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ABSTRACT

This paper provides a current picture of what is happening to homosexual students in science classrooms, and discusses the necessity of promoting an understanding of what needs to be done to make science classrooms inclusive for gays and lesbians. A summary of a research study that used a survey of homosexual students' attitudes toward school and academic performance provides the framework for the argument that homophobia in classroom environments affects a large enough population of students to warrant serious consideration of remedies. It is suggested that to overcome homophobia we need to confront the issue and not relegate it to health or sex-education classes, and teach units about homosexuality in biology and life science classes as early as fourth grade. A wide range of research dealing with many aspects of homosexuality is cited. The rationale and the advantages to all students of an inclusive science curriculum are explained. Contains 23 references. (DDR)

Inclusive Science Education: What does it look like?

(Confronting homophobia and providing equity for homosexuals in our science classrooms)

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INCLUSIVE SCIENCE EDUCATION: WHAT DOES IT LOOK LIKE?
(Sexual Orientation)

In order to understand what needs to be done to make science classrooms (or any classroom) inclusive for gays and lesbians, we need to examine what is occurring to homosexual students currently.

The best estimates are that 10% of our population is homosexual, therefore 10% of the students in our schools are homosexual (Crooks & Baur, 1990; Heron,1983). Although a small percentage of these have self- identified or have come "out" in middle school or high school, they are there. Some, perhaps most, know they have feelings that are different from their classmates but they are not sure themselves if they are gay or lesbian. Research completed by my wife and me (Merkle & Merkle, 1997) indicates that 85% of the homosexual students who completed our questionnaire had emotional thoughts or attraction to others of the same sex before they were 16 years of age. Seventy percent self-identified as gay or lesbian before they were 21. Yet only 37% shared their sexual orientation with any family member before the age of 21. Is ther any wonder why? Only 18% of homosexuals in our study shared their sexual orientation with their parents before age 21; and, 18% never have shared this information with their parents. We live in a culture which coerces many of those who have an affectionate orientation different from the majority to hide themselves.

Those who can't hide or choose not to hide while in middle school or high school are open to harassment. Forty-four percent of gays and lesbians in our study experienced overt acts of discrimination based on their sexual orientation. Fourteen percent of the time this harassment came from teachers (ibid.).

Twenty-nine percent reported that they had been physically harassed. Some were beaten, raped or, in one case, set on fire (ibid.).

We cannot and should not tolerate this inequity which forces our students to hide their true feelings and causes them to use their emotional and academic energies in ways that lower their expectations for themselves. Fifty-five percent of students responding in our study reported that they compensated for their being gay or lesbian while in high school. Many worked harder to excel academically. Others tried to achieve status in sports or music. However, seven percent reported that they left school rather than face the homophobic atmosphere, and another 7% were led to use drugs to compensate for their loss of self-esteem (ibid.).

Seventy percent reported they experienced stress due to balancing their true sexual feelings with other relationships. Fifty-one percent experienced suicidal feelings and one-third (33%) planned their own suicide (ibid.). We can no longer remain silent and continue to perpetuate the cycle that moves from silence to suicide.

When we asked the students, "In your school setting, who did you find most helpful, directly or indirectly, in assisting you to come to terms with your sexual orientation?", the most common response (44%) was no one (ibid.)!

I report these figures to you so that doubters who might say "it's not a problem in our school" have concrete evidence that discrimination of our homosexual students is occurring. In an article in Open Lives-Safe Schools (Walling, 1996), Prince reports that some teachers have policies that no longer tolerate such words as "fag", "queer", or "dyke" in their classrooms! This is important, but it is not sufficient action. We need to incorporate into our curricula, particularly in science, accurate and up-to-date information about homosexuality and homophobia (Anderson, 1994). In my search for science texts that incorporate accurate and up-to-date information on research on heterosexuality and homosexuality, I found only two.

To overcome the homophobia (fear and hatred of gays and lesbians) that permeates our culture, we first need to confront it (Blumenfeld, 1992; Friedrichs, 1994; Harbeck, 1992; N.E.A., 1992; Walling, 1993). We should not relegate the teaching of homosexuality to health or sex-education classes. All students need to be made aware of the contributions to our country and our history that were made by gays and lesbians. We need to have students validate their self-worth by identifying with scientists and science educators who share the same sexual orientation. There are a multitude of homosexuals who have contributed to the science enterprise: Sir Francis Bacon (philosopher and founder of the scientific method), George Washington Carver (plant scientist), Leonardo DaVinci (inventor and pioneer of flight), Neil Devine (astrophysicist), Sonya Kovlensky (mathematician), Margaret Mead (anthropologist), Florence Nightingale (school of nursing), and Alan Turing (originator of the modern computer) to name a few (Russell, 1995).

Secondly, we need to teach about homosexuality in our biology classes and in life science units, perhaps as early as fourth grade. We cannot continue to sentence our children (our students) who are experiencing emotional thoughts about being different to a "closeted" school life. We need to use the research available on same-sex attractions to counteract the

hatred spread by zealous television personalities and other enemies of justice in our society.

The inclusive classroom would value the contributions of all students by opening the doors to gender-equity, racial equity and sexual equity. Students would be free to learn in an atmosphere of tolerance and acceptance. All sides of issues need to be examined and discussed. As long as science educators remain silent on the issue of homosexuality there will continue to be ignorance. Ignorance breeds fears, hateful speech and ultimately, violence.

