

~~Write~~ *Right* from the Start

This document is designed to give prospective authors tips from NSTA journal editors. Our focus is on the essential parts of an article and the steps you can take to promote a smooth publication process.

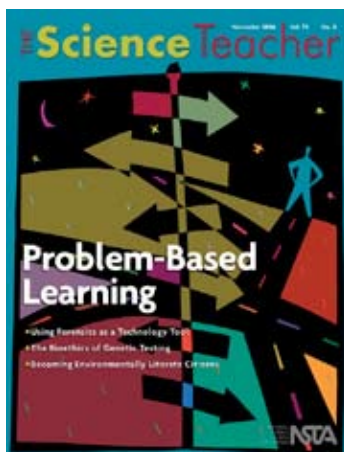
- Write because you want to share your experiences.
- Write about what you know—pick an activity or project you have done with your class. Personal involvement and interest will come through to the audience. Write in a conversational style.
- Share ideas that you have tested in your classroom. Ideas that sound great but have not been tried in the real world are not useable.



Science and Children
Grades preK–6



Science Scope
Grades 6–9



The Science Teacher
Grades 9–12



Journal of College Science Teaching
College Level Instruction

Getting Started

Congratulations! You've decided to take the plunge and start writing your manuscript. Before you call on your muse, remember to do a little prep work first:

- Review the journal you plan to write for to get an idea of the style, tone, and grade level.
- Author Guidelines can be found in most copies of the journals and online at:

Science and Children
www.nsta.org/162

Science Scope
www.nsta.org/153

The Science Teacher
www.nsta.org/169

Journal of College Science Teaching
www.nsta.org/171

- Set aside time to write.
- Gather your notes and information.
- Create an outline.
- Compose a first draft.
- To submit a manuscript, visit our online review system at *msrs.nsta.org*.

The Introduction: Grabbing Readers' Attention

A good introduction grabs readers' attention and helps them decide whether to invest time in reading the article.

- Identify concisely the main theme (e.g., “High school students in an introductory Earth science class use inexpensive materials to learn about the phases of the Moon”).
- Indicate what type of article you're writing (teaching method, pedagogy, activity, and so forth).
- Focus on the most interesting, unique, or striking point of your activity.
- Identify what led you to conduct this activity.
- Explain where the lesson or activity fits into the curriculum.
- Name the teaching level involved.
- Use humor, irony, a quote, or a unique fact to personalize your writing.
- Save detailed data for later in the body of the manuscript. Keep the introduction general and snappy.
- Share your unique insights, which are of primary interest to readers. Don't let your introduction become bogged down with references to others' research.
- Avoid slang or jargon.
- Provide a transition to the body of the manuscript.

Examples of Well Written Introductions

Introduction	Points Addressed
<p>“For any science teacher who has ever used slugs or snails for behavioral studies, sowbugs (also known as isopods or pillbugs) are a welcome alternative. I clearly remember the smell of dead slugs and the rotten, uneaten lettuce. Sowbugs, however, are practically odorless, much easier to maintain than snails or slugs, easier for students to handle (no slime), and easy to obtain. As an added bonus, they provide a good example of decomposers in action and a food source for classroom amphibians. A favorite inquiry-based activity that I have used successfully with tenth grade biology and ninth grade general science students is an investigation of sowbugs’ preferred food sources. In this investigation, students design their own experiment, perform a first trial, and refine their procedure before conducting a second trial with more accurate results.”</p> <p><i>From “Isopod Inquiry” By Thomas Mikulka The Science Teacher, December 2000, p. 20</i></p>	<ul style="list-style-type: none"> • Identifies concisely the main theme of the article (an inquiry investigation in which students study sowbugs’ preferred food sources) • Identifies what led the author to conduct the activity • Names the teaching level involved • Tells readers what type of article it is (activity) • Doesn’t give unnecessary details
<p>“The kitchen is a natural source of science exploration and a great place for young children to develop and practice their science-process skills. As professors of early childhood and elementary education who work directly with many children and their classroom teachers, we’d like to share a few of our favorite kitchen science activities we’ve conducted with students. These easy-to-do activities require few materials, address the <i>National Science Education Standards</i>, and introduce basic science processes, covering such topics as simple chemistry and healthy eating habits. They also incorporate the use of science journals and provide art and literature connections. While we did the activities in the classroom, they also work well as home science experiences for parents to do with their children.”</p> <p><i>From “Someone’s in the Kitchen with Science” By Patricia K. Lowry and Judy Hale McCrary Science and Children, October 2001, p. 23</i></p>	<ul style="list-style-type: none"> • Identifies concisely the main theme of the article (easy-to-do activities) • Names the teaching level involved • Tells readers what type of article it is (activity) • Doesn’t give unnecessary details • Provides a transition to the body of the article

