

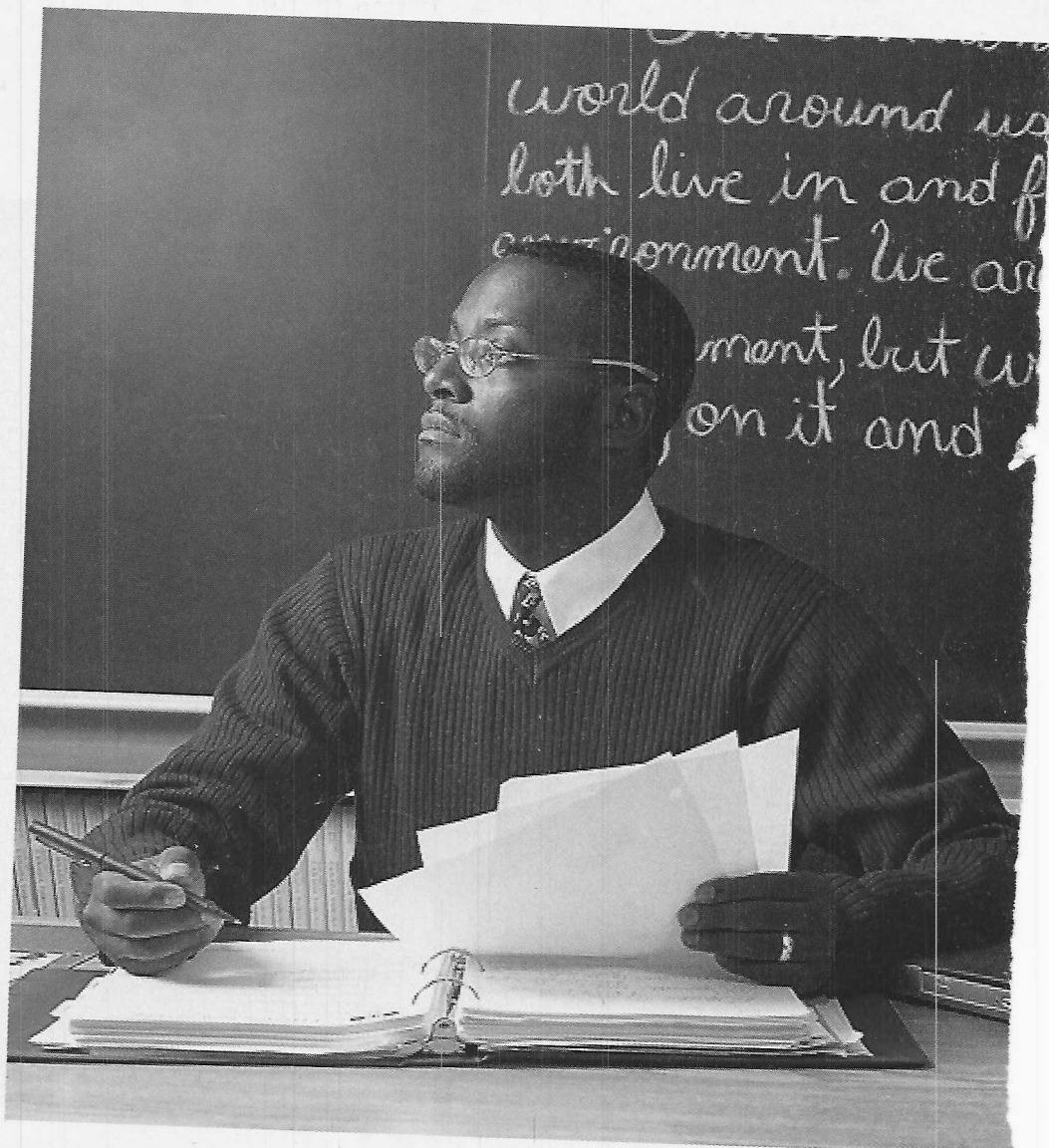
Step-by-Step: Teaching Students to Self-Monitor

Lisa A. Rafferty

Mr. Payton silently sat back in his chair and looked out at his students, who were supposed to be independently working on various projects. He noticed—and not for the first time—that a number of his students were unable to manage their own behavior and work independently of adult supervision. Mr. Payton felt overwhelmed because he was unable to constantly monitor and regulate all of his students' behaviors, especially given that their needs were so diverse.

