
Trainer does not provide feedback.	

Appendix G

Teacher Play Performance Feedback Procedural Fidelity Sheet

Data Collector: Date:

Therapist: Participant/ Session:

Feedback Procedural Fidelity

Steps	Correct (+), Incorrect (-), or N/A
Trainer observed Dyad in the Pre-K play center for the whole 15 min session.	
Trainer used the RICE-Play Tool to evaluate trainees' play practices.	
For each 3-minute interval, the trainer marked if the target performance occurred or did not occur (or was not applicable). Trainer completely filled out the RICE-Play Feedback Form.	
Trainer immediately met with the trainee following the observation period and the feedback form being filled out.	
Trainer gave the trainee written and verbal feedback referencing the RICE-Feedback form. Trainer went through each score for the target research informed practice for play time. If the trainee scored 3 or better, the trainer gave behavior specific praise. If the trainee scored 2 or worse, the trainer gave behavior specific feedback, and the trainer modeled if applicable.	
The trainer allowed time to answer questions and respond to trainee comments.	

Appendix H

Student Play Observation Procedural Fidelity Sheet

The same secondary dependent variable procedural fidelity data sheet was used during all conditions.

Therapist: Date/ Session:

Data Collector: Client:

Play Based Observation Procedural Fidelity

Steps	Correct (+) Incorrect (-)
Student is in centers with at least one peer and an adult is present at the entrance of the play area for safety purposes.	
Observer did not engage in play or provide attention to students.	
Observer watched student in the Pre-K play center for the whole 15 min session.	
For each 3-minute interval, the observer marked if the target performance occurred or did not occur (or was not applicable). Observer completed the whole data sheet.	

Appendix I

Didactic Instruction Presentation

Preparing the Environment

- Make sure that the play area has engaging toys
- Have student's preferred toys available
- Have the student's means of communication (e.g. PECS Book, SGD) ready and easily accessible in play area

Modeling Play

- Sit where the student can see you
- Get down on their level
- Model appropriate play with toys

Imitating the Student

- Imitate student's appropriate behaviors
- Examples:
  - Play
  - Babble
  - Motor movements

Prompting the Student to Imitate

- Prompt the student to imitate appropriate play/actions that you model
- Find the controlling prompt and use accordingly (e.g. vocal, partial physical, full physical)

Cooperative & Associate Play

- Prompt the student to take turns for at least 2 volleys
- Prompt the student to engage in collaborative play (e.g. working on a puzzle together)
- Prompt student to work together to complete a common goal or task

Communication

- Model language for students during play
  - Talk about what the child is engaged in
  - Model language using their preferred/ main form of communication
- Create natural motivation for communication (e.g. ask questions, create needs in the sense of engagement or interaction)
- Prompt students to communicate
- Reinforce communication & language
- Expand communication (e.g. *student grabs school bus* teacher says, "Oh, you want the bus. Buses are big and yellow!")

Meaningful Play

Reminders:

- Play time is an opportunity for students to learn in a natural environment
- Work on creating a balance between the things we discussed
  - Imitation
  - Communication
  - Modeling
  - Prompting
- Through meaningful play, students can make significant progress in other goals

Questions?

Appendix J

Social Validity Questionnaire for Blind Observers Regarding Teacher Play Performance

1.The trainee made sure the play area had at least 3 preferred toys

Strongly Agree, Agree, Neutral, Disagree, Strongly Disagree

2. The trainee was sitting where the student can see them and with demonstrating appropriate play with toys (at eye level)

Strongly Agree, Agree, Neutral, Disagree, Strongly Disagree

3. The trainee imitated the student as the student engaged in appropriate behaviors (babble, play, etc.)

Strongly Agree, Agree, Neutral, Disagree, Strongly Disagree

4. The trainee adequately prompted the student to imitate appropriate play/actions modeled by the participant

Strongly Agree, Agree, Neutral, Disagree, Strongly Disagree

5. The trainee adequately prompted the student to take turns

Strongly Agree, Agree, Neutral, Disagree, Strongly Disagree

6. The trainee adequately set up the environment to create natural motivation for communication

Strongly Agree, Agree, Neutral, Disagree, Strongly Disagree

7. The trainee adequately modeled language for the student by talking about what the student is attending to or doing

Strongly Agree, Agree, Neutral, Disagree, Strongly Disagree

8. The trainee explicitly prompted and reinforced communication and language by the student *

Strongly Agree, Agree, Neutral, Disagree, Strongly Disagree

9. The trainee responded to the student when the student engaged in communication while modeling an expanded version of that communication

Strongly Agree, Agree, Neutral, Disagree, Strongly Disagree

10. Overall, I would rate the quality of the trainee's play practices as…

Very Good, Good, Fair, Poor, Very Poor

Appendix K

Social Validity Questionnaire for Blind Observers Regarding Student Play

1. The student used a toy in the way it is intended to be used (e.g. pushing a toy train)

   Strongly Agree, Agree, Neutral, Disagree, Strongly Disagree

2. The student used a toy or object like it is a different toy or object

   Strongly Agree, Agree, Neutral, Disagree, Strongly Disagree

3. The student was within 1 -3 ft of a peer and was engaged in a different toy/activity

   Strongly Agree, Agree, Neutral, Disagree, Strongly Disagree

4. The student was within 1-3 ft of a peer and was engaged in the same or similar toy/activity (e.g., borrowing or lending toys)

   Strongly Agree, Agree, Neutral, Disagree, Strongly Disagree

5. The student was engaged in the same activity in interdependent or shared play

   Strongly Agree, Agree, Neutral, Disagree, Strongly Disagree

6. The student engaged in the same play behavior as a peer, the behaviors had formal similarity, and the student's behavior followed the modeled behavior within 10 seconds (i.e., imitation)

