
Appendix XII

Dissection and Dissection Alternatives in Science Courses: Policies and Resources for Massachusetts Public Schools

Introduction

This appendix, approved by the Board of Elementary and Secondary Education in October 2005 as a guidance document, is designed to help district and school personnel implement the Board's policy on dissection and dissection alternatives in science courses. It also provides a variety of alternative resources to actual dissection.

State Policy

The Board-approved policy on dissection and dissection alternatives states:

All public schools that offer dissection as a learning activity should, upon written request by a student's parent or guardian, permit a student who chooses not to participate in dissection to demonstrate competency through an alternative method.

Educators teaching life science consider dissection to be an important educational tool. But dissection should be used with care. When animal dissection is considered, teachers should recognize that there are other experiences (e.g., computer programs) for students who choose not to participate in actual dissections.

Further, as described in Mass. Gen. Laws c. 272, § 80G, and in Appendix XI, dissection should be confined to the classroom: "Dissection of dead animals or any portions thereof in...schools shall be confined to the classroom and to the presence of pupils engaged in the study to be promoted thereby and shall in no case be for the purpose of exhibition." This law covers treatment of animals in school settings (not just dissection). Please refer to Appendix XI for further information concerning the treatment of animals and dissection in the classroom.

Recommendations for School and Districts

- 1. Schools should be responsible about both the use of live animals and dissection of dead animals in the classroom.**

Schools and school districts should ensure that animals are properly cared for and treated humanely, responsibly, and ethically. The National Science Teachers Association's recommendations on how to include live animals and dissection of dead animals in the classroom can be found at www.nsta.org/about/positions/animals.aspx.
- 2. Schools should develop clear policies on dissection and dissection alternative activities.**

Schools and school districts should establish a written policy on courses that include animal dissection. The policy should state that options are available for students who object to dissection activities and that, upon written request by a student's parent or guardian, the school will permit that student to demonstrate competency through an alternative method. The policy should specify the available alternatives and explain how a student can participate in such an alternative.

The teacher, or other school authority, should specify in writing what is expected of the student participating in an alternative activity. The activity itself should allow students to gain the same content knowledge as a dissection activity and should involve a comparable investment of time and effort by the student. The students should be subject to the same course standards and examinations as other students in the course.

The school's policy on dissection and dissection alternatives should be included in the student handbook. The school should also provide a copy of the policy at the beginning of the school year to all teachers of science courses that involve dissection. A sample school policy and sample form letter for parents/guardians are included at the end of this appendix.

3. Schools should include information about dissection in relevant course descriptions, and should clearly specify dissection alternatives in that information.

When the school or school district publishes descriptions of the courses that it offers in the life sciences, the description for each course should specify whether dissection is part of the standard laboratory experience in that course. The course description should also state that alternatives to dissection are available for any student who objects to dissection and whose parent or guardian sends a written request to the school.

Information and Resources

1. Guidance and position statements from various science organizations

- **National Science Teachers Association** (2008), *Position Statement on Responsible Use of Live Animals and Dissection in the Science Classroom*, www.nsta.org/about/positions/animals.aspx
- **Institute of Laboratory Animal Resources, Institute of Medicine, National Research Council, National Academy of Sciences, National Academy of Engineering** (2004), *Principles and Guidelines for the Use of Animals in Precollege Education*, www.nabt.org/websites/institution/File/Principles%20and%20Guidelines%20for%20the%20Use%20of%20Animals%20in%20Precollege%20Education.pdf
- **National Association of Biology Teachers** (2008), *Position Statement on the Use of Animals in Biology Education*, www.nabt.org/websites/institution/index.php?p=97

2. Resources on alternatives to dissection

A number of organizations will loan or donate alternatives, such as **CD-ROMs (virtual dissections), models, and videos** to students and schools. The following organizations have free lending libraries and will help teachers find a suitable alternative to a dissection activity. (Often **a security deposit is required, but no charges are incurred unless the items are not returned or are returned damaged. The borrower is responsible for return shipping.**) Also available are **mobile apps (most requiring a purchase) that allow virtual dissection of a variety of organisms.**

