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Comparing Two Match-to-Sample Instructional Formats: Tabletop vs. PowerPoint

A Thesis Presented

By

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The New England Center for Children

Bouvé College of Health Sciences Graduate School

In partial fulfillment of the requirements

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Thesis Title: **Comparing Two Match-to-Sample Instructional Formats: Tabletop vs.
PowerPoint**

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Comparing Two Match-to-Sample Instructional Formats: Tabletop vs. PowerPoint

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Abstract

This study compared procedural integrity measures in two formats of match-to-sample (MTS) instruction using a multiple baseline design in which the training order was counterbalanced across 6 participants. In one format, instructional stimuli included picture cards presented on a board (Tabletop format). In the other format, a laptop computer was used and stimuli were presented using PowerPoint (PowerPoint format). Training sessions were conducted as role-plays supplemented by itemized feedback on skills from a procedural integrity (PI) checklist, and continued until 100% PI was demonstrated. Itemized feedback was followed by performance improvements in 69% of opportunities. The Tabletop procedure took fewer sessions to train (mean=5) than the PowerPoint procedure (mean=7), but skills learned from the PowerPoint procedure generalized more to the Tabletop procedure than in the other direction (2 of the 3 participants who first completed training in the PowerPoint procedure required no additional training to run the Tabletop procedure with 100% PI). During follow-up sessions, participants performed marginally better using the PowerPoint procedure (mean=90% PI) than the Tabletop procedure (mean=86% PI).

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Comparing Two Match-to-Sample Instructional Formats: Tabletop vs. PowerPoint

Emerging research has led some to recommend that complex skills be taught using advanced paradigms such as equivalence (Fields et al., 2009; Sidman, 1971), constructed responses (Dube, McDonald, McIlvane, & Mackay, 1991; Hanna, de Souza, de Rose, & Fonesca, 2004), and delayed matching (Doughty & Saunders, 2009; Stromer & Mackay, 1992). Because the complexity of these skills requires increasingly complex behavior on the part of the teacher, new technologies are being developed to streamline their application in classroom settings.

One such technology uses computers as teaching and testing tools. Previous research has compared computer-delivered instruction to traditional instruction for participants with intellectual disabilities (ID). The results of some studies favor computer-delivered instruction (Harper & Ewing, 1986; Williams, Wright, Callaghan, & Coughlan, 2002). Others favor traditional instruction (Berthold & Sachs, 1974; Lin, Podell, & Rein, 1991). Others favor a combination of the two (Lally, 1981; Schery & O'Connor, 1992). Still others found little difference between the two (Baumgart & Van Wallegghem, 1987; Chen & Bernard-Opitz, 1993).

In support of traditional instruction, it is generally argued that it is useful for teachers to have greater within-session flexibility in arranging contingencies (Wilson, Majsterek, & Simmons, 1996). In addition, the use of potent, student-specific reinforcement systems tends to be easier with traditional methods of instruction because computer programs generally use arbitrarily chosen generalized reinforcers (Russo, Koegel, & Lovaas, 1978).

A review by Goldsmith and LeBlanc (2004) summarizes some arguments supporting computer-delivered instruction for participants with ID. They point out, for instance, that for individuals with ID (who are known to have difficulties navigating social contingencies), the

nonsocial nature of computer-delivered instruction may prove more suitable. In addition, they suggest that interacting with computers may serve as a conditioned reinforcer. They also suggest that an automated system for arranging contingencies can allow teachers to systematically implement finer iterations of complex teaching procedures than traditional methods.

The majority of these comparison studies focus primarily on skill acquisition. While an improvement in skill acquisition is the ultimate objective of the employment of a new technology, it is not the only relevant variable affecting such a technology's utility. The resources required to design and implement student-specific curricula within a technology's framework, the time and resources it takes to train staff to use a technology, and the level of procedural integrity one may expect using one technology compared to another are all important factors as well (Wilson et al., 1996). A deficit in any one of these factors may ultimately lead to poorer skill acquisition. In addition, these variables may be idiosyncratic to the skill being taught, the classroom setting it is to be taught in, and the organization in which the classroom exists.

Procedural integrity (PI), otherwise known as treatment integrity, is defined as the degree to which treatments are implemented as planned, designed, or intended (Peterson, Homer, & Wonderlich, 1982). A number of studies have underscored the importance of high PI in the implementation of behavior change procedures. For a comprehensive review of these studies, please see McIntyre, Gresham, DiGennaro, and Reed (2007). In one prominent example, Wilder, Atwell, and Wine (2006) found that child compliance during a three-step prompting procedure varied as a function of PI. For this reason, ideal PI should be the primary goal of training staff to use any teaching technology, and comparisons of new technologies to traditional technologies should focus on PI.

This study compared a PI measures in match-to-sample (MTS) instruction using computer-delivered and traditional tabletop instructional formats. Mitigating some of the previously mentioned concerns of computer versus traditional systems of instruction, computerized instruction in this study automated the presentation of stimuli and stimulus prompts, while allowing teachers to choose what types of reinforcers to deliver. In addition, the computerized instruction worked within Microsoft PowerPoint, a program that most organizations already have, and many staff already have experience using.

Method

Participants and Settings

Six typically-developing adults between the ages of 24 and 27 years-old participated. Four participants, Lori Anthony, Justin, and Jasper were naïve to both the Tabletop and PowerPoint MTS instructional formats. The other two participants, Beverly and Cornelius, had experience using the Tabletop, but not the PowerPoint format. In all baseline, training, and follow-up sessions, the experimenter assumed the role of the ‘student’ while the participants assumed the role of the ‘teacher.’ Each session consisted of the ‘teacher’ administering nine trials of a match-to-sample program to the ‘student,’ and was approximately 3 to 5 min in length. The time between sessions was approximately 3 to 5 min. All sessions were conducted in quiet rooms containing, at a minimum, two chairs and a table. The rooms used were roughly 4 m by 4 m.

Materials

The Tabletop instructional format was administered using a 13 cm by 30 cm cardboard board. On one side of the board, a sample stimulus was presented. The same sample and three comparison stimuli were presented on the other side of the board. The PowerPoint instructional

format was administered using an HP Pavilion laptop computer (model dv2500) with a 38 cm screen.

The nine stimuli, each approximately 8cm by 8cm, used in this study were the country map, the flag, and an animal found in the Philippines, South Africa, and Sweden. The Tabletop procedure used countries' flags as the sample stimuli and corresponding animals' pictures as the comparisons. The PowerPoint procedure used the same flags as the sample stimuli and corresponding countries' maps as the comparisons. Together, these relations formed the basis of visual-visual conditional discrimination baselines taught within a stimulus equivalence paradigm.

