FRONTLOADING CLASSROOM MANAGEMENT

How to plan for the first class

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When we started teaching science, the first few weeks of school were chaotic. As new teachers, we were overwhelmed with unfamiliar administrative duties, such as reporting attendance, distributing materials, collecting fees, and "surprise" duties that no one had told us about. We had trouble getting our classes started, getting students into their seats, and gaining their attention. Disruptions were constant—students shouted out comments and did not complete their assigned tasks.

By the end of the first week, we both felt like we were drowning. At night, we experienced regular "teachermares"—nightmares about being late or unprepared, not being able to find our classrooms, or losing control of our classes. Years later, we have learned to plan every last detail for those first days of school. We still have occasional teachermares, but now our initial classes run smoothly and lay the foundation for an enjoyable and successful year ahead.

As science educators at the university and high school level, we have learned how to establish a safe and positive learning environment at the beginning of the school year. In this article, we describe a systematic approach to planning for the first days of school that is appropriate for today's demanding high school science classrooms. These strategies apply to any science subject and benefit student teachers, new teachers, and those teachers wishing to improve their classroom management skills.

Managing today's science classroom

Nowadays, science teachers face increasing challenges in the classroom—changing communities and values, burgeoning communication technologies, diverse learner needs and characteristics, and complex inquiry-based science programs. Teachers need classroom management strategies that not only address these issues, but also promote scientific literacy and productive learning environments.

There is growing consensus around a preventive problem-solving approach to classroom management (Alberta Education 2008; Belvel and Jordan 2003; DiGuilio 2000; McLeod, Fisher, and Hoover 2003; Nelsen, Lott, and Glenn 2000; Tate 2007; Wong and Wong 2009). In this approach, the emphasis is on using a variety of strategies to prevent negative behavior and promote positive behavior. When a student does misbehave, the teacher intervenes using problem-solving strategies,

such as helping the student accept responsibility for his or her inappropriate behavior and working with him or her to come up with a nonpunitive solution that is directly related to the problem and focuses on the situation, not the student. Examples include low-key interventions (e.g., the pause, the teacher look, proximity), limited choices (e.g., "You can work quietly with your group, or work quietly next to my desk—you decide"), and individual student problem-solving conferences.

Frontloading: A useful preventive strategy

In our first years of teaching, we learned by trial and error that concentrating preventive classroom management efforts early in the school year pays huge dividends in improved student behavior and learning later on. We call this *frontloading*. Frontloading involves bringing together several elements of classroom management to design and manage an effective environment for learning science; these include

- organization of the physical environment,
- positive relationships,
- behavioral expectations,
- classroom procedures,
- effective instruction, and
- intervention (Figure 1).

All but one of these elements—intervention—are aimed at preventing inappropriate behavior and promoting appropriate behavior. Both research (Emmer, Evertson, and Worsham 2008) and personal experience confirm that establishing these key elements of classroom management in the first few classes significantly reduces misbehavior later in the school year.

Getting organized

An essential part of classroom management is being organized and prepared before meeting your students for the first time (Alberta Education 2008; Emmer, Evertson, and Worsham 2008; McLeod, Fisher, and Hoover 2003; Tate 2007). An organizational checklist is a great way to identify the many tasks that must be completed before the school year begins. This list should include items such as obtaining information about your teaching assignment, your new students, and their learning needs; establishing classroom rules and procedures; making plans for relationship and community building; and creating instructional plans. New and preservice teachers should also add checklist items concerning school policies, procedures, teaching spaces, and facilities. (**Editor's note:** An example organizational checklist is included in the classroom management plan provided online [see "On the web"].)

Effective science teachers organize the physical environment of the classroom and lab to maximize learning, promote safety, minimize misbehavior and disruptions, and encourage the efficient movement of people and materials. In science classrooms, safety concerns must be paramount when arranging and storing glassware, chemicals, and other materials. The optimum arrangement of the teacher's desk, students' desks, chalkboards, demonstration area, projection screens, bulletin boards, wall space, and equipment and materials for hands-on activities are aspects of preparation often overlooked by beginning teachers. For the first class, for example, student desks should be arranged so you can circulate freely and easily monitor student

FIGURE 1

Key elements of first-day lesson planning.

