

Prevalence of Student Dissection-Choice Policies in U.S. Schools

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ABSTRACT

Although animal dissection is common in classrooms, growing concerns for animal welfare and advances in nonanimal teaching methods have prompted the creation of policies that allow students to choose humane alternatives to classroom animal use. We assessed the prevalence and content of policies that allow students to opt out of animal dissection in states and large public school districts across the United States – data that have not previously been collected or analyzed. We found that such policies exist at the state level in 22 states (plus the District of Columbia) and in many large public school districts in the other remaining states. These data illustrate that at least 63% of students in U.S. public schools have access to some kind of dissection choice, although the content of these policies varies widely. We discuss these results and recommend components of a comprehensive student dissection-choice policy.

Key Words: Animal dissection; policy development; dissection choice; schools; science classroom.

○ Introduction

Animal dissection is a long-standing, yet long-contested, science classroom practice. Although dissection remains common in North American schools, growing concern for animal welfare and advances in nonanimal teaching methods have prompted the creation of policies that allow students to choose humane alternatives to classroom animal dissection. These policies give students (1) the choice to opt out of animal-based classroom activities or demonstrations that they object to on ethical, religious, or moral grounds; and (2) access, without penalty, to ways of learning that do not involve the harmful use of animals or the use of purpose-killed animals for dissection.

Objections to dissection likely date as far back as the practice itself, which began in schools in the 1920s (Orlans, 1993). Choice

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policies, however, began to emerge in the 1980s in response to increasing student objections. One of the earliest well-publicized cases of dissection objection was that of Jenifer Graham, a tenth-grade student in California who, in 1987, refused to dissect a frog in her biology class on ethical grounds (Beauchamp et al., 2008). When Graham, a vegetarian, was told she would receive a poor grade in the course if she did not dissect, she legally challenged the school's dissection policy. It was argued that her ethical beliefs were equivalent to a religion and that the school district was violating her right to freedom of religion (Beauchamp et al., 2008). Her case was settled and not fully adjudicated, but it resulted in legislation, signed by the governor of California in 1988, that mandated that students in the state have the right to conscientious objection to educational projects involving the harmful use of animals (Hepner, 1994). The bill also stated that, in the case of such objections, teachers and students should work together to develop an alternative. Graham's case set precedent for subsequent challenges to schools on the grounds of refusal to accommodate students' objection to dissection (Kramer, 2007). In turn, this contributed to the development of dissection-choice policies across the country.

Today, dissection-choice policies exist in many states, districts, schools, and classrooms across the United States, but they vary significantly in their content. Duncan (2008) and Balcombe (2000) discuss components of an "ideal" dissection choice law or policy:

- It should be written into course syllabi and accompanied by discussions in class.
- There should be an explicit awareness among students that there is no penalty for choosing alternatives.
- Comparable alternatives must be made available.
- There should be no demand on students to obtain parental consent to substantiate their choice.

Having all of these components in place makes for a desirable choice policy because it means that students know their options, and that teachers are prepared to offer alternatives.

According to a majority of teachers who conduct animal dissections, there is an increasing number of objections to animal-based research and invasive procedures on animals (Almy et al., 2001; Capaldo, 2004; King et al., 2004; Lopresti-Goodman, 2012; Knight, 2014; Funk & Rainie, 2015). As such, choice policies mean that students and teachers can mitigate conflict about dissection in the curriculum and determine an alternative method for learning the lesson being taught.

There are other reasons why offering a choice in dissection and developing choice policies is desirable. One is that students who object to dissection but are forced to do it anyway will learn little from the process – and in some classrooms, students who object to dissection still feel pressured to participate in it (Oakley, 2013). Furthermore, when a student's emotional welfare is compromised, so too is their learning. For example, if a student feels disgusted by the prospect of dissection, their motivation to learn will be negatively affected (Holstermann et al., 2009; Randler et al., 2013). Negative classroom experiences such as these can result in compassionate people turning away from further studies in the life sciences (Solot & Arluke, 1997; Capaldo, 2004) – despite the fact that dissecting animals is rarely, if ever, a curricular requirement in secondary schools; nor is it a prerequisite for post-secondary studies; and other means of learning are widely available. Dissection-choice policies counter the message that objectors may receive, that their beliefs and values do not have a place in science. Such policies also contextualize conscientious objection as rooted in positive cultural values, including respect for life and a commitment to not harming animals – values that should be encouraged in a science classroom (Jukes & Chiuiua, 2003).