In each condition the participants had access to a curriculum sheet outlining the program's objectives, prompting and error procedures, reinforcement guidelines, and guidelines for prescribing the prompting step for the next session. They also had access to a data sheet that provided trial-by-trial prescriptions for the arrangement of stimuli, including which sample stimulus to present (quasi-random presentation of one of three sample stimuli) and the location of each of the three comparison stimuli (across trials, the prescribed location of comparisons rotated systematically across left, middle, and right positions, but the sample stimulus was prescribed in a quasi-random order such that each of the three comparison stimuli was presented once in each possible location with each sample stimulus). The data sheet also contained descriptions of the prompt fading procedure to implement in that session (described later); description of data codes for different possible student responses; and space to record data on the 'student's' responses. The curriculum and data sheets were generated using the Autism Curriculum Encyclopedia[®], a teaching tool developed at the New England Center for Children, and customized for use in this study.

The experimenter used a procedural integrity (PI) checklist (Appendix A) to record data on the participant's performance, and a set of five error scenarios to determine how often to respond to an incorrect stimulus (S-) when acting as the 'student.' In one scenario, the experimenter would make no errors during a session. In other scenarios, the experimenter would make one isolated error, two non-consecutive errors, two consecutive errors, and three non-consecutive errors respectively. These scenarios were applied to training sessions in quasi-random order. The experimenter also occasionally provided opportunities for the participant to prompt appropriate session behavior and observing responses. These scenarios and prompting opportunities were provided to assess all the PI skills from the checklist.

Experimental Design

Sessions were arranged using a within-subject multiple-baseline-across-instructional-formats design. Following collection of PI baseline data for each MTS instructional format, the participant began training on one instructional format. Baseline probes on the untrained format were taken intermittently during the training of the first format. Once the participant (acting as the 'teacher') administered the first instructional format with 100% PI to the experimenter (acting as the 'student'), the second format went into training. The order in which formats were trained was counterbalanced across participants. For example, Lori began training on the Tabletop format first, while Anthony began training on the PowerPoint format first. Follow-up sessions were conducted between one and four days after 100% PI was demonstrated on both instructional formats (with the exception of Anthony, whose follow-up was conducted two months after training).

Demonstration of Procedures

Prior to the first baseline session for each MTS format, the experimenter demonstrated the appropriate administration of the format by assuming the role of the ‘teacher’ while the participant assumed the role of the ‘student.’ The participant and experimenter sat next to one another at a table. On the table were the curriculum and data sheets, as well as the appropriate materials for administering the MTS format being demonstrated. For the purposes of training, the ‘student’s’ reinforcement program called for tokens, in the form of check marks drawn on a blank piece of paper, to be delivered following every correct response. The blank paper rested on the table and the experimenter had a marker to draw the check marks.

As the ‘teacher,’ the experimenter demonstrated all appropriate behaviors outlined on the treatment integrity checklist, but did not point them out to the participant or talk about them in any way. One session consisted of the ‘teacher’ administering nine MTS trials to the ‘student.’ Prior to the first trial, the ‘teacher’ made eye contact with the ‘student,’ and waited for the ‘student’ to either return eye contact or attend to the materials. In the context of the Tabletop format, the ‘teacher’ waited with the cardboard board resting on his or her lap, and the sample stimulus facing up. In the context of the PowerPoint procedure, the ‘teacher’ waited with the first blank slide of the PowerPoint presentation displayed.

Once the ‘student’ demonstrated attending, the ‘teacher’ began the first trial. In the context of the Tabletop procedure, this required holding up the board with the sample stimulus displayed. In the context of the PowerPoint procedure, this required advancing to the next presentation slide that displayed the sample stimulus. With the sample stimulus displayed, the ‘teacher’ then waited for the ‘student’ to touch the sample stimulus. If the ‘student’ did not do so, the ‘teacher’ would model pointing to the sample stimulus. In the context of the Tabletop

procedure, once the ‘student’ pointed to the sample stimulus, the ‘teacher’ would flip the board over to reveal the same sample stimulus along with the three comparison stimuli. In the context of the PowerPoint procedure, the ‘teacher’ would advance the presentation to the next slide that displayed the sample and comparison stimuli.

A delayed prompting procedure was used to prompt the ‘student’ to point to the correct comparison stimulus (S+). The prompting steps, starting from the presentation of the comparison stimuli, were 0 s delay, 2 s delay, 4 s delay, and no prompt. One prompting step was used for all nine MTS trials in a session. In the context of the Tabletop procedure, the ‘teacher’ would deliver prompts in the form of a point cue to the S+. In the context of the PowerPoint procedure, prompts were delivered on-screen in the form of the S+ flashing once.

Following the ‘student’s’ response, the ‘teacher’ either put down the board or advanced the PowerPoint procedure to the next blank slide. If the ‘student’ responded to the S+, the ‘teacher’ would deliver a token. If the ‘student’ responded to the S-, the ‘teacher’ provided no consequence. The ‘teacher’ then recorded data describing the student’s response on the data sheet and began the next trial. After administering nine trials in this manner, the ‘teacher’ initialed and recorded the date on the data sheet, and prescribed the prompting step for the next session based on guidelines found on the curriculum sheet.

Baseline

During baseline, the participants assumed the role of the ‘teacher,’ while the experimenter assumed the role of the ‘student.’ Implementation materials were arranged identically to the demonstration session. The participants were instructed to take as much time as they needed to review the program materials before beginning the session. The PI and scripted

error checklists were held by the experimenter on a clipboard that was not visible to the participant. No feedback was provided to the participants.

Training

Training sessions were conducted identically to baseline sessions with one exception. Prior to each training session, the experimenter delivered feedback on one specific target behavior of the PI checklist that the participant did not demonstrate in the previous session. For example, if during Session 6 the participant did not provide reinforcement for a correct response, before beginning Session 7 the experimenter might say, “on one trial during the last session you didn’t reinforce one of my correct responses. It’s important to provide the student’s specific reinforcers after every correct response. Remember that, as the student during these sessions, my reinforcement program calls for check marks after correct responses. Try to make sure you do that during this session.”

