

# SEE ME, HEAR ME, COACH ME

**Virtual bug-in-ear technology  
brings immediacy to  
professional development**

BY MARCIA L. ROCK,  
MADELEINE GREGG,  
PAMELA W. HOWARD,  
DONNA M. PLOESSL,  
SHARRON MAUGHN,  
ROBERT A. GABLE,  
& NAOMI P. ZIGMOND



**I**t is late in the afternoon. Kendra Applebee's 2nd graders are working on the carpet. Some are talking, others are wiggling, and a few are poking at peers while Applebee reads aloud from the story "Gregory's Shadow." She recently started teaching a science unit on shadows. Applebee thought the children would be excited about the topic, and she is pleased that she has integrated literature into the unit. But her children do not seem very interested. Applebee is feeling puzzled and slightly frustrated with the lesson that has been under way for a few minutes as the Skype call signal rings on her computer. She realizes it's 2 p.m. Applebee

smiles as the children look eagerly at the computer that sits atop her desk. They all know what time it is. Applebee reaches in her pocket, pulls out her Bluetooth earpiece, and slides it over her ear on her way to the computer. She moves the cursor to the green button, accepting the interactive video conference call, and the weekly virtual coaching session begins.

**Coach:** “Hello, Mrs. Applebee. How are you today?”

**Applebee:** “I’m good. How are you? The children are excited to see you today.”

**Children:** (*waving at the web cam and chanting in unison*) “Good afternoon, Dr. Rock.”

**Coach:** “I am well, thanks. Please say hello to the children for me and let them know I appreciate their warm welcome. I see them waving. And I can hear you and see you. Please begin when you are ready.”

Applebee minimizes the coach’s image on the computer screen, so the children are not distracted, and resumes the lesson.

### ON-THE-SPOT COACHING

While the idea of educational coaching is not new, the way teachers-in-training across six west Alabama counties are receiving job-embedded support is far from routine. In fact, these teachers are going boldly into a virtual frontier. Educational consultants 764 miles away are pioneering the use of the same kind of virtual

coaching for professional development. From their offices at the Pennsylvania Training and Technical Assistance Network (PaTTAN) in Harrisburg, Pa., consultants use online and mobile technology to coach special education teachers and paraeducators in four outlying public school districts.

In the most effective coaching and supervision paradigms, feedback to teachers is immediate (Scheeler, McAfee, & Ruhl, 2004). Nevertheless, many coaches don’t achieve immediacy in the traditional plan-observe-conference cycle so many use. Feedback often occurs long after the teaching episode and out of the teaching context. Bug-in-ear technology can change that (Rock et al., in press). Bug-in-ear technology is a proven method for improving the professional practice of frontline practitioners. Consisting mainly of a portable two-way radio with earpiece and microphone, bug-in-ear devices allow coaches or supervisors to give teachers immediate feedback while they are delivering instruction in their classrooms.

**Applebee:** “When I call your name, it is your turn to read aloud. Please follow along so you know where we are in the book when I call on you.”

**Coach:** (*corrective feedback*) “Kendra, you’re using round-robin reading, a low-access instructional strategy — only one student can respond at a time. To give all students high opportunities to respond correct-

This paper was supported by Grant #H325K060310 from the U.S. Department of Education, Office of Special Education Programs Research to Practice Division. The opinions expressed herein do not necessarily reflect the position or the policy of that agency.

ly, try a high-access read-aloud strategy like choral reading, partner reading, or cloze-reading with choral response. Please give one of those a try now.”

**Applebee:** “Let’s try reading the next page aloud together.”

**Coach:** (*encouraging feedback*) “That’s it! Choral reading is a good choice. Now all the students are actively engaged in the read-aloud.”

Students finish reading aloud chorally from the story.