   Strongly Agree, Agree, Neutral, Disagree, Strongly Disagree

7. The student exchanged PECS, used a SGD, gestures, or speech to communicate with a peer or nearby adult.

   Strongly Agree, Agree, Neutral, Disagree, Strongly Disagree

8. Overall, I would rate the quality of the student's independent play as...

   Very Good, Good, Average, Poor, Very Poor

Appendix L

Social Validity Questionnaire for Master's Level Participants

1. This intervention helped me improve on my play skills

    Strongly Agree, Agree, Neutral, Disagree, Strongly Disagree

2. This intervention helped me improve on imitating students when they are engaging in appropriate play behavior

    Strongly Agree, Agree, Neutral, Disagree, Strongly Disagree

3. This intervention helped me improve on prompting students to imitate my appropriate play skills

    Strongly Agree, Agree, Neutral, Disagree, Strongly Disagree

4. This intervention helped me improve on prompting students to take turns

    Strongly Agree, Agree, Neutral, Disagree, Strongly Disagree

5. This intervention helped me improve on setting up the environment to create natural motivation for communication

    Strongly Agree, Agree, Neutral, Disagree, Strongly Disagree

6. This intervention helped me improve on modeling language for the student by talking about what the child was attending to or doing

    Strongly Agree, Agree, Neutral, Disagree, Strongly Disagree

7. This intervention helped me improve on explicitly prompting and reinforcing communication and language by the student

    Strongly Agree, Agree, Neutral, Disagree, Strongly Disagree

8. This intervention helped me improve on responding to the student when the student engaged in communication while modeling an expanded version of that communication

    Strongly Agree, Agree, Neutral, Disagree, Strongly Disagree

9. This intervention was socially significant

    Strongly Agree, Agree, Neutral, Disagree, Strongly Disagree

Appendix M

Results for Social Validity Questionnaire for Blind Observers Regarding Teacher Play Performance Pre- and Post-Intervention

Table 3

Social Validity Results Pre- and Post-Intervention for Teacher Play Performance.

Questions	Trainee 1		Trainee 2		Trainee 4	
	Pre	Post	Pre	Post	Pre	Post
The trainee made sure the play area had at least 3 preferred toys	1	1	1	1	1	1
The trainee was sitting where the student can see them and with demonstrating appropriate play with toys (at eye level)	2	3	1	1	1	1
The trainee imitated the student as the student engaged in appropriate behaviors (babble, play, etc.)	4	3	2	2	2	1
The trainee adequately prompted the student to imitate appropriate play/actions modeled by the participant	2	2	3	1	1	1
The trainee adequately prompted the student to take turns	3	2	5	2	2	1
The trainee adequately set up the environment to create natural motivation for communication	4	2	3	1	3	1
The trainee adequately modeled language for the student by talking about what the student is attending to or doing	5	4	2	1	3	1
The trainee explicitly prompted and reinforced communication and language by the student	5	2	4	1	5	1
The trainee responded to the student when the student engaged in communication while modeling an expanded version of that communication	3	3	3	1	5	1
Overall, I would rate the quality of the trainee's play practices as...	3	2	2	1	3	1

Note. Questions were rated from 1 = Strongly agree, to 5 = Strongly disagree/ 1 = Very Good, to 5 = Very Poor

Appendix N

Results for Social Validity Questionnaire for Blind Observers Regarding Student Play Pre- and Post-Intervention

Table 4

Social Validity Results Pre- and Post-Intervention for Student Play.

Questions	Student 1		Student 2		Student 4	
	Pre	Post	Pre	Post	Pre	Post
The student used a toy in the way it is intended to be used (e.g. pushing a toy train)	5	1	1	5	1	3
The student used a toy or object like it is a different toy or object	2	2	1	1	5	2
The student was within 1 -3 ft of a peer and was engaged in a different toy/activity	1	1	1	1	2	1
The student was within 1-3 ft of a peer and was engaged in the same or similar toy/activity (e.g., borrowing or lending toys)	5	1	5	5	5	5
The student was engaged in the same activity in interdependent or shared play	5	5	5	5	5	5
The student engaged in the same play behavior as a peer, the behaviors had formal similarity, and the student's behavior followed the modeled behavior within 10 seconds (i.e., imitation)	5	1	5	5	5	5
The student exchanged PECS, used a SGD, gestures, or speech to communicate with a peer or nearby adult.	5	5	5	1	5	5
Overall, I would rate the quality of the student's independent play as...	5	3	2	4	1	4

Note. Questions were rated from 1 = Strongly agree, to 5 = Strongly disagree/ 1 = Very Good, to 5 = Very Poor

Appendix O

Results for Social Validity Questionnaire for Master's Level Participants

Table 5

Social Validity Results for Master's Level Participants.

Questions	Trainee 1	Trainee 2	Trainee 4	Average
This intervention helped me improve on my play skills	1	1	1	1
This intervention helped me improve on imitating students when they are engaging in appropriate play behavior	1	1	1	1
This intervention helped me improve on prompting students to imitate my appropriate play skills	1	2	1	1.33
This intervention helped me improve on prompting students to take turns	1	1	1	1
This intervention helped me improve on setting up the environment to create natural motivation for communication	1	1	1	1
This intervention helped me improve on modeling language for the student by talking about what the child was attending to or doing	1	2	1	1.33
This intervention helped me improve on explicitly prompting and reinforcing communication and language by the student	1	1	1	1
This intervention helped me improve on responding to the student when the student engaged in communication while modeling an expanded version of that communication	1	1	1	1
This intervention was socially significant	1	1	1	1

Note. Questions were rated from 1 = Strongly agree, to 5 = Strongly disagree