Feedback was given on one new checklist item at a time in sequential order starting with the first behavior that the participant did not demonstrate. If the participant failed to demonstrate any skill that he or she had already received feedback on, the experimenter would remind him or her of it in addition to providing feedback on a new skill. In this way, prior to any given training session the experimenter may have given feedback on multiple skills, but only one “new” skill (that the participant had not already received feedback on). This sequence of itemized feedback followed by an MTS session was continued until the participant achieved 100% PI on the trained instructional format. Next, this same training procedure was applied to the second instructional format if PI was less than 100% in baseline.

Follow-up

Follow-up sessions were conducted similarly to baseline sessions.

Social Validity

After each participant completed their last session, the experimenter asked him or her which procedure he or she preferred to use and why.

Inter-Observer Agreement

All sessions were video recorded. For 32% of sessions an independent observer recorded data on the participant's performance using the PI checklist. Inter-observer agreement (IOA) for each session was calculated as the number of PI checklist items with agreement divided by the total number of checklist items for which the independent observer recorded data. IOA was calculated at 94%.

Results

The results for all participants can be found on Figures 2 through 7. For all participants, the number of PI checklist items accurately demonstrated is plotted on the Y-axis as a function of sessions on the X-axis. Circles represent the Tabletop format; diamonds represent the PowerPoint format. Sessions that were not preceded by instructional feedback are represented by open data points. Sessions that were preceded by feedback are represented by closed data points.

Results for Lori are depicted on Figure 2. Initially, she correctly demonstrated approximately five PI checklist items for each format during baseline. She began receiving feedback on the Tabletop format first. After the first delivery of feedback, there was an immediate increase to seven checklist skills demonstrated. During the sixth training session she demonstrated all 10 skills.

While feedback was being delivered on the Tabletop format, the PowerPoint format remained in baseline, and the increasing trend suggests that skills acquired for the Tabletop format generalized to the PowerPoint format. Although no feedback for the PowerPoint format

had been delivered, Lori accurately performed nine of the 10 skills. Only three training sessions were required for her to demonstrate all 10 checklist skills on the PowerPoint format. Follow-up sessions were conducted the next day, and she demonstrated all 10 checklist skills for both the Tabletop and PowerPoint formats.

Results for Anthony are depicted on Figure 3. Initially he correctly demonstrated only two PI checklist items for each format during baseline. He began receiving feedback on the PowerPoint format first. After the first delivery of feedback, there was an immediate increase to five checklist skills demonstrated with fidelity. During the 12th training session he demonstrated all 10 skills.

While feedback was being delivered for the PowerPoint format, the Tabletop format remained in baseline. Again, the increasing trend in baseline suggested generalization, but in this case generalization was from the PowerPoint to the Tabletop format. Anthony demonstrated all 10 checklist skills for the Tabletop format without ever receiving feedback on its implementation. Follow-up sessions were conducted two months later. Anthony demonstrated seven PI skills for the PowerPoint format and 6 PI skills for the Tabletop format.

Results for Justin are depicted on Figure 4. During baseline he demonstrated approximately four PI skills for both the Tabletop and PowerPoint formats. He began receiving feedback on the Tabletop format first. After the first delivery of feedback (on one checklist item), there was an increase to five checklist skills demonstrated. During the seventh training session he demonstrated all 10 skills.

While feedback was being delivered on the Tabletop format, the PowerPoint format remained in baseline. There was no apparent generalization from the Tabletop format to the PowerPoint format. After the first instance of feedback, however, Justin demonstrated eight of

the skills accurately in this format. During the fifth training session, he demonstrated all 10 skills. Follow-up sessions were conducted the next day, in which he demonstrated all 10 checklist skills for both the Tabletop and PowerPoint formats.

Results for Jasper are depicted on Figure 5. During baseline he accurately performed four PI skills for both the Tabletop and PowerPoint formats. He began receiving feedback on the PowerPoint format first. Throughout the feedback condition, Jasper maintained a steady increase in PI. He demonstrated all 10 PI skills in the fifth training session. Like Anthony, there was considerable generalization from trained PowerPoint skills to untrained Tabletop skills. Jasper required only one training session to demonstrate all 10 PI skills for the Tabletop format. Follow-up sessions were conducted one day later. Jasper demonstrated eight skills for the PowerPoint format and seven skills for the Tabletop format.

Results for Beverly are depicted on Figure 6. Initially she correctly demonstrated about six PI checklist items for each format during baseline. She began receiving feedback on the Tabletop format first. After the first delivery of feedback there was an increase to seven checklist skills demonstrated. During the second training session for the Tabletop format she demonstrated all 10 checklist skills.

Beverly showed no generalization from the trained format to the untrained format. As with the Tabletop format, however, only two instances of feedback were required before she demonstrated all 10 checklist items in the PowerPoint format. During follow-up sessions the next day, she demonstrated all 10 checklist items for the Tabletop format, and nine for the PowerPoint format.

Results for Cornelius are depicted on Figure 7. Initially he demonstrated eight to nine PI skills for the Tabletop format, and five to six skills for the PowerPoint format during baseline.

He began receiving feedback on the PowerPoint format first. After the delivery of feedback there was an increase to nine checklist skills performed accurately. In the fourth training session he demonstrated all 10 checklist skills. Like Anthony, training for the PowerPoint format generalized completely to the Tabletop format. Cornelius eventually demonstrated all 10 checklist skills for the Tabletop format without ever receiving feedback on it. Follow-up sessions were conducted five days later. Cornelius demonstrated all 10 skills for the PowerPoint format, and eight skills for the Tabletop format. All six participants said that they preferred the PowerPoint format over the Tabletop format.

Discussion

The results of this study are summarized on Table 1. Using this itemized feedback training method, the Tabletop procedures were learned in fewer sessions than the PowerPoint procedures. The three participants who were taught the Tabletop procedure first (Lori, Bethany, and Justin) took an average of five training sessions to demonstrate all 10 PI skills. The three participants who were taught the PowerPoint procedure first (Anthony, Cornelius, and Jasper) took an average of seven training sessions to do the same.

Skills taught in the context of the PowerPoint procedure generalized more to the Tabletop procedure than in the other direction, however. Of the three participants who were taught the PowerPoint procedure first, two needed no training at all to demonstrate all 10 PI skills with the Tabletop procedure. The third participant, Jasper, only needed one training session. There are some potential explanations for this. First, since the PowerPoint procedure took more sessions to train to 100% PI, the higher degree of generalization observed may be a result of more exposure to the training procedure. Second, the automation of the presentation of stimuli and the delivery of stimulus prompts during the PowerPoint procedure may have allowed participants to attend

more to other PI skills. Finally, the on-screen presentation of the sample and comparison stimuli in the PowerPoint procedure may have served as a type of video model of proper MTS instruction.