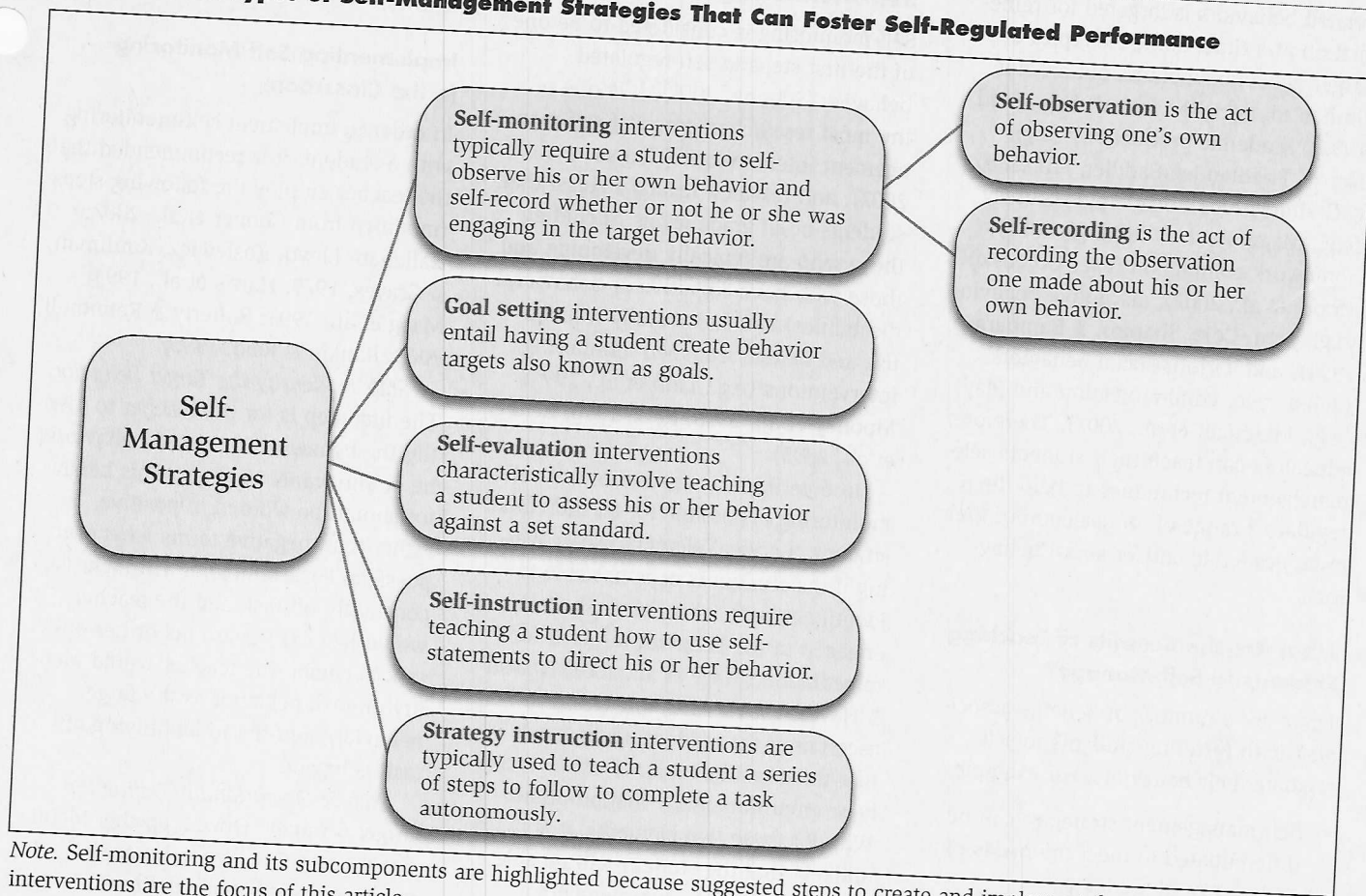
Some of his students required constant prompting to remain on-task. Others needed prompting to work with their partners when they were instructed to do so, whereas a few needed reminding to work alone during designated times. In addition, a number of students needed their academic work monitored.

Mr. Payton knew that it is humanly impossible to continuously monitor all of his students' behaviors. Consequently, he set out to find a type of strategy that he could use to help his students manage their own behaviors. It was during his research that Mr. Payton stumbled upon a group of self-management interventions called "self-monitoring."