There is a persistent assumption among many educators that dissection remains the “best” way students can learn (e.g., see Osenkowski et al., 2015), despite evidence that learning with alternatives such as computerized programs is comparable, and in some cases superior, to learning via conventional animal dissection (Waters et al., 2005, 2011; Knight, 2007; Patronek & Rauch, 2007; Motoike et al., 2009; DeHoff et al., 2011; Physicians Committee for Responsible Medicine, 2013). From a pedagogical standpoint, there is no reason not to offer students an alternative to dissection, since it is clear that students can learn principles of anatomy and physiology – in both required and elective courses – in ways other than cutting into a once-living animal. Indeed, offering a choice in dissection follows the policies and practices being used in higher education, such as medical schools that have eliminated animal laboratories from medical student training (see Physicians Committee for Responsible Medicine, 2014). In addition to student concerns, some teachers are opposed to dissection for reasons that include health and safety concerns, classroom management, learning and retention issues, cost, and the inability to justify killing animals for dissection (Oakley, 2012).

This research supports the creation of choice policies – as do the positions of leading science-education organizations. The National Science Teachers Association (NSTA) (2008), the Human Anatomy and Physiology Society (HAPS) (2012), and the National Association of Biology Teachers (NABT) (2008) all advise teachers to be

responsive to students' objections to harming animals by making humane alternatives available upon request. NSTA and HAPS also endorse teachers' decisions to completely replace animal dissection in their classrooms. Implementing dissection-choice policies allows students to know that alternatives are available and that their use is supported in the classroom.

Alternative nonanimal teaching methods such as interactive digital dissections, lifelike models, and clay modeling systems are widely available and educationally effective, as noted above. Digital Frog, a computer-based dissection simulation, includes modules on anatomy, physiology, and ecology, and provides a reference guide for educators identifying science content areas that are covered by their product offerings (see Digital Frog International, 2010). Froguts, another computer simulation, has aligned its frog, squid, sea star, cow eye, owl pellet, fetal pig, and Mendelian genetics modules with the National Science Education Standards (see Froguts, 2012). Anatomy in Clay's systems that allow students to form body systems with clay and build them onto a human skeleton have been shown to be as or more effective in comparison to using cat dissection to teach human anatomy at the college level (Motoike et al., 2009).

For more advanced biomedical education, dissection can be ethically performed and justified using ethically sourced human or animal cadavers. This includes obtaining animals who have died of natural causes, or using the bodies of deceased companion animals that have been donated to science through educational memorial programs (see Kumar et al., 2001) or through willed-body donation programs established by veterinary schools. Opportunities to work with human cadavers are also available through colleges and universities, even to high school students (Hubbard et al., 2005). Examination of actual animal and human cadavers and organs can also be achieved using plastinated specimens (Stuart & Henry, 2002).

Given the myriad reasons for supporting choice in dissection through policy creation, we sought to answer this question: How prevalent are dissection-choice policies in U.S. states and school districts today?

○ Research & Materials

Review of Existing Data

We collected publicly available information on current, state-level dissection-choice policies by researching all State Board of Education websites (using the key words “animal,” “controversial issues,” “dissection,” and “challenged materials”) and by consulting an existing database (American Anti-Vivisection Society, 2015). For states that do not have apparent state-level policies, we identified the five largest public school districts in each state (except for the sparsely populated districts in Montana, Alaska, South Dakota, and Wyoming, which all have less than five large public school districts). The five largest school districts in each state were selected because they represent the vast majority of students in each state. For example, Clark County School District, the largest in the state of Nevada, includes 70% of the state's student population (Ballotpedia, 2015). We also researched district-level policies via web searches, using the key words “animal,” “controversial issues,” “dissection,” and “challenged materials.”