Despite taking more sessions to learn how to use the PowerPoint procedure, participants performed slightly better on it during follow-up sessions. The six participants demonstrated an average of 9.0 PI skills for the PowerPoint procedure, and an average of 8.6 for the Tabletop procedure during follow-up. Anthony, Cornelius, and Jasper all performed better on the PowerPoint procedure, averaging 8.3 skills for the PowerPoint procedure and 7.0 skills for the Tabletop procedure. Two participants, Lori and Justin, showed no difference between procedures during follow-up (both demonstrated all 10 PI skills). Only one participant, Beverly, performed better on the Tabletop procedure during follow-up, demonstrating all 10 skills for the Tabletop procedure versus nine for PowerPoint.

The difference found in the number of training sessions needed to learn the two instructional formats may have been an artifact of the PI checklist. The two items that the participants had the most difficulty learning for the PowerPoint procedure were starting the session with the first blank slide maximized, and advancing the slides immediately following the “student’s” response. Their equivalents in the Tabletop procedure are starting the session with the board down and the sample stimulus displayed, and removing and rotating the stimuli between sessions. All of the participants commented that these items seemed intuitive to running the Tabletop procedure, whereas their PowerPoint equivalents needed to be explicitly taught. When running the PowerPoint procedure, it is as easy to wait until the student demonstrates session behavior to maximize the first slide as it is to begin the session with the first slide maximized. When running the Tabletop procedure it is much easier to begin the session with the

board laying on the table or on the teacher's lap while waiting for session behavior than to hold it in another position. When running the PowerPoint procedure, it is possible to leave the stimuli displayed on the screen while providing a reinforcer or taking data. When using the Tabletop procedure, it is difficult to leave the stimuli in the student's sight while performing these same tasks, because the teacher must put down the materials to have a free hand.

The structure of feedback may have been another limitation in this study. Across all six participants, 58 instances of feedback were provided. Of these, 40 were followed by immediate improvement on the PI skill in question. This success rate, 69%, may be improved by some simple manipulations. For example, prior to each training session, the experimenter delivered feedback on only one new checklist item. It may be useful instead to provide feedback on every checklist item that the participant failed to demonstrate during the previous session, regardless of whether or not feedback had already been delivered for that item. All six participants commented that they would have preferred this type of training. Future research should focus on evaluating the ideal number of feedback items to be delivered.

Additionally, the curriculum materials used may have been a limitation. All six participants commented that the curriculum sheets provided were confusing to read. Three of the participants, Lori, Bethany, and Justin, commented that it would have been useful to have a simple, itemized description of appropriate student and teacher behavior to refer to between sessions. Future research should focus on how curriculum materials can be structured to better facilitate PI.

All six participants commented that they strongly preferred the PowerPoint procedure to the Tabletop because it was difficult to manage the tabletop materials. Future studies should develop similar technologies such that the prompting procedures used can be easily modified to

meet students' needs, while maintaining ease of use for staff, ease of applicability (using software platforms that are widely available), and flexibility in reinforcement and data collection procedures.

Based on this comparison of PI, the PowerPoint procedure may be tentatively recommended over the Tabletop procedure. Although the participants required more sessions to learn to administer the PowerPoint procedure with 100% PI, it was superior in all other comparisons. There are other important variables to explore when evaluating a new technology against an old one, however. Further research should compare PI with the two instructional formats during actual classroom instruction. The resulting levels of skill acquisition by students given the two formats should also be compared. Future research should also assess student preference of tabletop and computerized instructional formats.

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Table 1

Summary of Results for All Six Participants

Comparison	Tabletop	PowerPoint
Mean number of training sessions required to demonstrate 100% PI (when taught first)	5.0	7.0
Mean number of training sessions required to teach subsequent procedure (generalization)	3.33	0.33
Follow-up (number of PI checklist skills demonstrated)	8.6	9.0
Social validity (preference)	0%	100%

Note. Summary of the results for all six participants. Mean number of training sessions in first and second (generalization) training format is calculated for the three participants for whom the procedure indicated was taught first or second, respectively. Preference indicates the percent of participants who selected the indicated procedure as their most preferred. More favorable results are indicated in bold.

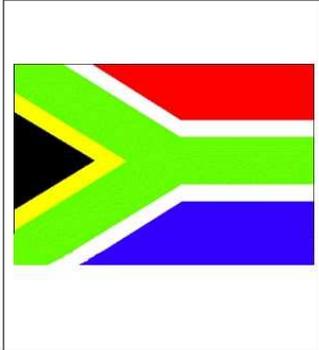
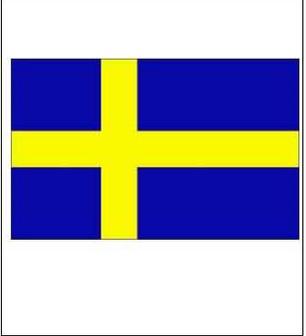
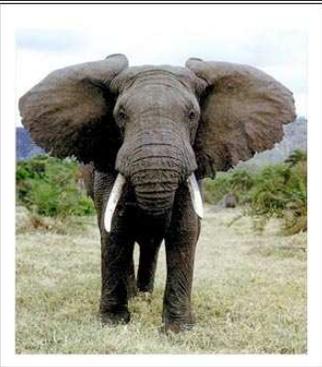
	1.) <i>Philippines</i>	2.) <i>South Africa</i>	3.) <i>Sweden</i>
A.) <i>Country map</i>			
B.) <i>Flag</i>			
C.) <i>Animal</i>			

Figure 1. The nine stimuli used for the teaching procedure in this study were related as A.) the country map, B.) the flag, and C.) an animal found in 1.) the Philippines, 2.) South Africa, and 3.) Sweden