Element	Description
Organization of the physical environment	Organize the physical environment of the classroom or teaching space to maximize learning, promote safe and efficient movement of people and materials, and minimize misbehavior and disruptions.
Positive relationships	Build relationships between students, teacher and students, and teacher and parents.
Behavioral expectations	Communicate and reinforce behavioral expectations (i.e., rules) and general classroom guidelines about respect, cooperation, achievement, and safety to provide a safe, caring, and productive learning environment.
Classroom procedures	Establish your expectations for specific classroom activities (i.e., accomplish classroom activities efficiently with minimal disruption to learning).
Effective instruction	Plan and implement engaging, interesting lessons that motivate students and meet their learning needs.
Intervention	Use problem-solving interventions, such as low-key responses, limited choices, and individual conferences.

FIGURE 2

Structure of the first lesson.

Lesson introduction (5 min.)	
Attention-getting procedure	Explain, demonstrate, practice, and reinforce the standard attention-getting procedure you will use in the classroom.
The hook	Engage students' interest with an image, puzzle, video clip, or short demonstration. (Use your professional judgment on what is appropriate for your first lesson.)
Teacher introduction	Teach the class your name (correct spelling and pronunciation) and provide some information about your background, family, interests, and so on.
Lesson agenda	State your planned activities, behavioral expectations, and learning objectives. Write the agenda on the board, or project it on a screen or interactive whiteboard.

Lesson body (30–60 min.)	
Student introductions	Learn students' names and some personal information. Conduct a get-acquainted activity or icebreaker.
Behavioral expectations (rules)	Establish or reinforce rules for respectful, safe behavior in the classroom and in the laboratory, using strategies such as class discussion, small-group tasks, and individual writing.
Procedures	Teach or reinforce basic procedures needed in the first few lessons using strategies such as direct instruction, demonstration, class discussion, and guided practice with feedback.
Academic expectations	Teach or reinforce key academic expectations and assessment policies and procedures.
Advance organizer	Use a brief introductory science-specific activity to provide a framework for subsequent lessons and motivate students to learn.

Lesson closure (5 min.)	
Consolidation of learning	Ask check-for-understanding questions about the rules, your name, and academic expectations. Ask students to demonstrate and model procedures.
Assessment or feedback	Give students some positive feedback on their learning and behavior.
Dismissal procedure	Teach or reinforce the class dismissal or end-of-lesson procedure.
Next lesson preview	Provide reminders, motivation, and advance organizers for the next lesson.

learning and behavior. Students should have a clear line of sight to screens, boards, displays, and demonstrations.

First-day lesson structure

Experienced science teachers will tell you it is much easier to establish authority in the first classes of the school year than it is later on. Most effective teachers plan a combination of activities for the first few lessons that together

- build positive relationships,
- establish behavioral expectations and classroom procedures,
- and motivate students to learn through effective instruction.

Figure 2 (p. 45) shows a generic first-day lesson plan for secondary science, with typical activities for the introduction, body, and closure of the lesson. The next few sections describe this lesson in more detail.

Lesson introduction

The first-day lesson introduction, usually about five minutes in duration, serves to reduce anxiety, foster positive attitudes, engage students' attention and interest, and establish what they will do and learn in the body of the lesson (Figure 2). Typically, this includes introducing yourself briefly, explaining and practicing the attention-getting procedure you will use throughout the year (Wong and Wong 2009), and motivating students to learn science with an inquiry-based "hook" such as a prop (e.g., a cell model), a puzzle, an intriguing graphic image, or a brief demonstration. Lastly, an advance organizer or agenda with learning objectives, main ideas, and activities provides a natural transition from the introduction to the body of the lesson.

Lesson body

The lesson body provides opportunities for students to learn about the teacher's behavioral and academic expectations, the learning experiences planned for the year, and how learning will be assessed. Well-chosen learning activities promote achievement of the learning objectives, and assessment strategies provide feedback for students and the teacher about what has been learned. As seen in Figure 2, experienced teachers tend to include some combination of a relationship-building activity (e.g., student introductions) and activities for establishing classroom rules, key procedures, and academic expectations.