Surveys. In districts for which policies were not found, we e-mailed survey letters to administrators during 2011–2014, asking the following questions:

- Is animal dissection included in [District’s] classes or included in the curriculum? (Yes or No)
- For classes that include animal dissection or other procedures involving animals or animal parts, does [District] have a policy allowing students with religious, ethical, or other objections to these exercises to opt out and be provided with nonanimal methods (e.g., computer software)? (Yes or No)
- Is this policy formal or informal?

Combining data from these surveys and online research, we categorized the confirmed dissection-choice policies of all school districts by type: Informal Practice, Dissection Specific, Religious Exemption, Controversial Issues, Challenged Materials, and Exemption/Exclusion from Instruction. Informal Practice policies, as confirmed by surveys to administrators, are practices in which the district reportedly allows students to opt out of animal dissection but does not have a published policy. Dissection Specific policies are formal statements that explicitly address animal dissection, a student’s right to opt out, and a requirement for teachers to offer an alternative activity. Religious Exemption policies are those that allow students to opt out of classroom activities that are contrary to their religious beliefs. Controversial Issues policies are more general and allow students to be excluded from instruction that is determined to be controversial in nature, such as using animals for classroom dissection or sex education, and be provided with an alternative activity. Similarly, Challenged Materials policies allow parents to formally challenge materials they deem unsuitable for their child, and require teachers to offer an alternative learning activity. Exemption/Exclusion from Instruction policies also allow parents to exclude their child from classroom activities that are contrary to their beliefs, but do not necessarily require teachers to provide an alternative activity.

Table 1. States with a state-level choice policy.

No.	State	Type of Policy
1	Arizona (Arizona State Legislature, 2014)	Formal policy
2	California (California Statutes, 1999)	Dissection specific
3	Connecticut (Connecticut Statutes, 2013)	Dissection specific
4	District of Columbia (District of Columbia Office of the State Superintendent of Education, 2012)	Dissection specific
5	Florida (Florida Statutes, 1985)	Dissection specific
6	Hawaii (Hawaii State Department of Education, 2012)	Formal policy
7	Illinois (Illinois Statutes, 2000)	Dissection specific
8	Louisiana (Louisiana State Resolution, 1992)	Dissection specific
9	Maine (Maine Office of the Department of Education and Cultural Services, 1990)	Dissection specific
10	Massachusetts (Massachusetts State Board of Education, 2005)	Dissection specific
11	Michigan (Michigan State Board of Education, 2014)	Dissection specific
12	Minnesota (Minnesota Statutes, 2014)	Formal policy

○ Results

State-Level Policies

A growing number of states have policies in place for students who are opposed to classroom animal dissection. We identified 22 (45%) states, plus the District of Columbia, that have state-level policies in place (see Table 1), which represents choice-in-dissection for 31.2 million public school students in the United States (Ballotpedia, 2015). Among these 22 states plus the District of Columbia, 18 of the state-level policies are dissection-specific and 5 are formal educational policies that allow students to opt out of objectionable material on moral, religious, or ethical grounds. None of the policies exempt choice in dissection for elective science courses.

District-Level Policies

In the other 28 (55%) states without state-level policies, we researched the five largest districts ($n = 128$) in each state, which represent the vast majority of the student population. Exceptions were the sparsely populated districts in Montana (researched 1 district), Alaska (3 districts), South Dakota (2 districts), and Wyoming (2 districts). Among these 128 large public school districts, we identified 23 formal policies at the district level. For the remaining 105 districts, we sent survey letters to district administrators and followed up, as applicable, with e-mails. In total, we received 37 responses. We categorized the responses from responding school districts and the existing policies from our research into six groups: Informal Practice (40%), Controversial Issues (18%), Challenged Materials (13%), Dissection Specific (18%), Exemption/Exclusion from Instruction (7%), and Religious Exemption (3%) (see Table 2).