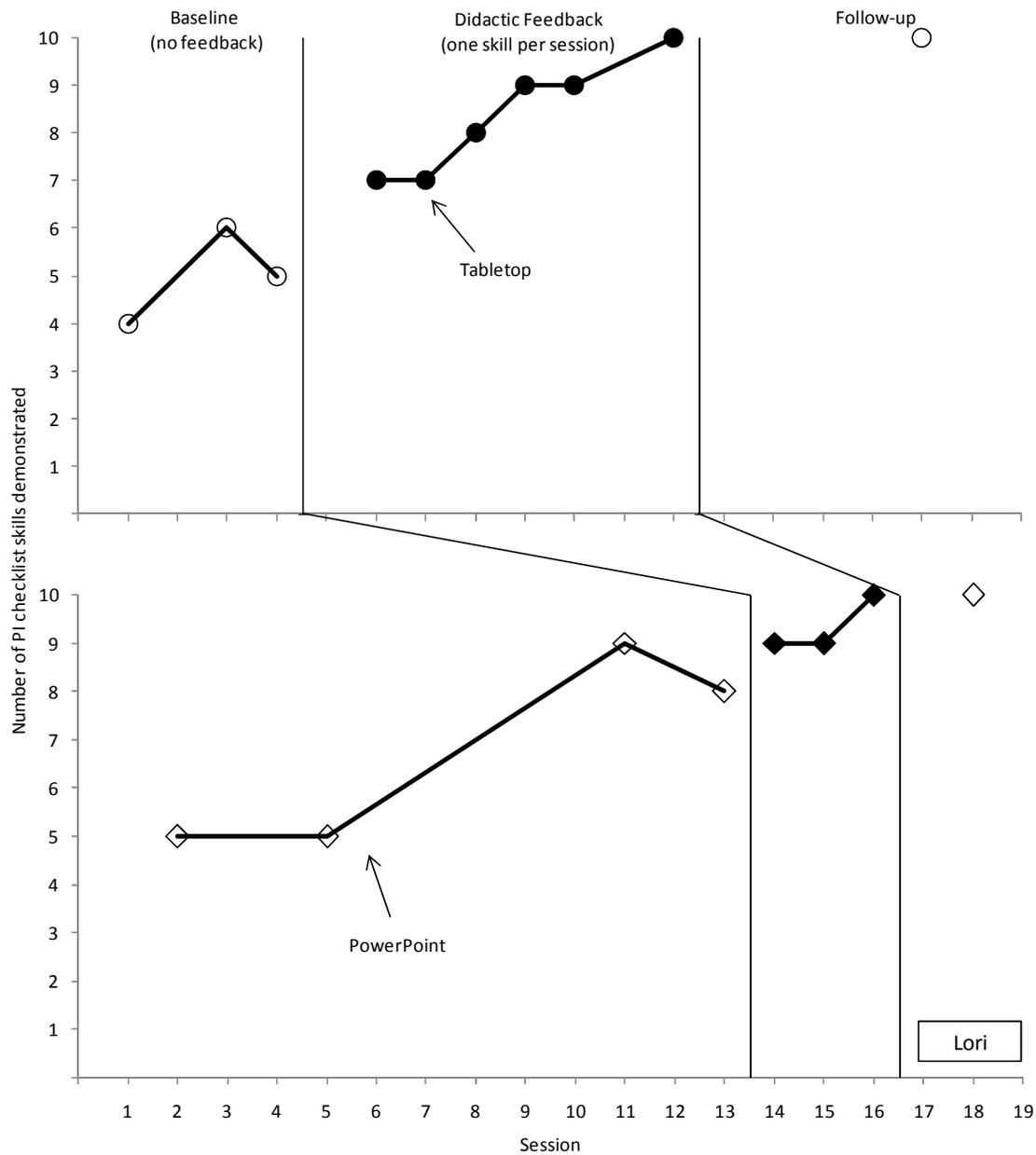


Figure 2. Results for Lori. The number of PI checklist items demonstrated is plotted on the Y-axis as a function of sessions on the X-axis. Circles represent the Tabletop format; diamonds represent the PowerPoint format. Sessions that were not preceded by instructional feedback are represented by open data points. Sessions that were preceded by feedback are represented by closed data points. Baseline and feedback sessions were conducted on the same day. Follow-up sessions were conducted one day after.