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Figure 1. Five Types of Self-Management Strategies That Can Foster Self-Regulated Performance



Note. Self-monitoring and its subcomponents are highlighted because suggested steps to create and implement these types of interventions are the focus of this article.

Self-Management

An overarching goal in education is to enable students to become independent and self-sufficient individuals who are able to manage their behaviors without the assistance of others (Cooper, Heron, & Heward, 2007; Lan, 2005). When students are able to manage their own behaviors (also known as self-regulation), they do not rely on external controls, such as teacher prompting.

In general education classrooms, teachers are facing an increasingly diverse population of students with an array of needs. As illustrated in the earlier story, it is not feasible for a teacher to constantly manage a student's behavior. Add 20 to 30 children to the equation and the task becomes daunting. One group of interventions that have been successfully taught and used by students at all grade levels with a wide range of abilities is self-management interventions.

Are There Different Types of Self-Management Interventions?

There are five types of self-management interventions that are frequently used to help foster self-regulated performance: (a) self-monitoring, (a) goal setting, (c) self-evaluation, (d) self-instruction, (e) strategy instruction (Cooper et al., 2007; Keller, Brady, & Taylor, 2005; Mace, Belfiore, & Hutchinson, 2001; Nelson & Hayes, 1981; Reid & Lienemann, 2006; Schunk, 2001). See the concept model in Figure 1 for a brief explanation of each type.

For What Kinds of Students Are Self-Management Interventions Designed?

Self-management interventions can be taught to and used by students from a wide variety of backgrounds and with a diverse range of abilities, including students in preschool (e.g., Reinecke, Newman, & Meinberg, 1999), elementary school (e.g., Lannie & Martens, 2008), middle school (e.g., Gureasko-

Moore, DuPaul, & White, 2007), high school (e.g., Chalk, Hagan-Burke, & Burke, 2005), and college (e.g., Keller, et al., 2005) settings. Students with learning disabilities (e.g., Saddler, 2006), emotional and behavioral disabilities (Mooney, Ryan, Uhing, Reid, & Epstein, 2005), attention deficit hyperactivity disorder (ADHD; Reid, Trout, & Schartz, 2005), autism (Lee, Simpson, & Shogren, 2007), and cognitive disabilities (e.g., King-Sears, 2008) have also successfully used self-management interventions.

What Can Self-Management Interventions Help Students Do?

Self-management interventions can be used to help students manage a variety of social and academic behaviors. The behavior(s) that are selected for change with a particular intervention are known as the target behavior(s). Typically, when a student is taught how to use a self-management intervention, only one behavior or a set of

related behaviors is targeted for remediation at a time. Some examples of target behaviors include, but are not limited to, attention to task (e.g., Reid, 1996), academic productivity (e.g., Harris, Friedlander, Saddler, Frizzelle, & Graham, 2005), academic accuracy (e.g., Maag, Reid, & DiGangi, 1993), homework completion (e.g., Gureasko-Moore et al., 2007), disruptive behavior (e.g., Lam, Cole, Shapiro, & Bambara, 1994), and various social behaviors such as peer communication and play (e.g., Marchant et al., 2007). Therefore, educators can teach their students self-management techniques to help them regulate a range of, or selection of their own, academic and/or social behaviors.

What Are the Benefits of Teaching Students to Self-Manage?

There are a number of benefits associated with fostering students to self-regulate their behaviors. For example,

- Self-management strategies can be differentiated to meet the needs of a wide range of students.
- They are typically less invasive than teacher-managed strategies (Fantuzzo, Polite, Cook, & Quinn, 1988).
- They may be more effective than teacher-regulated interventions (DuPaul & Stoner, 2002).
- Students who effectively use self-regulatory processes or self-management skills tend to have higher levels of self-efficacy, motivation, and school achievement (Zimmerman, 2002).
- These students typically use appropriate help-seeking behaviors in order to learn how to do something independently instead of sitting helplessly or looking for someone else to do it for them (Newman, 2002).
- Students who learn how to effectively use a small number of self-management strategies can potentially manage a variety of behaviors (Cooper et al., 2007), which will help them throughout their school careers and after they graduate (Lan, 2005).

Self-Monitoring

Self-monitoring is considered to be one of the first steps to self-regulated behavior (Schunk, 2001). It is one of the most researched group of self-management interventions (Cooper et al., 2007), and research results suggest that students at all grade levels (including those who are typically developing and those who have cognitive or behavioral disabilities) can successfully learn to use and benefit from self-monitoring interventions (e.g., Lam et al., 1994; Mooney et al., 2005; Reid, 1996; Reid et al., 2005).