Relationship-building activities, in which students and teachers learn important details about one another and start to build trust, are essential for early community building. These activities, which can be modified depending on student age and subject level, include

- playing appropriate icebreakers such as classmate bingo, fact finders, or movie mania (favorite movies);
- interviewing peers in pairs and introducing each other to the class; and
- completing an information sheet or interest inventory.

Time permitting, we also include a generic science activity in the lesson body to engage students' interest and introduce major themes around scientific inquiry and literacy. We have used safe, uncomplicated hands-on activities (e.g., adding small amounts of dishwashing liquid to a plate containing milk and food coloring, and observing closely), a textbook scavenger hunt activity (Figure 3), and activities in which students create mind-webs or collages of the course's topics based on graphics in their textbooks or what they already know.

Lesson closure

To be effective, the closure, like all parts of the first lesson, must be meticulously planned. During the last five or so minutes of class, the teacher draws attention to the end of the lesson, reinforces key points, assesses students' learning, and provides reminders and motivation for the next day's lesson (Figure 2). Many teachers find it helpful to reinforce the dismissal procedure before the end-of-class bell rings. As in the introduction and body, we recommend planning closure activities that fulfill multiple purposes, such as reinforcing classroom rules and procedures while fostering positive relationships and assessing student learning. (Figure 3 includes a sample end-of-class procedure.)

Visual aids

Visual aids play an important role during the first lessons of the year. Expectations, rules, procedures, and advance organizers are effectively taught using a variety of visual aids, such as posters, handouts, PowerPoint presentations, and interactive whiteboard presentations. We write daily agendas on the whiteboard and establish rules and procedures with the aid of handouts, posters (Wong and Wong 2009), and electronic media. To add structure, interest, and interaction, we use PowerPoint and Smart Notebook presentations, which can be adapted for different classes and updated over the years. (**Editor's note:** A first-day presentation that accompanies the example lesson in Figure 3 is available online [see "On the web"].)

First-day errors to avoid

Novice teachers often think that classroom management is something teachers do only when students misbehave. In our experience, common mistakes that student teachers and new teachers make in planning for their first classes include

- not providing enough structure,
- rushing to teach content too soon, and

- devoting too little time to building relationships and establishing rules and procedures.

To help establish your authority, procedures, and boundaries, we recommend that the first class be fairly structured, straightforward, and mainly in whole-class mode. During subsequent classes, plan on reviewing students' names, reinforcing relevant rules and procedures, and building community with "getting-acquainted" activities. Teach new procedures as needed, provide more details about academic expectations and the units you will be teaching, and involve students in additional advance organizer activities or introductory activities for the first unit. After the second class or so, the focus is increasingly on content, but effective teachers keep patiently reinforcing procedures, monitoring student behavior, and following up on any misbehavior.

Figure 3 provides a first-day lesson plan for a typical ninth-grade science class. The 70-minute lesson includes a variety of activities designed to achieve the desired student learning objectives.

Intervention

Although the emphasis at the beginning of the year is on prevention and creating a positive environment, a certain amount of inappropriate behavior will inevitably occur. When it does, consider whether a change in the learning environment might solve the problem. Often, changing your position in the room or modifying the activity, the seating arrangements, or even the volume and tone of your voice is all that is needed. If this does not work, intervene in a firm, friendly, and timely manner.

We have found that a problem-solving approach that *reinforces* expectations is more effective with today's students than *enforcing* rules and procedures with punishment. For example, the first time a student talks when you are addressing the class, a low-key intervention—such as eye contact, proximity, pausing, cease-and-desist cues, or quietly saying the student's name—will gently remind the student that when someone is talking,

FIGURE 3

Example first lesson plan: Ninth-grade science.

Student learning objectives

Students will

- state the teacher's name and describe his or her family, interests, and teaching background;
- identify and demonstrate basic expectations and procedures for the class;
- describe the key aspects and units of the textbook;
- recognize important features of the classroom and state their purpose; and
- develop a positive attitude toward the class, the teacher, and classmates.

Lesson introduction (5 min.)