Studies validating bug-in-ear technology’s effectiveness have appeared in education and related fields for more than five decades (Bowles & Nelson, 1976; Gallant & Thyer, 1989; Korner & Brown, 1952). But because traditional devices rely on FM radio frequency technology, their transmitting capabilities are limited to a range of 150 to 300 feet and the coach or supervisor has to be on-site to use the device. Recent advances in Internet and mobile technology, however, have revolutionized the bug-in-ear device so that virtual coaching can happen at a distance. The breakthrough came with the introduction

MARCIA L. ROCK is associate professor at the University of North Carolina at Greensboro and the director of Project TEEACH. You can contact her at mrock63@gmail.com.

MADELEINE GREGG is a professor at the University of Alabama and co-director of Project TEEACH. You can contact her at mgregg@bamaed.ua.edu.

PAMELA W. HOWARD is a clinical assistant professor at the University of Alabama.

DONNA M. PLOESSL is a doctoral student at the University of Alabama and a graduate associate with Project TEEACH.

SHARRON MAUGHN is an adjunct instructor at the University of Alabama and a supervisor with Project TEEACH.

ROBERT A. GABLE is an eminent scholar and the Constance F. and Colgate W. Darden professor of special education at Old Dominion University. You can contact him at rgable@odu.edu.

NAOMI P. ZIGMOND is a distinguished professor at the University of Pittsburgh. You can contact her at naomi@pitt.edu.

### Advanced online bug-in-ear virtual coaching system

COMPONENTS	COST
<i>BASIC COMPONENTS</i>	
Plantronics P1-Voyager 510 Bluetooth Headset	\$41.36
IOGear Enhanced Data Rate Bluetooth Wireless USB Adapter GBU221	\$34.00
Creative WebCam Live! Ultra-Web Camera	\$61.00
Skype	Free
<b>SUBTOTAL</b>	<b>\$136.36</b>
<i>ADDITIONAL COMPONENTS</i>	
Pamela Call Recording (Optional for bug-in-ear video recording)	\$36.95
Maxtor One Touch III USB 2.0 External Hard Drive (Optional for archiving video recorded sessions)	\$159.99
<b>TOTAL</b>	<b>\$333.30</b>

Source: Rock et al., in press (Information is proprietary; patent pending)

of Bluetooth technology. A Bluetooth earpiece allows the teacher to receive coaching while delivering classroom instruction and without interrupting the lesson. For the first time, two professional development tools — coaching and bug-in-ear technology — can be used together and effectively to overcome barriers of time and distance.

#### THE NUTS AND BOLTS OF VIRTUAL BUG-IN-EAR COACHING

While virtual bug-in-ear coaching may seem futuristic, it is feasible today using most school districts’ existing technology resources and most teachers’ existing level of technology know-how. That said, practical information can help sustain initial enthusiasm. Before launching into virtual coaching, mentors and teachers need to plan how and when they will make contact as well as how, when, and what type of feedback will be offered.

#### Making contact

To begin, virtual coaches and teachers need to assemble the tools

needed to conduct interactive video conferencing. See the components and estimated cost of our advanced online bug-in-ear technology in the table above. After the district or school obtains the equipment, it takes just a couple of hours to install the software and equipment on a desktop computer. After a few tests, the first virtual coaching session can begin.

Once the teacher and the coach have agreed on the time and date, each allots a minimum of 30 minutes for the interactive session. At the appointed time, the virtual coach places the interactive videoconference call to the teacher in the classroom. Skype’s instant messaging feature is especially useful for remedying almost any technological problem. If the problem cannot be resolved in a few minutes, the session is rescheduled to minimize disruptions in the instructional day. When a call drops during a session, the coach calls the teacher back and the connection is re-established almost seamlessly.

#### Providing feedback

While technology allows virtual coaching to take place from a distance, it is the feedback the mentor provides that supports the teacher in a distant classroom. Because virtual coaching relies primarily on auditory

feedback, it is essential that a coach consider the quality and quantity of his or her remarks before sharing them with the mentee. As with on-site coaching, virtual feedback should be offered in a warm and supportive tone. However, unlike on-site coaching, the coach can give feedback in real-time while the teacher is talking or delivering instruction but without interfering in the lesson. The coach can talk to the teacher when there is silence in the classroom (i.e. the students are engaged in independent or cooperative learning activities), as well as before or after the lesson. The type of coaching feedback can include encouragement or timely questions as well as instructional and corrective remarks.