In determining whether or not self-monitoring is possible for an individual student, a critical element is discovering if the student is or is not able to identify or note when he or she has engaged in the behavior targeted for remediation (Mace et al., 2001; Nelson & Hayes, 1981). Also, one needs to ascertain if the student understands that the target behavior is either socially or environmentally inappropriate. Without these two elements, it is unlikely that the student will be able to regulate his or her own behavior.

Self-Monitoring and Graphing

Although having a student graph his or her behavior is not a necessary component of self-monitoring, research results have suggested that a combination of having a student record and graph his or her behavior may be more effective than using recording alone (DiGangi, Maag, & Rutherford, 1991). In addition, it is possible that graphing is motivational to students (e.g., Harris, Graham, Reid, McElroy, & Hamby, 1994), and students who graph their own behavior begin to spontaneously create goals for themselves and self-evaluate their performance, which are other important processes of self-regulated behavior. Therefore, teachers should include a graphing component when they implement self-monitoring interventions to help foster the development of other self-regulation processes. The graph can be used as the recording sheet or in combination with another self-monitoring sheet. An example of the steps to use for self-

monitoring is given in the section that follows.

Implementing Self-Monitoring in the Classroom

In order to implement self-monitoring with a student, it is recommended that the teacher employ the following steps (modified from Cooper et al., 2007; Hallahan, Lloyd, Kosiewicz, Kauffman, & Graves, 1979; Harris et al., 1994; Maag et al., 1993; Rafferty & Raimondi, 2009; Rankin & Reid, 1995).

Step 1: Identify the Target Behavior.

The first step is for the teacher to identify the behavior (or related behaviors) he or she wants to target. This behavior should be worded in positive, rather than negative terms whenever possible. For example, if a student is constantly off task and the teacher would like to increase his or her on-task behavior, the teacher would identify on-task behavior as the target behavior, opposed to identifying off-task behavior.

Step 2: Operationally Define the Target Behavior. Once a teacher identifies the target behavior, he or she needs to operationally define it. In other words, the teacher needs to create a detailed description of what the behavior looks like so that it can be observed and measured (Cooper et al., 2007). Sometimes it is helpful to also give a nonexample. How each person defines on-task behavior may vary, and what is considered on-task in one environment may not be the same in another. Therefore, a teacher would have to operationally define on-task behavior within the context of a particular environment and/or activity. For instance, if a teacher would like a student to increase his or her on-task behavior during independent math practice while using a self-monitoring intervention, on-task behavior could be operationally defined as

- (a) looking at the self-monitoring card or the math practice sheet,
- (b) writing on the self-monitoring card or the math practice sheet,
- (c) using manipulatives to count, or
- (d) asking the teacher for help. (Rafferty & Raimondi, 2009, p. 289)

Step 3: Collect Baseline Data. After the teacher operationally defines the target behavior, baseline data should be collected. In order to make an informed decision about the need to remediate the target behavior or the intervention to use, it is recommended that the teacher gather at least three to five pieces of baseline data. In addition, if it is decided that remediation is appropriate, these data will supply the teacher with preintervention information that can be used to analyze the student's progress once the intervention has been implemented.

There are a number of ways that teachers can collect data. Two commonly used methods are frequency count and time sampling procedures, which are briefly explained in the following paragraphs (see Cooper et al., 2007, for more information about these and other data collection methods):

- *Frequency count procedures* are used to count the number of times a behavior occurs. Discrete behaviors are often measured using frequency counts. Frequency counts are easily used when a permanent product is evaluated. For example, if the target behavior is "academic productivity" and the teacher wants the student to finish more math problems independently, he or she can monitor the student's progress by simply counting the number of math problems the student completes on a worksheet each day.
- *Time sampling procedures* provide an estimate of time that a student is engaged in the target behavior. For high-rate behaviors that cannot be measured using a permanent product, teachers often use this data collection method. For example, time sampling procedures can be used to measure a student's on-task behavior (such as the one operationally defined in the previous step).

Although time sampling procedures only provide an estimate of the student's engagement in the behavior, it is often unrealistic for a teacher to continuously watch a single student's behavior for any extended amount of time. Therefore,

teachers use this method because it allows them to engage in other teaching activities while intermittently collecting data.