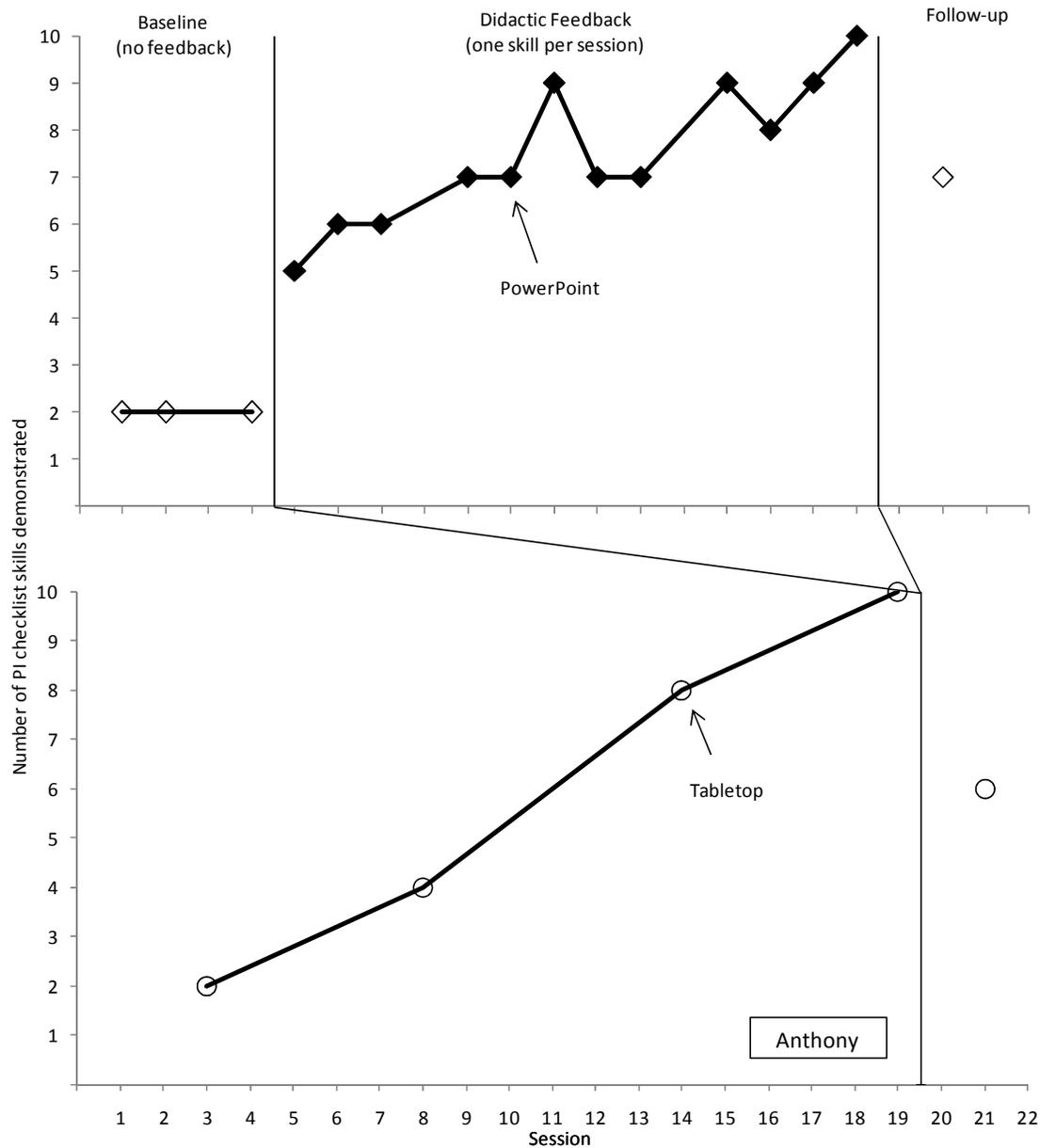


Figure 3. Results for Anthony. The number of PI checklist items demonstrated is plotted on the Y-axis as a function of sessions on the X-axis. Circles represent the Tabletop format; diamonds represent the PowerPoint format. Sessions that were not preceded by instructional feedback are represented by open data points. Sessions that were preceded by feedback are represented by closed data points. Baseline and feedback sessions were conducted on the same day. Follow-up sessions were conducted two months after.

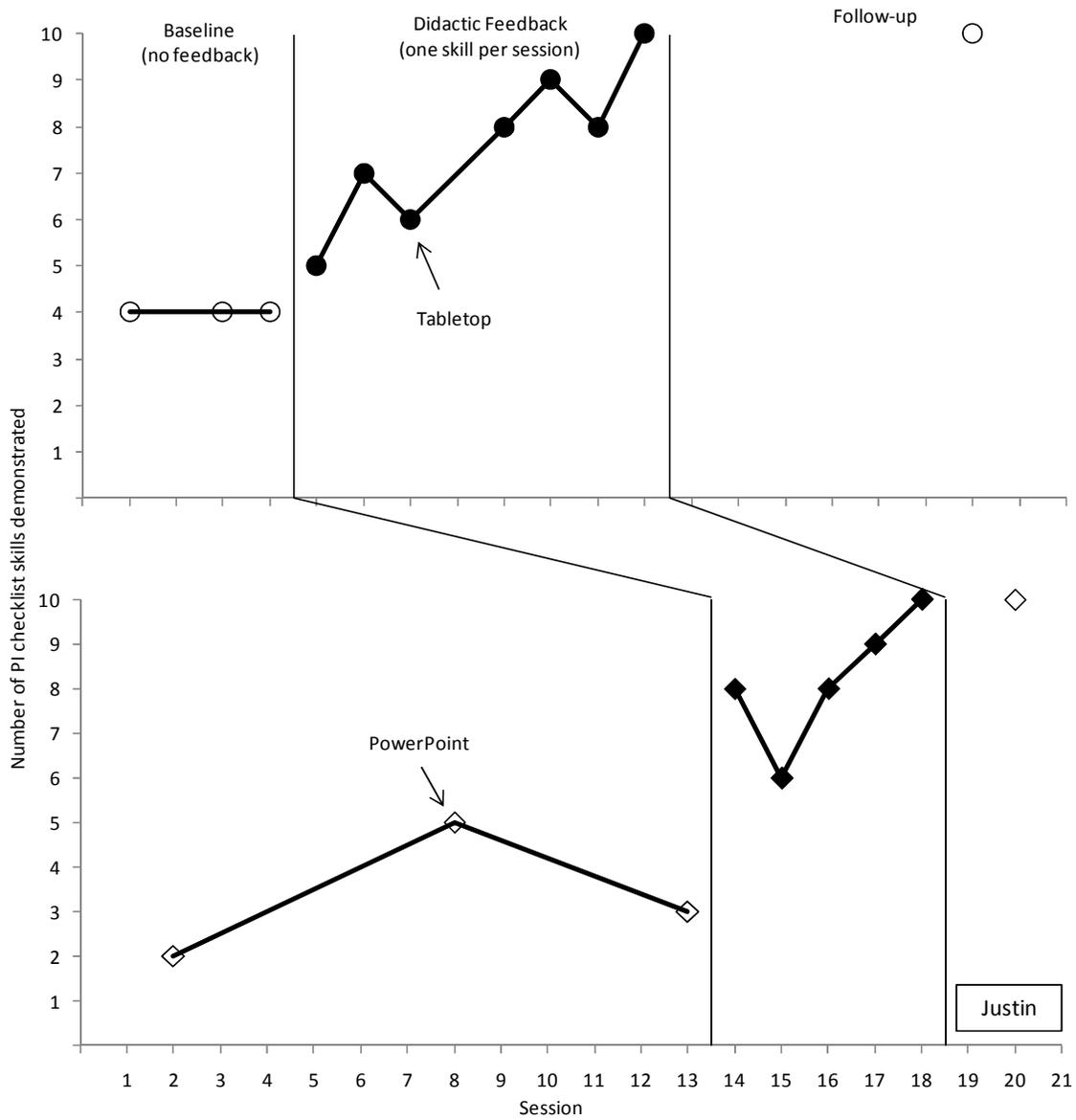


Figure 4. Results for Justin. The number of PI checklist items demonstrated is plotted on the Y-axis as a function of sessions on the X-axis. Circles represent the Tabletop format; diamonds represent the PowerPoint format. Sessions that were not preceded by instructional feedback are represented by open data points. Sessions that were preceded by feedback are represented by closed data points. Baseline and feedback sessions were conducted on the same day. Follow-up sessions were conducted one day after.