**Applebee:** “Now it’s time to make predictions about shadows. What do you think will happen when I hold this piece of paper up in front of the flashlight? Will we see a shadow?”

**Coach:** (*instructive feedback*) “Do you notice how only a few students are raising their hands to answer the prediction question? Now would be a good time to stimulate their prior knowledge and to use some high-access strategies. Instruct the students to think about what they have been learning about shadows and the story

#### More information

The online version of this article includes a table summarizing professional development implications for this approach. See [www.nsd.org/news/jsd/](http://www.nsd.org/news/jsd/).

you just read together. Then instruct them to share their prediction with a partner.”

**Applebee:** “To help you make a prediction, think about what we have been learning about shadows and the story we just read together — ‘Gregory’s Shadow.’ Then, turn to your partner and share your prediction. Remember to be respectful. You need to use whisper voices.”

**Coach:** (*encouraging feedback*) “Wonderful! See how all your students are now actively engaged in the lesson? They are eagerly talking with their partner about shadows and what they think will happen when you shine the light over part of the paper.”

**Applebee:** “Let’s listen respectfully while two or three partners share their predictions.”

**Coach:** (*instructive feedback*) “Remind the other students to agree or disagree with the predictions by

putting their thumbs up or down. And record their predictions on the whiteboard to begin modeling the scientific procedure.”

**Applebee:** “Thank you for sharing. Please put your thumbs up if you agree with their prediction or your thumbs down if you disagree. Great job using your thumbs to agree or disagree. Let me see thumbs up or down again so we can count together and record our responses on the board. That’s what smart scientists do!”

**Coach:** “Terrific! Now, while you are recording, ask them a higher-order question. Why did you make that prediction or why do you agree or disagree? Doing so will help you to check their understanding.”

**Applebee:** “Keep your thumbs in the air while I record and turn and tell your partner why you agreed or disagreed.”

**Coach:** (*encouraging and question-*

*ing feedback*) “Wonderful! They are really with you now, but listen carefully. Some of the students are using faulty reasoning to support their answers. Do you see now why it is important to ask those higher-order questions and to give as many students as possible an opportunity to respond using high-access instructional strategies?”

**Applebee:** “Yes, I sure do.”

•

## LESSONS LEARNED

Since spring 2007, we have conducted more than 350 virtual coaching sessions using virtual bug-in-ear technology with frontline practitioners enrolled in Project TEEACH, a federally funded training program designed to transform practicing general education teachers into advocates, change agents, and highly qualified special educators. Our Pennsylvania



counterparts at PaTTAN launched their use of virtual coaching more recently, in February 2008. The lessons learned from these two ongoing projects have been as varied as they have been instructive.

### Technology-related lessons

The good news is that the advanced online bug-in-ear technology has proven to be dependable, achieving an 84% or better reliability rating — the systems work when they are turned on — in fall 2007. Nevertheless, while the technology is sound, there are occasional minor glitches.

The most frequent stumbling blocks have included problems with firewalls, bandwidth limitations, audio difficulties, dropped calls, video and audio recording issues, and lack of on-site technical support. Others using interactive videoconferencing

have reported similar problems (Bower, 2001; Levy, 2005). Basic technology support and a can-do attitude appear to be enough to overcome these occasional glitches.

### People-specific lessons

For many teachers, the thought of having a virtual visitor not only looking over your shoulder but also whispering in your ear while you are teaching is disquieting. Indeed, previous researchers (Gallant & Thyer, 1989; Gersten, Morvant, & Brengelman, 1995) have established that new and experienced teachers frequently report heightened levels of anxiety when they are being coached. The mere presence of “another” (i.e. observer, coach, supervisor, administrator, or colleague) in a classroom implies that the teacher is doing something wrong (Gersten et al., 1995). To help the teachers feel warm support instead of harsh scruti-

ny, we have used a scaffolded approach that allows the practicing teachers to be immersed gradually in more and more intensive virtual coaching experiences. We also have sought to alleviate the teachers’ anxiety by investing time and energy in developing relationships. As in any coaching situation, the bond between the professionals should be predicated on trust and respect (Knight, 2007; Norton, 2007).