With this set of procedures, teachers observe and record the occurrence or nonoccurrence of the target behavior at fixed intervals. For this type of assessment, a teacher would also need his or her own cueing device to prompt him or her to observe and record the student's behavior. From these data, the teacher could then calculate a percentage—in this example a percentage of time on-task—by dividing the number of intervals the student was observed on-task with the total number of intervals he or she was observed. Then, that answer should be multiplied by 100 to get a percentage. (Figure 2 provides an example of a recording sheet and

ble-digit numbers with regrouping, but makes careless mistakes, this is a performance deficit and self-monitoring would be appropriately used to increase academic accuracy. However, if the student does not know how to add double-digit numbers with regrouping, then this would be considered a skill deficit and self-monitoring would not be appropriate for this behavior.

- The teacher should assess how often the student will have the opportunity to engage in the target behavior. If it is a behavior that would be expected infrequently, self-monitoring may not be an appropriate intervention to use. It is recommended to choose behaviors that would be expected at least a few times a week to several times a day. (Baseline data should be used to make an informed decision.)

[S]elf-monitoring should only be used with skills that the student already possesses, and the deficit is in the student's performance of the skill.

steps to collect data using a time sampling system.)

Step 4: Determine If It Is an Appropriate Behavior to Remediate. The fourth step involves having the teacher determine whether or not the target behavior is an appropriate behavior to remediate by teaching the student to self-monitor. The following criteria should be evaluated before the decision is made to create and implement a self-monitoring program (see Figure 3 for a condensed checklist; The IRIS Center for Training Enhancements, n.d., Rankin & Reid, 1995):

- It should be understood that self-monitoring is a self-management intervention; it is not a learning strategy. Therefore, self-monitoring should only be used with skills that the student already possesses, and the deficit is in the student's performance of the skill (Graham, Harris, & Reid, 1992). For example, if a student knows how to add dou-

- Developmental and cognitive levels should be taken into account. If the expectation of the behavior is developmentally inappropriate or if a student is unable to identify the occurrence or nonoccurrence of a behavior because it is too complex, then self-monitoring is unlikely to work.
- The teacher also needs to assess whether or not the student can control the behavior. In other words, is the behavior voluntary or involuntary? Self-monitoring is not appropriate for behaviors a student is not able to control. For example, if a student has tics from a genetic disorder, it is not appropriate to use self-monitoring to remediate this behavior.
- Sometimes a behavior may be too severe to use self-monitoring interventions to remediate, and external control procedures may be necessary to help establish control over the behavior prior to assisting the student to self-manage it. These

Figure 2. A Sample Recording Sheet and the Steps to Collect Data Using a Time Sampling System

Interval	+ or --
1	+
2	-
3	+
4	+
5	-
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
16	
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18	
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1. Using a tactile prompting device as well, Mrs. Dean will use the device to prompt her to observe and record Angelica's behavior once every minute for 30 minutes.

2. When Mrs. Dean feels the prompt, she will look at Angelica and assess whether or not she is on-task. She will put a plus if she is and a minus if she is not.

3. When Mrs. Dean is done, she will count the number of pluses and divide by 30. Then she will multiply that number by 100 to get the percentage of time Angelica was on-task.

- The teacher needs to decide if the student will self-monitor during an activity or after the activity each day or occurrence.

If a student is to monitor his or her behavior during an activity, the teacher needs to create a self-monitoring card where the student will record his or her observations when cued. For example, for the target behavior of "on-task behavior," which was operationally defined earlier, it would be an appropriate behavior to have the student assess periodically while completing a task. (An example of a self-monitoring card is provided in Figure 4.)

If the student is only going to monitor after an activity, then the teacher might elect to have the student simply graph his or her behavior over time. For example, if the target behavior is to "increase academic productivity" defined as the number of math problems a student completes each day, the teacher might elect to have the student count the number of math problems completed each day and graph them. The student could, however, also be prompted to do this periodically throughout the session. (Examples of graphs are provided in Figures 5 and 6.)

- If the student is going to be expected to self-monitor periodically while engaging in an activity, the teacher will need to decide how the student will be cued to observe and record his or her behavior. Typically, auditory cues are used, such as a kitchen timer set to beep at set intervals, or prerecorded beeps that are emitted through a tape or compact disc player. Tactile prompting devices that vibrate at fixed intervals are also very effective.
- The teacher needs to plan to monitor the student's progress after he or she is taught how to use the intervention. The teacher should continue to use the method used to collect baseline data so that he or she can appropriately assess the student's progress.

include any behaviors where the student is harming him- or herself, the environment, or another person.