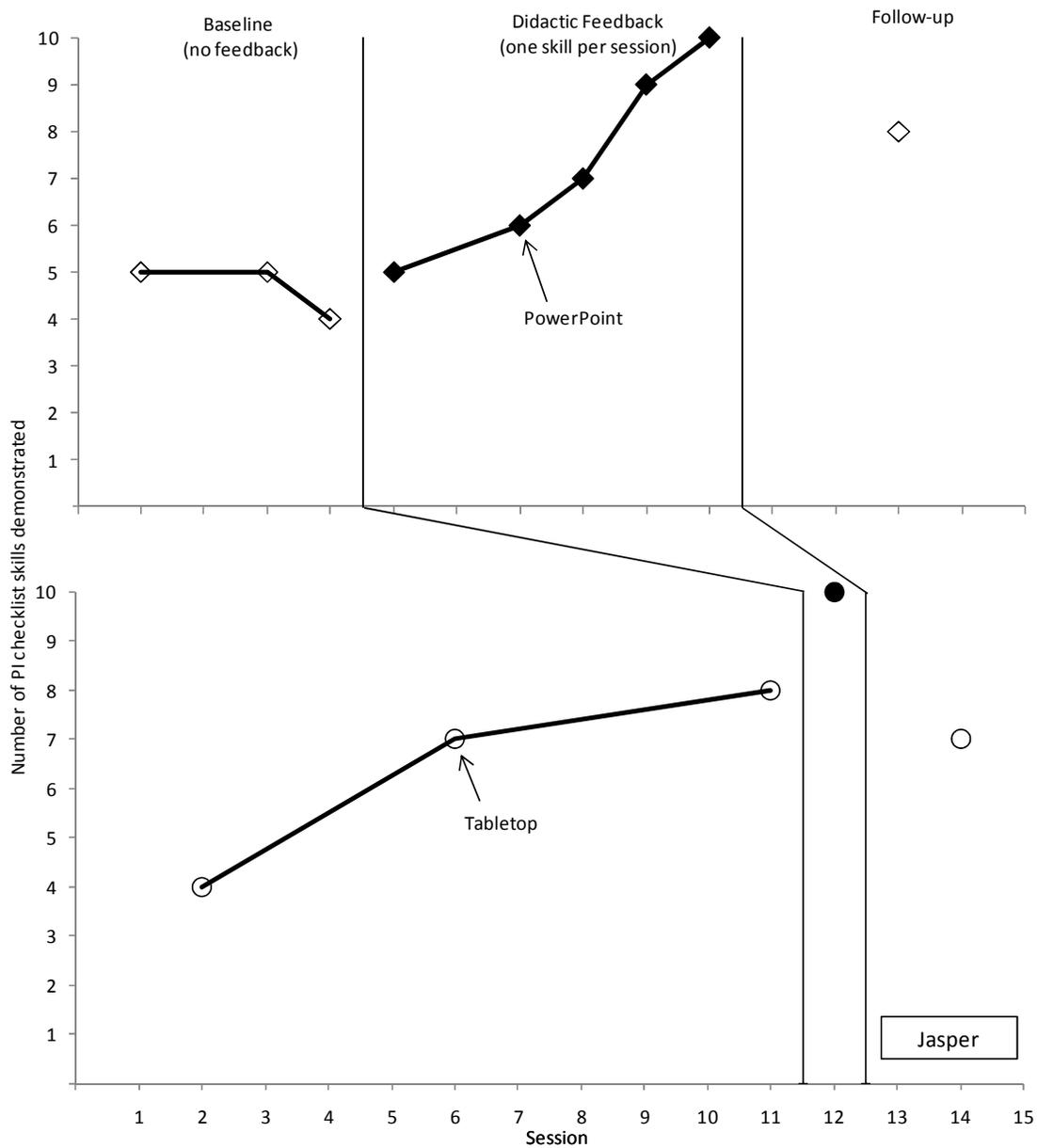


Figure 5. Results for Jasper. The number of PI checklist items demonstrated is plotted on the Y-axis as a function of sessions on the X-axis. Circles represent the Tabletop format; diamonds represent the PowerPoint format. Sessions that were not preceded by instructional feedback are represented by open data points. Sessions that were preceded by feedback are represented by closed data points. Baseline and feedback sessions were conducted on the same day. Follow-up sessions were conducted one day after.