### IMPACT OF VIRTUAL COACHING ON TEACHERS AND STUDENTS

While the Pennsylvania project has just begun, we have analyzed and reported data on 15 practicing teachers who participated in the first Project TEEACH-related bug-in-ear study (Rock et al., in press). Quantitative and qualitative results indicated that the advanced online bug-in-ear technology was a practical and efficient way to provide immedi-

ate job-embedded feedback, resulting in four noteworthy outcomes. First, the climate in the teachers' classrooms improved significantly. During instructional interactions, the teachers used more specific, descriptive praise and fewer reprimands contributing to a nurturing, student-centered learning environment. Second, the teachers' use of research-based practices increased significantly. Third, students' on-task behavior improved from 73.8% to 92.7%. Fourth, the teachers viewed the advanced online bug-in-ear technology as a powerful tool for improving the teaching and learning process.

The lesson continues with Applebee varying the light source and object position under which she performs the flashlight activity. Students go on making predictions, while Applebee records their observations

on the board. The coach intermittently provides encouraging feedback each time Applebee uses a high-access instructional strategy and poses a higher-order question to the students, which she does without further instructive or corrective prompting for the remainder of the lesson.

**Applebee:** "Well, kids, that's all we have time for today in science. It's time to get your backpacks and line up for dismissal."

**Coach:** (*instructive and corrective feedback*) "Kendra, remember: It's important to review the lesson. Try singing the 'Shadow' song you taught the children last week while they gather their belongings. Then when they are in line, review the main points of today's lesson about shadows. Challenge them to look for their shadow as they walk to the bus."

**Applebee:** "Yes, I know I need to work on that. I will."

Applebee transitions the students, putting into practice the coach's suggestions, while the coach continues to offer brief encouraging remarks. As the dismissal bells sound, the coach offers summary feedback.

**Coach:** (*instructive, encouraging, and questioning feedback*) "Nice job, Kendra, incorporating the feedback I gave you today into the lesson. I look forward to seeing you use more of those strategies next week when I visit virtually. Also, I think you did well today creating a positive classroom climate, using descriptive commenting, incorporating literature in the science unit, and engaging the students in an authentic science activity. What would you like to continue working on next week?"

**Applebee:** "I know I need to work on content, ask higher-order questions, and use more high-access strategies."

**Coach:** “I think so, too. Please thank the children for me; I’ll see you all again soon.”

**Applebee:** “Thank you very much.”

•

### CONCLUDING THOUGHTS

The teachers, consultants, and administrators involved in the Pennsylvania and Alabama virtual coaching projects are on the cutting edge in the use of technology in schools. In seeking innovative ways to make classrooms places in which all students succeed, these pioneers are entering the virtual world of technology in search of strategies that will improve both teaching and learning processes. The classroom-based research conducted so far shows that their efforts are paying off, not only for the teachers, but also for their students.