Example of a Poorly Written Introduction

Introduction	Points not Addressed
<p data-bbox="211 388 609 430">My Favorite Biology Activity</p> <p data-bbox="211 462 1015 766">“It is very important for students to be involved in hands-on science. According to research, students are more likely to pursue careers in science if they engage in hands-on activities (Jones 1998, Smith et al 2001, Watson 2000). Furthermore, the use of hands-on activities is supported by state and national education standards (NRC 1996). Teachers should use hands-on activities instead of demonstrations whenever possible. The following describes a successful hands-on activity.”</p> <p data-bbox="211 808 373 850"><i>-anonymous</i></p>	<ul data-bbox="1079 378 1412 1029" style="list-style-type: none">• Does not identify a theme• Repetitive• Does not name the teaching level involved• Does not tell where this fits into the curriculum• Becomes bogged down in references to others’ work• Poor transition to the body of the article

The Body of Your Manuscript: Painting a Complete Picture

Organize the body of the manuscript logically to present a complete description of the project, activity, research study, or pedagogy.

- Consider this a “conversation” with other teachers. Tell readers exactly what you did in a step-by-step fashion, how you did it, what you learned, and what students learned.
- Share the complete experience. Describe student actions and reactions.
- Provide transitions from one part to the next.

A few questions you might ask yourself as you’re writing your first draft are:

- What is the project?
- How did the project come about?
- What initial planning was involved?
- What was the overall project timeline?
- How was the project introduced to students/other educators?
- How did the project progress from phase to phase?
- How was learning assessed?
- How does the experience involve inquiry?
- How does it reflect the *National Science Education Standards* (for K–12 journals)?
- How do you handle classroom management issues?

The Conclusion: Wrap It Up

Please write one! Many times authors overlook this vital element. Your conclusion should be reflective of what you learned from your experience and perhaps mention future possibilities. It is important to avoid rehashing the information presented in the body. As you write the conclusion, consider these questions:

- What were the outcomes of this experience?
- Did everything go as planned? Describe any unexpected outcomes.
- Would you do anything differently next time?
- Do you have any ideas for extensions?

Examples of Well Written Conclusions

Conclusion	Points Addressed
<p>“Super Science Saturday had a terrific effect on students’ and parents’ attitudes toward science—both at the school and in the community. Many students at Helms are from low-income families. It is often difficult to get parents to come to school at night or on Saturdays. Yet, the first year of Super Science Saturday 100 participants attended; the second year, 150 people participated. For a small urban school like ours this growth seems significant.</p> <p>Test scores at the school have also improved. Certainly Super Science Saturday has not made that difference in and of itself. But the enthusiasm generated from Super Science Saturday and other collaborative outreach efforts for families, such as math night, helped this low-performing academic school rise this year to the highest academic achievement accountability rating issued by the state—exemplary.</p> <p>Perhaps the truest mark of success with Super Science Saturday was that other elementary schools in the city have inquired about the event and asked how to replicate it in their schools. We are spreading the word of the importance of family science!”</p> <p><i>From “Super Science Saturday” By Rick Krustchinsky and William Harris Science and Children, October 2001, p. 23</i></p>	<ul style="list-style-type: none"> • Identifies the outcomes of the experience • Mentions future possibilities • Explains how the experience has been extended • Does not rehash information from the article
<p>“This study does not address the issue of whether Internet courses could replace regular classes <i>in toto</i>. The students in the Internet course self-selected to undertake that course. While this study could have been statistically more valid if students had been randomly assigned to either class, it reflects the emerging trend of letting students choose their learning environment. Thus, the data presented here supports the use of Internet courses as an alternative learning environment that some students find effective and convenient. A course over the Internet can indeed be a worthwhile teaching and learning experience—for teachers and students.”</p> <p><i>From “Internet Courses: Are They Worth the Effort?” By Peter King and David Hildreth Journal of College Science Teaching, October 2001, p. 115</i></p>	<ul style="list-style-type: none"> • Identifies the outcomes of the experience • Identifies ideas how future studies could be improved • Does not rehash information from the article