Among the responses we received, not a single district indicated that animal dissections are compulsory for required or elective science courses. Some reported that the district curriculum includes instructions for offering alternative assignments, while

Table 1. Continued

No.	State	Type of Policy
13	New Hampshire (New Hampshire State Board of Education, 2014)	Dissection specific
14	New Jersey (New Jersey Statutes, 2013)	Dissection specific
15	New Mexico (New Mexico Statutes, 2009)	Dissection specific
16	New York (New York Statutes, 1994)	Dissection specific
17	Oregon (Oregon Statutes, 2005)	Dissection specific
18	Pennsylvania (Pennsylvania School Code, 1992)	Dissection specific
19	Rhode Island (Rhode Island Statutes, 1997)	Dissection specific
20	Texas (Texas Constitution and Statutes, 1995)	Formal policy
21	Utah (Utah Department of Administrative Services, 2014)	Formal policy
22	Vermont (Vermont Statutes, 2008)	Dissection specific
23	Virginia (Virginia Statutes, 2004)	Dissection specific

Table 2. Confirmed choice policies in largest school districts in states without a state-level policy.

No.	State	District	Type of Policy
1	Alabama	Baldwin County Public Schools	Dissection specific
2	Alaska	Fairbanks North Star Borough School District	Challenged materials
3	Alaska	Anchorage School District	Informal practice
4	Arkansas	Little Rock School District	Informal practice
5	Colorado	Jeffco Public Schools	Dissection specific
6	Colorado	Douglas County School District	Exemption/exclusion from instruction
7	Colorado	Adams 12 Five Star Schools	Informal practice
8	Colorado	Cherry Creek School District	Religious exemption
9	Delaware	Red Clay Consolidated School District	Dissection specific
10	Georgia	Gwinnett County Public Schools	Controversial issues
11	Georgia	Cobb County School District	Informal practice
12	Georgia	Fulton County Schools	Informal practice
13	Idaho	Joint School District No. 2 (AKA West Ada School District)	Challenged materials
14	Idaho	Boise School District	Challenged materials
15	Idaho	Coeur d'Alene Public Schools	Controversial issues
16	Indiana	Fort Wayne Community Schools	Informal practice
17	Indiana	South Bend Community School Corporation	Informal practice
18	Iowa	Cedar Rapids Community School District	Challenged materials
19	Iowa	Des Moines Public Schools	Informal practice
20	Kansas	Olathe Public Schools USD 233	Controversial issues
21	Kansas	Blue Valley Unified School District 229	Informal practice
22	Kentucky	Fayette County Public Schools	Challenged materials
23	Kentucky	Jefferson County Public Schools	Dissection specific
24	Kentucky	Kenton County School District	Informal practice