Recent research provides considerable evidence that homosexuality is not a choice (Bailey & Pillard, 1991; Burr, 1993; Hall & Kimura, 1994; Hamer & Copeland, 1993,1994; Hamer et al, 1993; LeVay, 1991, 1993; LeVay & Hamer, 1994; Macke et al, 1993; Nimmons,1994). Gays and lesbians, it appears, are born with an affectionate orientation different than heterosexuals. We have, in the past, feared this difference.

In 1994 I personally experienced blatant homophobia within our AETS organization. I am not gay, but as the father of two gay sons, I felt the hurt. Imagine, if you can, the impact of homophobic statements by teachers or powerful others on gay and lesbian students. Homophobia is the antithesis of inclusion and homophobia is learned. We should no longer tolerate homophobic or heterosexist behaviors. Remaining silent and ignoring the problem is equally unacceptable.

AETS has the opportunity to help science teachers move toward more complete inclusion. Science educators should not be academic elitists, nor should they continue to keep gay and lesbian students closeted in fear. In the past some of our colleagues were insensitive to students with learning disabilities. Some recalcitrant professors waited for a government edict before they opened their biology, chemistry, and physics classes to females.

Today, AETS is challenged to open the science curriculum to students who are gay and lesbian. We need to include in textbooks accurate and up-to-date information concerning homosexuality and homophobia. We need to open our lecture halls to discussion of genetic research concerning heterosexuality and homosexuality. We need to help create an environment wherein students can be open and honest about themselves and participate in the science enterprise free of fear and without harassment. As an association of educators of science teachers we have the responsibility to arm our teachers and teachers-to-be with a new sense of worth for all students. The fully inclusive science classroom can hold great promise for our students, each motivated to reach their highest expectations in a classroom that nurtures intellect and provides an open, caring, just environment without prejudice and without fear.

References

Anderson, J. D. (1994). School climate for gay and lesbian students and staff members. *Phi Delta Kappan*, October, 1994.

Bailey, J. M. & Pillard, R. C. (1991). A genetic study of male sexual orientation. *Archives of General Psychiatry. 48*, 1089-96.

Blumenfeld, W. [ed.](1992). *Homophobia, how we all pay the price.* Boston: Beacon Press.

Burr, C. (1993). Homosexuality and biology. *The Atlantic, 271*(3), 47-65.

Cook, A. & Pawlowski, W. (1991). *Youth and homosexuality.* (Issue paper #3, Respect All Youth Project). Washington, D.C.: Parents, Families and Friends of Lesbians and Gays (PFLAG).

Crooks, R. & Baur, K. (1990). *Our sexuality.* Redwood City, CA; Benjamin/Cummings.

Friedrichs, T. P. (1994). Facts and readings related to exceptionality in gay, lesbian, and bisexual students. *Council for Exceptional Children: Human Rights Task Force.* (Paper delivered at CEC Convention, April, 1994.)

Hall, J. & Kimura, D. (1994). Dermatoglyphic asymmetry and sexual orientation in men. *Behavioral Neuroscience, 108*(6), 1203-1206.

Hamer, D. & Copeland, P. (1993). *The science of desire.* New York: Simon & Schuster.

Hamer, D. & Copeland, P. (1994). *The science of desire: The search for the gay gene and the biology of behavior.* New York: Simon & Schuster.

Hamer, D. H., Hu, S., Magnuson, V. L., Hu, N., & Pattatucci, M. L. (1993). A linkage between DNA markers on the X chromosome and male sexual orientation. *Science, 261*, 321-327.

Harbeck, K. [ed.] (1992). *Coming out of the classroom closet: Gay and lesbian students, teachers and curricula.* Binghamton, NY: Harrington Park Press.

Heron, A. [ed.] (1983). *One teenager in ten: Writings by gay and lesbian youth.* Boston: Alyson Publications, Inc.

LeVay, S. (1991). A difference in hypothalamic structure between heterosexual and homosexual men. *Science, 253*, 1034-1037.

LeVay, S. (1993). *The sexual brain.* Cambridge, MA: MIT Press.

LeVay, S. & Hamer, D. H. (1994). Evidence for a biological influence in male homosexuality. *Scientific American, 270*(5), 43-49.

Macke, J. P., Hu, N., Hu, S., Bailey, J. M., King, V. L., Brown, T. R., Hamer, D. H., & Nathans, J. (1993). Sequence variation in the androgen receptor gene is not a common determinant of male sexual orientation. *American Journal of Human Genetics, 53*(4), 844-852.

Merkle, D. & Merkle, M. L. (1997). Unpublished work in progress.

National Education Association (1992). Teaching and counseling gay and lesbian students. *NEA: Human and Civil Rights Action Sheet.*

Nimmons, D. (1994). Sex and the brain. *Discover, 15*(3), 64-72.

Russell, P. (1995). *The gay 100: A ranking of the most influential gay men and lesbians, past and present.* New York: Citadel Press.

Walling, D. (1993). *Gay teens at risk.* Bloomington, IN: Phi Delta Kappa Educational Foundation.

Walling, D. [ed.] (1996). *Open lives, safe schools.* Bloomington, IN: Phi Delta Kappa Educational Foundation.

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