1. *Welcome:* Introduce yourself briefly and announce the class and section, in case students are in the wrong room. Write your name, the name of the class, and the class section on the board. (2 min.)
2. *Agenda and objectives:* Refer to the agenda and objectives on the board and explain what the students will be learning for the next 70 minutes. (3 min.)

Lesson body (60 min.)

1. *Introduction:* Use a PowerPoint presentation and props to describe your family, hobbies, and talk about your education (i.e., where and what you have been taught). (5 min.)
2. *Course outline:* Hand out and explain the course outline, showing examples of the assignments and projects. Review how grades are allocated within the course. (10 min.)
3. *Expectations:* Explain the materials students need to bring to every class, the importance of the agenda and time management, and classroom procedures and behaviors (i.e., cell phone and MP3 player policy). (10 min.)
4. *Attendance:* Take attendance and assign students to seats. Lost students will have shown up by now. (5 min.)
5. *Classroom tour:* Take students around the classroom and show them where they can find everything from pencil sharpeners to recycling containers. Emphasize the importance of safe behavior in science classrooms and laboratories. (10 min.)
6. *Fire drill:* Walk students through a fire drill, showing them the class meeting point and the fire exits. (5 min.)
7. *Orientation:* Sign out textbooks from textbook center. Time permitting, distribute handout and lead students through a textbook scavenger hunt activity to motivate them about the units, and familiarize them with the textbook features. (15 min.)

Lesson closure (5 min.)

1. *Recap:* Refer back to the agenda and objectives on the board, and briefly give class some positive feedback on their performance. Ask if they have questions about expectations or procedures. (3 min.)
2. *Next class:* Referring to the homework board, ask students to copy their homework (to finish the scavenger hunt handout) into their agendas and remind them to bring the required materials to the next class. Tell students about all the cool things they will be doing and learning about in the next class. Remind students about the dismissal procedure. (2 min.)

everyone else should be listening (Alberta Education 2008; DiGuilio 2000; Tate 2007). This provides the opportunity for the individual to recall the teacher's expectation and take responsibility for solving the problem (by not talking), while reinforcing this expectation.

When minor disruptions first occur, we tend to use low-key interventions. In most cases, this is sufficient. When necessary, we move to higher-key interventions, such as offering limited choices or holding a conference with the student outside of class time. Effective interventions cause minimal disruption to learning; sustain positive teacher–student relationships; maintain the student's and teacher's dignity; and solve the behavior problem with minimum outlay of time, effort, and resources.

Conclusion

Like other experienced science teachers, we have found that organization, advanced preparation, and frontloading classroom management are keys to an effective first day in the science classroom. In our own classes, students' initial and subsequent behavior improved dramatically once we discovered how to start the year right. This had a ripple effect, in that we could provide a better environment for teaching and learning earlier in the year, with more engaging activities, a more positive climate, and less stress for all. Naturally, the exact details of first-day planning will vary with the situation. For instance, we would likely spend more time on relationships, expectations, and motivating students in the first days of a large 9th-grade general science class than in a smaller 12th-grade AP Biology class.

When new science teachers begin to plan for the first days of school like seasoned veterans, they often gain early competence in managing a science classroom—bypassing years of trial-and-error. Improved classroom management by early career science teachers—and by science teachers at every experience level—can only increase the likelihood of students receiving a better science education and achieving scientific literacy. ■

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On the web

Examples of first day lesson plans, a first day presentation, a classroom management plan, and other materials to support this article can be found at *http://people.uleth.ca/~keith.roscoe/Planning_to_Manage/Resources.html*.

Addressing the Standards.

The following National Science Education Standards (NRC 1996) are addressed in this article:

Teaching Standard A: Inquiry-Based Science Program (p. 30)

- Select teaching and assessment strategies that support the development of student understanding and nurture a community of science learners.

Teaching Standard D: Design and Manage Learning Environments (p. 43)

- Create a setting for student work that is flexible and supportive of science inquiry.
- Ensure a safe working environment.
- Make the available science tools, materials, media, and technological resources accessible to students.

Teaching Standard E: Communities of Learners (p. 45)

- Enable students to have a significant voice in decisions about the content and context of their work and require students to take responsibility for the learning of all members of the community.
- Nurture collaboration among students.

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