- The teacher should take the student's culture into consideration. If there are cultural reasons why the child engages in the behavior the teacher would like to remediate, then it is not typically appropriate to remediate the behavior. For example, if a teacher would like to increase the number of times a student makes eye contact with an adult during a conversation, and

there is a cultural reason behind why the child does not make eye contact, then it would be inappropriate to remediate this behavior unless this is something that has been discussed and agreed upon with the child's parents.

Step 5: Design Procedures and All Materials. After the teacher determines that the target behavior can be appropriately remediated using self-monitoring techniques, he or she needs to design all of the procedures and materials.

Step 6: Teach the Student How to Self-Monitor. After the teacher designs the procedures and all of the materials, he or she should train the student to self-monitor using the following steps (modified from Hallahan et al., 1979; Harris, 1986)

- The teacher and the student should discuss the importance of the target behavior and the idea of self-monitoring. This step is very important because without student buy-in most interventions are unlikely to work (Rankin & Reid, 1995).
- The student should be taught to discriminate between engaging in the target behavior and not engaging. It would be useful to share the operational definition of the behavior with the student and model examples and nonexamples of the behavior.
- The teacher should show the student how to monitor his or her behavior at designated times.
- The student should then be taught how to record his or her behavior on the self-monitoring card (if applicable).
- The student should then be taught how to transfer the total number for the day to the graph.
- The teacher should model the steps in their entirety.
- The teacher should then have the student practice the steps, and the teacher should provide guided practice when necessary. This step should be repeated as many times as necessary.
- When the student is able to independently practice the steps without any guidance at least two or three times in a row, the student should be ready to self-monitor.

Step 7: Monitor Student's Progress. Once the student begins to independently use the self-monitoring intervention, the teacher should monitor the student's progress. The teacher should use the data to make informed instructional decisions. For example, the teacher might assess whether or not the student is able to independently

Figure 3. Checklist to Help Determine Whether Self-Monitoring Is an Appropriate Intervention to Remediate the Target Behavior or Not



Questions to Determine If Self-Monitoring Is an Appropriate Intervention		
	Yes	No
Does the student possess the skills to engage in the target behavior (i.e., a performance deficit)?		
Would the student be expected to engage in the target behavior at least a few times a week?		
Is the target behavior developmentally and cognitively appropriate for the student?		
Is the behavior voluntary?		
Is the behavior one that does not evoke harm on the student, the people around him or her, or the environment?		
Is it clear that the student does not engage in the behavior for cultural reasons?		

If you answered "yes" for **all** of the questions, then self-monitoring may be an appropriate intervention to use.

If you answered "no" for **any** of the questions, then self-monitoring is probably not an appropriate intervention to use.

Note. Adapted from The IRIS Center for Training Enhancements. (n.d.). *SOS: Helping students become independent learners* (page 3). Retrieved from <http://isis.peabody.vanderbilt.edu/sr/chalcycle.htm>. Courtesy of the IRIS Center, Peabody College.

Figure 4. An Example of a Self-Monitoring Card That Could Be Used to Self-Monitor On-Task Behavior

Name _____	
Date _____	
At this moment, am I doing my work?	
 YES	 NO

monitor his or her behavior over time. If not, retraining should be undertaken. In another instance, the teacher might evaluate if the student's behavior is changing without the use of additional reinforcers. If not, the teacher can help the student create a goal and identify a reinforcer that the student would receive upon achieving the goal. (Please note that social reinforcement should always be paired with tangible reinforcers [e.g., stickers] so that when tangible reinforcers are removed, the student can continue to receive social praise.) As the student becomes more competent using the intervention, the teacher can monitor the student's behavior less frequently.

Step 8: Fade Use of Intervention.