### REFERENCES

- Bower, B.L. (2001).** Distance education: Facing the faculty challenge. *Online Journal of Distance Learning Administration, 4*(2). Available at [www.westga.edu/~distance/ojdla/summer42/bower42.html](http://www.westga.edu/~distance/ojdla/summer42/bower42.html)
- Bowles, E.P. & Nelson, R.O. (1976).** Training teachers as mediators: Efficacy of a workshop versus the bug-in-ear technique. *Journal of School Psychology, 14*(1), 15-25.
- Gallant, J.P. & Thyer, B.A. (1989).** The “bug-in-the-ear” in clinical supervision: A review. *The Clinical Supervisor, 7*(2/3), 43-58.
- Gersten, R., Morvant, M., & Brengelman, S. (1995).** Close to the classroom is close to the bone: Coaching as a means to translate research into classroom practice. *Exceptional Children, 62*(1), 52-66.
- Knight, J. (2007).** *Instructional coaching: A partnership approach to improving instruction*. Thousand Oaks, CA: Corwin Press.
- Korner, I.N. & Brown, W.H. (1952).** The mechanical third ear. *Journal of Consult Psychology, 16*(1), 81-84.
- Levy, S. (2005).** Will sticks lick broadband fix? *Newsweek, 146*(8), 14.
- Norton, J. (2007).** Adding layers of support. *JSD, 28*(1), 20-25.
- Rock, M.L., Gregg, M., Thead, B.K., Acker, S.E., Gable, R.A., & Zigmond, N.P. (in press).** Can you hear me now? Evaluation of an online wireless technology to provide real-time feedback to special education teachers-in-training. *Teacher Education and Special Education*.
- Scheeler, M.C., McAfee, J.K., & Ruhl, K.L. (2004).** Providing performance feedback to teachers: A review. *Teacher Education and Special Education, 27*, 396-407. ■

## IMPLICATIONS FOR PROFESSIONAL LEARNING

In the table below, we show the relationship between our virtual coaching system and NSDC’s delineation of how technology can be used as a vehicle for high-quality professional development (NSDC & NICI, 2001). As we have discussed, virtual coaching is one of many possible e-learning configurations available to staff development personnel.

<b>TECHNOLOGY</b> as a general tool for staff development (NSDC & NICI, 2001, p. 7)	<b>VIRTUAL COACHING</b> as a specific tool for staff development
<b>1</b> Alters the learning environment.	As the students are engaged in classroom instruction, they are exposed to the novel way in which the teacher is using technology to learn new teaching methods. The students now have a powerful model of how technology can be used to facilitate lifelong learning. Also, because virtual coaching is scaffolded and used over time, teachers and students can join in evaluating the short- and long-term effects the new methods have on achievement.
<b>2</b> Provides new structures and media for reflecting, communicating, and acting.	Online and mobile technologies are intertwined to invent a new structure that allows for reflection and communication through interactive discourse with a coach, mentor, or expert in real-time.
<b>3</b> Facilitates modeling and visualization.	Virtual coaching through the advanced online bug-in-ear technology provides auditory and visual modeling in real-time. For example, when students blurt out uncontrollably during a lesson, the teacher hears the coach on the other end model, “I am calling on students who are raising their hands quietly.” Then the teacher glances over at the computer screen and sees the coach demonstrating a raised hand.
<b>4</b> Allows for construction and discovery of knowledge.	The advanced online bug-in-ear technology allows teachers to receive immediate, positive, corrective, and specific feedback while they are teaching, which in turn helps them to construct and discover knowledge when they need it the most.
<b>5</b> Expands access to information networks, people, and ideas.	The advanced online bug-in-ear technology now gives teachers access to experts, mentors, and coaches that time and distance have prevented in the past. Teachers can use the combined online and mobile technology to access multiple levels of on-site and virtual coaching support to develop classroom management and differentiated instruction skills that are positive and respectful to the students and their culture.
<b>6</b> Increases the flexibility of time and places for learning.	The improved bug-in-ear technology allows a virtual coach to conduct up to seven or eight online sessions in as many different classrooms and/or school buildings in a single day without leaving his or her office. Teachers also have greater flexibility in that they can use the technology to virtually coach colleagues in other schools and districts.
<b>7</b> Provides significant resources.	Virtual coaching is a fiscally responsible approach because it improves the usefulness of existing classroom and school technology (i.e. a desk or laptop computer and the Internet). It also decreases the amount of travel reimbursement needed for teachers and trainers, while enabling teachers to receive more coaching sessions with an expert or mentor.

### Reference

National Staff Development Council & National Institute for Community Innovations. (2001). *E-learning for educators: Implementing the standards for staff development*. Oxford, OH: NSDC.