References: Give Credit Where Credit Is Due

You must reference any statistics, quotes, and ideas that are not your own. It is not, however, necessary to reference ideas that are common knowledge.

The majority of NSTA reference rules are drawn from *The Chicago Manual of Style*, 15th edition.

- Use the author-date method of citing references within text. With the author-date method, citations appear parenthetically in the text in alphabetical order, such as “(Adams 2002; Jones et al. 1999; Smith 1989; Smith and Jones 1986; Smith et al. 1996).” References are listed in alphabetical order by author at the end of the chapter or article.
- Make sure spellings of author names and dates of publication correspond exactly between the text and the reference list.
- Each reference cited in the text should be included in the reference list at the end of the chapter, and each reference included in the list should be cited in the text. Discrepancies between the text and the references can lead to significant delays in the editing and proof review stages of production.
- Be sure to check all reference citations (and quotations) against the original source before submitting the manuscript.
- Provide a page number for any direct quotes.
- If you have additional resources not referenced in the text, please create a separate list.

References: Give Credit Where Credit is Due

Examples of Books:

- Davis, R.A. 1994. *The evolving coast*. New York: W. H. Freeman and Company.
- Leakey, R.P., and R.M. Lewin. 1995. *The sixth extinction*. New York: Doubleday.
- Marcus, C., et al. 1990. *Investigations into the phenomenon of limited-field criticism*. Boston: Broadview Press.

Examples of Journals:

- Levin, D.R., and J.A. Montvilo. 1996. Shipwreck salvage: A unique approach for integrating science into a business curriculum. *Journal of College Science Teaching* 26 (1): 31–32.
- Martin, A. 1979. Government-business relations in 20th century America. *Prologue* 11 (summer): 91–105.
- Banks, W. 1958. A secret meeting in Boise. *Midwestern Political Review* 6 (4): 26–31.
- Zoller, U. 1997a. Success on algorithmic and LOCS vs. conceptual chemistry exam questions. *Journal of Chemical Education* 72 (11): 98–99.
- Zoller, U. 1997b. The traditional-to-innovative switch in college science teaching. *Higher Education in Europe* 15 (4): 5–10.

Supplemental Materials: Tables, Charts, and Graphs

Tables, charts, and graphs may be used in your manuscript.

- Please include only those figures that are necessary for the clarity of the manuscript. If the information has already been conveyed in text, please do not add the figure.
- Mention figures at an appropriate place in the text.
- Give each figure a title.
- Label all parts of the figure, especially axes of graphs, color codes, and points on a map.
- Be sure the text in the manuscript accurately describes the figure (especially colors, patterns, and shading).
- Obtain permission to use any reprinted material before submitting. NSTA is not responsible for securing such permission.

Supplementary Materials: Student Worksheets

Activity sheets showing student work are helpful to readers who want to know what the results will look like.

- Provide blank worksheets that teachers can copy and distribute for use in the classroom. They are enormously helpful to readers. Pending space available, blank worksheets may also be put on the website for readers to download.
- Submit completed worksheets, also, if they are available. These worksheets lend veracity to your article and give readers an idea of what kind of answers to expect.
- Author-designed worksheets are especially encouraged. Again, if you plan to submit worksheets developed by another source, you must obtain appropriate reprint permission.