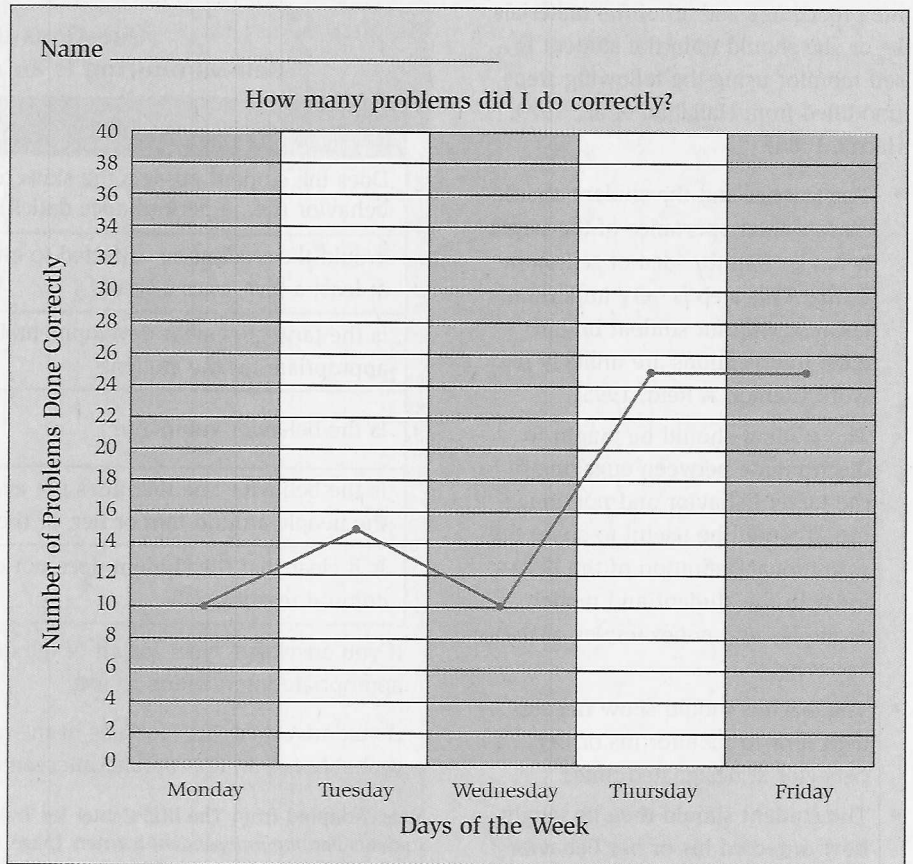
Eventually, the use of the self-monitoring materials (i.e., self-monitoring sheet, graph, and cueing mechanism) should be faded. The eventual goal is to help the student monitor his or her behavior without the intervention. The point is to help the student internalize the process, but still maintain appropriate levels of engagement in the target behavior. Internalizing the behavior can be done by having the student gradually observe and record his or her behavior less and less frequently. During this time, however, the teacher should continue to monitor the student's progress. If the student's engagement in the target behavior falls outside of the acceptable range, then it is possible that the student is not ready to self-monitor without aid, and the intervention should be faded at a later date.

Checking in on Mr. Payton

After Mr. Payton discovered self-monitoring interventions in his research, he followed the steps provided in this article to help him create and implement a self-monitoring intervention program for those students who were not able to manage their own behaviors, particularly while they were supposed to be completing independent work when he was working with small reading groups.

Because this was Mr. Payton's first attempt at creating and implementing this type of program, he wanted to make it as easy on himself as he could,

Figure 5. An Example of a Graphing Sheet That Could Be Used to Graph an Older Child's Academic Accuracy in Math



while still meeting the students' individual needs. Mr. Payton felt that some of his students needed to focus on remaining on-task; these students never seemed to finish their work. Another

in order to finish their work and to finish it with accuracy. In addition, Mr. Payton could devote his time and attention to his reading groups, because he could monitor the students' progress by

The eventual goal is to help the student monitor his or her behavior without the intervention.