Table 2. Continued

No.	State	District	Type of Policy
25	Maryland	Prince George's County Public Schools	Dissection specific
26	Maryland	Baltimore County Public Schools	Dissection specific
27	Maryland	Baltimore City Public School System	Dissection specific
28	Maryland	Montgomery County Public Schools	Informal practice
29	Maryland	Anne Arundel County Public Schools	Informal practice
30	Mississippi	Jackson Public School District	Challenged materials
31	Missouri	Rockwood School District	Challenged materials
32	Missouri	Springfield Public Schools	Informal practice
33	Montana	Billings Public Schools	Challenged materials
34	Nebraska	Lincoln Public Schools	Controversial issues
35	Nebraska	Papillion-La Vista Public Schools	Controversial issues
36	Nebraska	Omaha Public Schools	Exemption/exclusion from instruction
37	Nebraska	Millard Public Schools	Exemption/exclusion from instruction
38	Nevada	Clark County School District	Dissection specific
39	Nevada	Washoe County School District	Informal practice
40	North Carolina	Cumberland County Schools	Controversial issues
41	North Carolina	Charlotte-Mecklenburg Schools	Dissection specific
42	North Carolina	Winston Salem/Forsyth County Schools	Dissection specific
43	North Carolina	Wake County Public Schools	Informal practice
44	North Carolina	Guilford County Schools	Informal practice
45	North Dakota	West Fargo Public Schools	Informal practice
46	Ohio	Columbus City Schools	Controversial issues
47	Ohio	Cincinnati Public Schools	Controversial issues
48	Ohio	Akron Public Schools	Controversial issues
49	Ohio	Toledo Public Schools	Dissection specific
50	Oklahoma	Edmond Public Schools	Exemption/exclusion from instruction
51	Oklahoma	Oklahoma City Public Schools	Informal practice
52	South Carolina	Greenville County School District	Informal practice
53	Tennessee	Rutherford County Schools	Controversial issues
54	Tennessee	Knox County Schools	Informal practice
55	Washington	Seattle Public Schools	Informal practice
56	Washington	Spokane Public Schools	Informal practice
57	West Virginia	Cabell County Schools	Controversial issues
58	Wisconsin	Green Bay Area Public School District	Informal practice
59	Wisconsin	Madison Metropolitan School District	Informal practice
60	Wisconsin	Milwaukee Public Schools	Religious exemption

others noted that having alternatives to dissection is encouraged. For example, one respondent noted that

All [teachers] had methods in place to allow students optional ways to complete the assignment. We do not have a District wide [formal] policy, but do encourage through our science Curriculum Committee that teachers have alternative methods for teaching the adopted curriculum. Fortunately, virtual labs have made this both easier to accomplish and even more effective than former methods of using pictures, drawings and the like. (Anchorage School District, Alaska, 2011)

Others reported that students are allowed to opt out without consequence: “If a student wishes to opt out of any dissection activity, they may do so at any time without consequence” (Des Moines Public Schools, Iowa, 2011). Another respondent stated that dissections are communicated to students as being optional: “We emphasize that dissections are optional. If a student does not feel comfortable with a dissection, they always have an option of going to the library or an alternate location to complete a simulation or online dissection” (Guilford County Schools, North Carolina, 2012). Some respondents contextualized dissection alternatives as an ethical issue: “As a matter of ethics, virtual labs are alternatives to traditional dissection and may be used to meet course requirements” (Cincinnati Public Schools, Ohio, 2012). Others remarked that dissection is in fact discouraged in their schools: “We favor limited use of dissection. We also discourage dissection at the elementary and middle levels” (Little Rock School District, Arkansas, 2011).

There are an estimated 13,600 public school districts in the United States with a combined student population of 55.2 million (Ballotpedia, 2015). Our study of state policies and large districts found that at least 34.5 million students (63%) in public schools have access to some kind of dissection choice. This includes 92 of the 100 largest school districts in the United States (American School and University, 2014).

Discussion

Our data uncovered substantial variety in the content and types of policies in existence, including Informal Practice, Controversial Issues, Challenged Materials, Dissection Specific, Exemption/Exclusion from Instruction, and Religious Exemption. These varied policies ostensibly all provide students choice in dissection, but they are not consistent in either specifically addressing dissection practices in classrooms or enabling students to use an alternative without having to formally challenge the curriculum or request an exemption (or have their parents request an exemption) based on personal grounds. On the basis of these findings, we recommend that dissection-choice policies be crafted to include the previously discussed components suggested by Duncan (2008) and Balcombe (2000), which has been done in, for example, the Michigan State Board of Education’s policy on Student Options for Animal Dissection Coursework (see Michigan State Board of Education, 2014).

While our research reveals that most students in U.S. public schools have access to some kind of dissection choice, there are still many students who do not. It is increasingly important – given the increasing number of objections to harmful animal use and the

development of effective alternatives to dissection – for schools, districts, and states to be consistent with the recommendations of leading science-education organizations and to adopt choice policies that respect students’ ethical, religious, and moral objections to animal dissection.

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