- **The American Anti-Vivisection Society (AAVS)**
800-729-2287
www.animalearn.org/
- **People for the Ethical Treatment of Animals (PETA)**
843-771-2394
www.peta.org/dissection
PETA donates virtual dissection software to schools and teachers and offers free professional development training in computer-based dissection.
Contact Samantha Suiter for more information: SamanthaS@peta.org

- **The Ethical Science and Education Coalition (ESEC)**
617-523-6020
www.neavs.org/resources/index.htm
This Boston-based organization can provide teacher training.
- **The National Anti-Vivisection Society (NAVS)**
312-427-6065
Dissection hotline: 800-922-FROG (3764)
Overview of BioLEAP, NAVS' Biology Education Advancement Program:
www.navs.org/education/animals-in-education
Free online dissection resources: www.navs.org/education/free-online-dissection-resources
Dissection alternatives lending library: www.navs.org/document.doc?id=5

The following websites offer free alternatives to dissection:

- **Various simulations, experiments, and animals**
(www.animalearn.org/sbDownloads.php#.VqaMlvkrLGg)
- **Frog**
 - Virtual frog dissection kit (froggy.lbl.gov/)
 - Net frog (frog.edschool.virginia.edu/Frog2/)
 - Virtual frog lab (www.mhhe.com/biosci/genbio/virtual_labs/BL_16/BL_16.html)
 - Biology Junction (www.biologyjunction.com/frog_dissection.htm)
- **Fish**
 - Perch dissection (www.bio200.buffalo.edu/labs/tutor/Perch/Perch.html)
 - Perch dissection images
(jb004.k12.sd.us/MY%20WEBSITE%20INFO/BIOLOGY%202/ANIMAL%20KINGDOM/PERCH%20DISSECTION/PERCH%20DISSECTION%20HOMEPAGE.htm)
 - Blue mackerel dissection (australianmuseum.net.au/Dissection-of-a-Blue-Mackerel-Scomber-australasicus)
 - Virtual shark lab (www.pc.maricopa.edu/Biology/ppepe/BIO145/lab04.html)
- **Rat**
 - Rat anatomy review (www.utm.edu/staff/rirwin/public_html/ratanat.htm)
 - Kansas State University (www.k-state.edu/organismic/rat_dissection.htm)
 - University of Manitoba (umanitoba.ca/science/biological_sciences/BIOL1030/Lab4/biolab4_2.html#Rat1)
- **Pigeon**
 - Vertebrate anatomy pigeon dissection (www.savalli.us/BIO370/Anatomy/7.Pigeon.html)
 - Pigeon dissection images
(jb004.k12.sd.us/MY%20WEBSITE%20INFO/BIOLOGY%202/ANIMAL%20KINGDOM/PIGEON%20DISSECTION/PIGEON%20DISSECTION%20HOMEPAGE.htm)
 - SUNY Buffalo's virtual pigeon dissection
(www.bio200.buffalo.edu/labs/tutor/Pigeon/Pigeon.html)

- **Fetal pig**
 - Whitman College (www.whitman.edu/biology/vpd/)
 - ZeroBio (www.execulink.com/~ekimmel/fetal0.htm)
 - Biology Corner (www.biologycorner.com/pig/fetal.html)
 - Interactive science activity (carolinascienceonline.com/index.php/resources/fetal_pig_anatomy_interactive_science_activity.html#.Vpa9CPkrLIX0)
- **Cat**
 - Anatomy Corner (anatomycorner.com/main/virtual-cat-dissection/)
 - Cat dissection images (http://www.3dtoad.com/dissections_cat.php)
 - D.R. Adams interactive programs for veterinary anatomy (www.tabanat.com/)
- **Invertebrates**
 - Dissection of a deer tick (www.ent.iastate.edu/imagegal/ticks/iscap/tickdissection/)
 - SUNY Buffalo's virtual crayfish dissection (www.bio200.nsm.buffalo.edu/labs/tutor/Crayfish/)
 - The Crayfish Corner (www.mackers.com/crayfish/)
- **Owl pellet**
 - Kidwings virtual owl pellet dissection (kidwings.com/nests-of-knowledge/virtual-pellet/)
- **Cow eye**
 - Exploratorium's cow's eye dissection (www.exploratorium.edu/learning_studio/cow_eye/index.html)
- **Brain and heart**
 - Exploratorium's sheep brain dissection: the anatomy of memory (www.exploratorium.edu/memory/braindissection/index.html)
 - Michigan State University atlas of the sheep brain (www.msu.edu/~brains/brains/sheep/index.html)
 - Comparative mammalian brain collections (www.brainmuseum.org)
 - Veterinary gross anatomy online lab (cal.vet.upenn.edu/projects/neurology/lab2/lab2.htm)
 - The Virtual Heart's cardiac anatomy (thevirtualheart.org/anatomyindex.html)

The websites below list many dissection alternatives but are intended for information only. Teachers who identify an item in one of these databases that they want to borrow or purchase should contact the free lending libraries listed above.