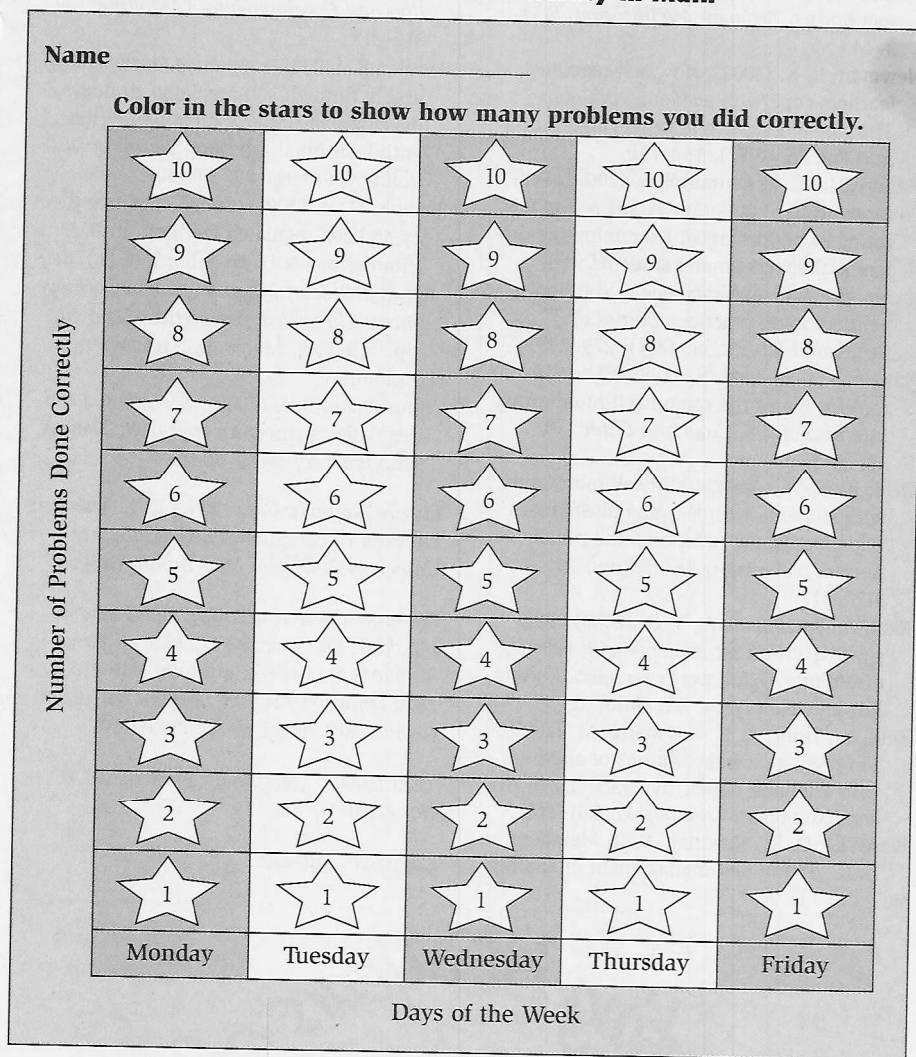
group of students, however, always finished their work, but made careless mistakes possibly because they rushed through their work. In an attempt to meet the needs of both groups, Mr. Payton decided to focus on two related target behaviors—academic productivity and academic accuracy. He defined academic productivity as the number of items the student attempted to complete whether they were right or wrong, and academic accuracy was defined as the number of items the student accurately completed. Focusing on these two related behaviors, Mr. Payton believed that he could meet the needs of both groups, because the students had to be on-task

collecting their worksheets and using frequency counts

After Mr. Payton identified the target behaviors, operationally defined them, and decided how he would measure the identified behaviors, he collected baseline data and completed the checklist to determine the appropriateness of using a self-monitoring intervention to remediate his students' behavior. He used all of the information he obtained to make an informed decision about the procedures and materials he created to implement the self-monitoring program.

Mr. Payton decided that the students would monitor their behavior after the independent work time and the stu-

Figure 6. An Example of a Graphing Sheet That Could Be Used to Graph a Younger Child's Academic Accuracy in Math



Mr. Payton will continue to engage in the same reflective processes that he used when creating and initially implementing this self-monitoring program.

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dents would graph their performance over time. To do this, Mr. Payton knew that this would take a little bit of planning in the beginning, but the materials he created could be used again or shared with other teachers. For example, Mr. Payton realized that he needed to create answer keys for the worksheets he gave to the students in order for them to correct their own worksheets and graph their performance. In addition, he needed to create and design a graph that the students could use.

Mr. Payton then created a lesson plan to teach his students how to use the self-monitoring intervention. He used the steps described in this article as a framework for his lesson. Because there were a total of five students in his class that would benefit from this program, he decided to instruct them in a small group setting rather than individ-

ually. He did, however, individually assess the students' ability to independently practice the steps.

It has been a month since Mr. Payton first implemented the self-monitoring program, and he continues to collect data on the students' performance. He is quite impressed with the progress that each student is making. The students who were not completing their work are now completing more of it, and some of the students are completing all of it. The students who finished their work with mistakes are now completing their work with more accuracy. Mr. Payton has been able to devote more of his attention to teaching during small group instruction, rather than redirecting student behaviors. He plans to continue to monitor his students' performance and eventually fade the use of the intervention. Until then,

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