Example of a worksheet: Give me some skin

Materials

- glue
- scissors
- tweezers
- butterfly bandages
- plastic storage bags
- vinyl gloves
- vinyl of different skin tones, cut into 10 cm x 10 cm squares
- layer of fibrous batting, cut into 10 cm x 10 cm squares
- 1-cm thick foam padding, cut into 10 cm x 10 cm squares
- batting or white felt, cut into 10 cm x 10 cm squares
- red felt, cut into 10 cm x 10 cm squares
- 15-cm strips of red, blue, and yellow yarn bundled together
- sticky notes
- curved upholstery needle or surgical needle (optional)

Safety



Take appropriate precautions with scissors, razor blades, and needles. Use only school glue. Vinyl gloves are recommended over latex gloves to avoid allergy problems.

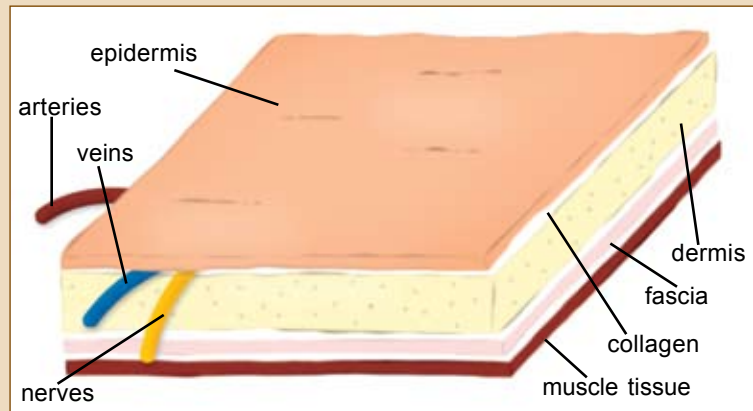
Use only school glue. Vinyl gloves are recommended over latex gloves to avoid allergy problems.

Procedures

1. After the class discussion about skin layers, collect the pieces for constructing your skin model.
2. Using an illustration of skin layers for reference, and working together as a class, glue the pieces of your skin model together, starting with the muscle tissue and working up toward the epidermis.
3. Form the neurovascular bundles by twisting together the red, blue, and yellow strands of yarn. Thread the yarn into a large embroidery needle, and pull the needle through the dermis and collagen layers, weaving in and out randomly. Cut off the excess.
4. Hold the model together by stapling along one edge, allowing layers to be lifted on the open edges.
5. Label epidermis, collagen, dermis, fascia, muscle, nerve, artery, and vein using small sticky notes or labels.
6. After models are constructed, review the skin layers represented and their functions.
7. Answer the follow up questions.

Questions

1. Name at least three components of skin that are the same in all racial groups.
2. What substance in skin accounts for color differences?
3. What regions of the world did nature select for people with darker skin?
4. What advantage does darker skin have in those regions?



Material

- Vinyl of different skin tones
- Layer of fibrous batting
- 1-cm thick foam padding
- Layer of batting or felt
- Red felt
- Strips of red yarn
- Strips of blue yarn
- Strips of yellow yarn

Represents

- epidermis
- collagen
- dermis
- fascia
- muscle tissue
- arteries*
- veins*
- nerves*

*These three form the neurovascular bundle.

from *Science Scope*, February 2003

Supplemental Materials:

Photos and Art

Photos and art that are most helpful are those that clearly demonstrate the activity. Students should be age-appropriate for the journal and should be wearing appropriate dress. The photos that are most likely to be used in the journals are ones that show:

- Students and/or teachers engaged in the activity. Please do not submit vanity shots (e.g., students posed and smiling into the camera).
- Equipment set-up.
- Results (e.g., petri dish with growth, completed molecular model, and so forth).
- Adherence to appropriate safety guidelines.

Students in laboratory settings must be shown following appropriate safety guidelines and wearing proper safety attire, including full-wrap, splash-proof goggles. Their faces should be visible, but they should not look directly at the camera. If the photo is used, a signed model release will be required of each student pictured. A copy of NSTA's model release can be found online at nsta.org/298.