- Norina (oslovet.veths.no/NORINA/)
- InterNICHE (www.interniche.org/en)
- The Physicians Committee for Responsible Medicine (www.pcrm.org/)

- Humane Society Veterinary Medical Association: Alternatives in Education database (www.hsvma.org/alternatives#.VkuBn_mrQUO)
- Froguts Inc. (www.froguts.com/)

A special thanks to the New England Anti-Vivisection Society (www.neavs.org) and PETA (www.peta.org) for providing input to this list of dissection alternative resources.

1. Sample School Policy and Sample Form Letter for Parents/Guardians

A sample school policy and a sample form letter for parents/guardians are provided on the following pages.

Sample School Policy

POLICY ON DISSECTION AND DISSECTION ALTERNATIVES

In accordance with the 2005 Board of Elementary and Secondary Education's Policy on Dissection and Dissection Alternatives, our school/school district has developed the following policy.

Participation in hands-on science is important to learning science, and dissections are a valuable learning experience in which all students are encouraged to participate. When dissection is used in the classroom:

- Teachers will thoroughly explain the learning objectives of the lesson and use written and audio-visual materials, as appropriate, to maximize the educational benefits of the experience.
- All specimens will be treated with respect.
- All students will be informed, prior to the dissection, that they have the option of discussing individual concerns about dissection with the appropriate teacher.
- Upon completion of the dissection, the remains will be appropriately disposed of as recommended by the local board of public health.

The science courses that include dissection also offer dissection alternatives. Upon written request of a student's parent or guardian, our school will permit a student who objects to dissection activities to demonstrate competency through an alternative method.

Currently, our school offers the following courses that include dissection: (*name courses, such as: Biology, Honors Biology, and Anatomy and Physiology*). Specific dissection and dissection alternative activities will be listed on the course syllabi, available to students before enrolling in these courses.

Alternative activities may include models (*name models*) and applications (*name Internet, computer, or mobile device programs*) in place of dissecting (*name organism[s]*).

(Schools may find it easier to provide a chart such as the one below.)

Course	Dissection Activity	Dissection Alternative Activity

The procedure for a student to participate in an alternative activity in place of dissection is as follows:

- The student will notify the science teacher of the student's choice to participate in an alternative activity in place of participating in a dissection.
- The student will submit a written request from his or her parent/legal guardian to the science teacher or to the school principal.
- The student will be provided an alternative activity to be determined by the teacher, who will specify in writing what is expected of the student. Alternative activities will allow students to gain the same content knowledge as the dissection activities and will require a comparable investment of time and effort by the student.
- The student will accept responsibility for completing the alternative activity within the assigned time and is expected to learn the same content knowledge as if the student were performing the dissection activity.
- The student will be subject to the same course standards and examinations as other students in the course.

This policy is included in the student handbook and is also provided at the beginning of each school year to all teachers of science courses that involve dissection.

Sample Parent/Guardian Form Letter

Note: A student's parent/guardian is not required to use a particular form to request that the school provide the student with an alternative to dissection. This sample is provided for the convenience of school personnel and parents/guardians who wish to use it.

Dear _____ (Principal or Teacher):

I understand that participation in hands-on science is important to learning science and that dissections are an important component of comprehensive science and life science education. I also understand that alternatives to dissection are available and that, upon written request of a parent/legal guardian, the school will permit a student to demonstrate competency through an alternative method, such as computer simulations and other appropriate research activities. I further understand that students participating in alternative activities instead of dissection are subject to the same course standards and examinations as other students in the course.

I request that my child, _____, be permitted to demonstrate competency through alternative activities rather than participating in dissection.

Sincerely,

Signature of parent or legal guardian

Printed name of parent or legal guardian

Date: _____