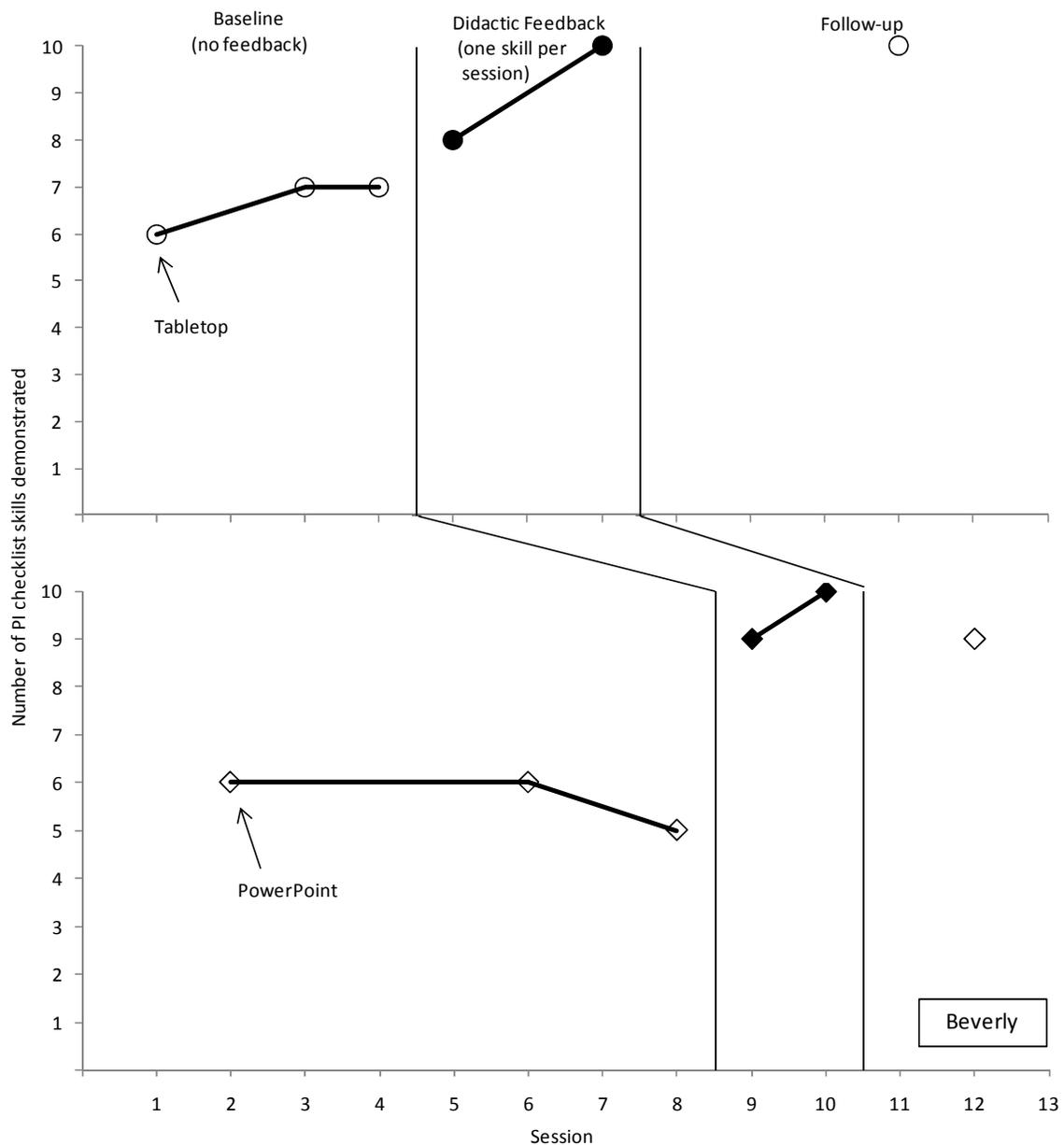


Figure 6. Results for Beverly. The number of PI checklist items demonstrated is plotted on the Y-axis as a function of sessions on the X-axis. Circles represent the Tabletop format; diamonds represent the PowerPoint format. Sessions that were not preceded by instructional feedback are represented by open data points. Sessions that were preceded by feedback are represented by closed data points. Baseline and feedback sessions were conducted on the same day. Follow-up sessions were conducted one day after.

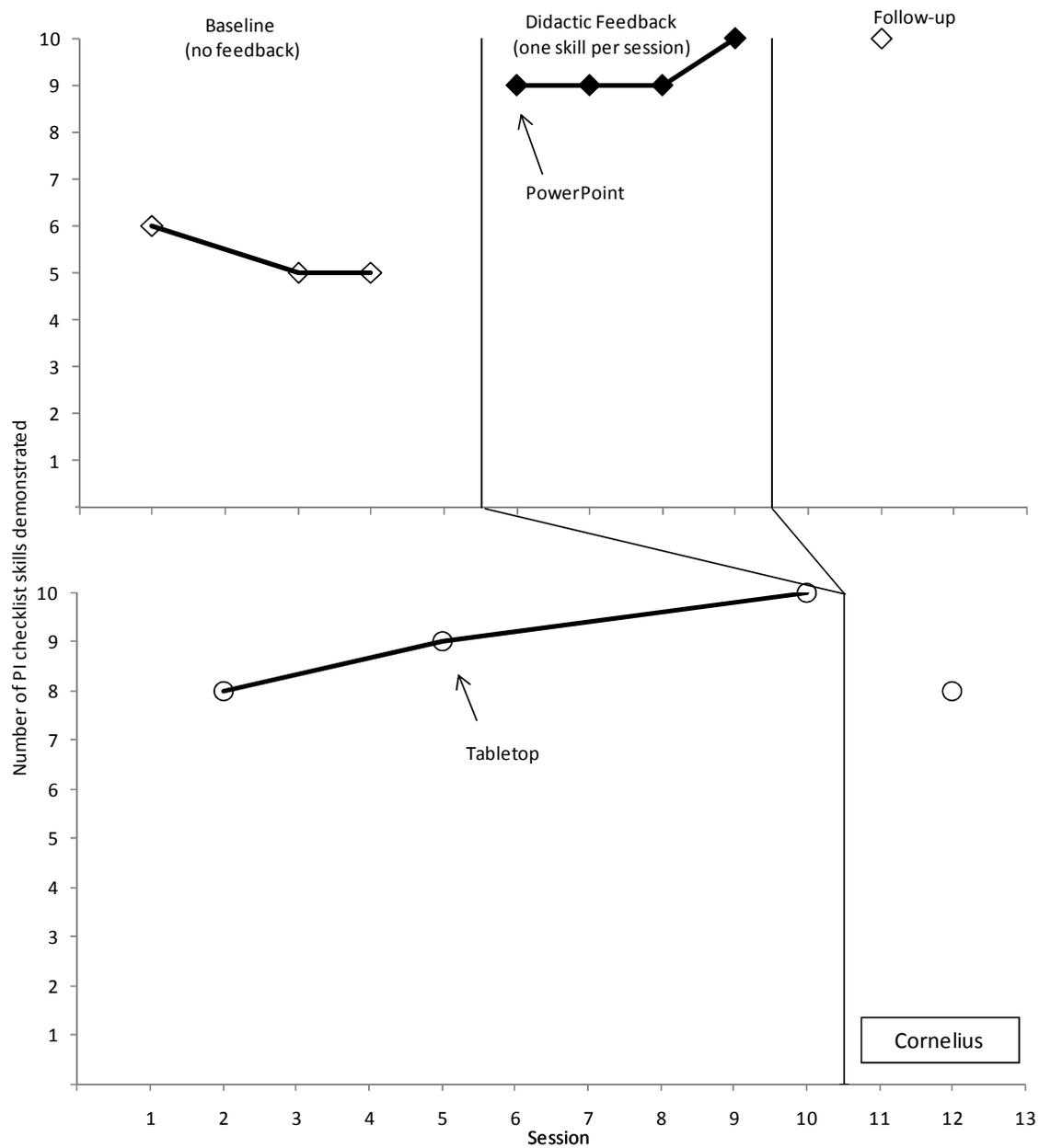


Figure 7. Results for Cornelius. The number of PI checklist items demonstrated is plotted on the Y-axis as a function of sessions on the X-axis. Circles represent the Tabletop format; diamonds represent the PowerPoint format. Sessions that were not preceded by instructional feedback are represented by open data points. Sessions that were preceded by feedback are represented by closed data points. Baseline and feedback sessions were conducted on the same day. Follow-up sessions were conducted five days after.

Appendix A

Behavior	Session				
	1	2	3	4	5
Started with board down (Tabletop)/blank slide (PowerPoint)?					
Modeled and waited for ready response?					
Waited for or prompted all observing responses?					
Provided appropriate prompts (Tabletop), or waited for on-screen prompts (PowerPoint)?					
Correct consequence?					
Immediate Consequence?					
Recorded Response Data?					
Rotated stimuli correctly (Tabletop) or advanced slides when appropriate (PowerPoint)?					
Filled out Session Information?					
End Session after 2 consec/3 errors, and prescribed next session correctly?					