We need high-resolution (300 dpi) versions of the images for use by the journal if your manuscript is accepted for publication. If you are unable to send these elements electronically, you can send hard copies of the images. **Submit only copies, no originals.**

Although we appreciate receiving author photographs and illustrations, we cannot guarantee that they will be used or returned. Tape an identifying label on the back of each photo—do not write directly on the back of photos or paper clip them together. On a separate sheet of paper, include descriptions and photo credits.

Model Release Form

Students over the age of 18 may sign for themselves; students under 18 must have this release signed by their parent or guardian.

I hereby consent to the use of this photograph of my child/dependent/self, and/or any copies of this photograph in any editorial and/or promotional material produced and/or published by the National Science Teachers Association.

I understand that signing this release does not guarantee publication of the photo.

Name (Adult or Parent/Guardian):

Signature (Adult or Parent/Guardian):

Date: _____

Safety First

Today's students need hands-on experience in science; however, high-stakes tests have narrowed our focus and sharpened the scrutiny of our communities. The public is more litigious, increasing teachers' concerns about liability. When you write your article, please be sure to point out any safety precautions taken or any special equipment required (such as gloves, aprons, or full-wrap, splash-proof goggles) to complete the activities.

No single workshop can cover every eventuality or all the specific policies and rules of federal, state, and local authorities. Although there will never be a definitive list of everything that is unsafe, or a list of activities that would always be safe, our best recommendation is to use common sense and stay up to date with best practices, state laws, and district policies.

Safety Resources Through SciLinks

SciLinks is an interactive, Web-based service that connects your lessons and/or selected course materials with vetted online content. The keywords for each of these links are "Safety in the Science Classroom."

Safety in the Science Classroom

- **Elementary**
www.scilinks.org/retrieve_outside.asp?sl=9263562110661033
- **Middle**
www.scilinks.org/retrieve_outside.asp?sl=9263565510661033
- **High**
www.scilinks.org/retrieve_outside.asp?sl=9263569910661033

Don't Forget Assessment

Please include an authentic assessment of any activity. This should not just be a list of student affirmations saying that they enjoyed the activity and learned a lot. Acceptable assessments tools are student portfolios, tests, rubrics, checklists, writing samples, and so forth.

NSTA has assembled various educational resources—news and journal articles, books, and websites—to help you gain a better understanding of assessment, its ever-changing role in our education system, and possible alternatives, as you work through the second half of the school year.

Assessment Resources

Assessment Through SciLinks

SciLinks is an interactive, Web-based service that connects your lessons and/or selected course materials with vetted online content. The keyword for each of these is “assessment.”

- **Elementary assessment information** can be found online at www.scilinks.org/retrieve_outside.asp?sl=9263562110221003
- **Middle school assessment information** can be found online at www.scilinks.org/retrieve_outside.asp?sl=9263565510221033
- **High school assessment information** can be found online at www.scilinks.org/retrieve_outside.asp?sl=9263569910221033

Professional Development

The Eisenhower National Clearinghouse (ENC) provides information on how evaluating the data from various assessments can improve learning for all.

For online information, please go to www.enc.org/focus/data.

The Lingo of Learning

For more on assessment, read this excerpt from NSTA's *The Lingo of Learning: 88 Education Terms Every Science Teacher Should Know*.

Available online at www.nsta.org/main/pdfs/assessment.pdf.

One Last Look

Once your manuscript is in good shape, please go over it one more time. A few additional points to consider are:

- Share your manuscript with a peer who is well versed in the field and ask for constructive criticism. Ask them not only to critique the content and grammar but also to carefully critique the scientific accuracy.
- Go over the author guidelines one last time to be certain you have complied with them.
- Run a spell check.
- Avoid using exotic fonts or excessive formatting.
- Be sure all units are in metric. It is NSTA policy to use the metric system. In rare instances, we allow English units.
- If you are not sure of the conversion factor, a handy, online service we recommend is *ConvertIt.com*, which will do the math for you. It is available at www.convertit.com/Go/ConvertIt/Measurement/Converter.ASP.

We look forward to receiving your manuscript!