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Zebrafish in K-12 science education

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Zebrafish have long been used in research studies, but they can be a useful teaching tool as well. (Image: Wikipedia Commons)

In research laboratories around the world, the zebrafish (*Danio rerio*) is the go-to model organism for the study of vertebrate development, genetics, evolution, toxicology, and disease. But these little fish are beginning to gain popularity in another setting: the classroom.

Many of the properties that make the zebrafish amenable to scientific study also serve it well as an educational tool. Its prolific reproduction, combined with the external development of the transparent embryo, make the zebrafish accessible to teachers and students. The short timeline of zebrafish development and maturation also allows students to formulate, carry out, and analyze meaningful studies within the confines of the academic year.

[*Zebrafish*](#), a peer-reviewed scientific journal, recently devoted a [special issue to the use of zebrafish in K-12 and undergraduate education](#). Guest Editors Chris Pierret, PhD, (Mayo Clinic) and Jamie Shuda, EdD, (University of Pennsylvania), together with Education Editors Jennifer Liang, PhD, (University of Minnesota Duluth) and Lara Hutson, PhD, (University at Buffalo) assembled a collection of articles demonstrating the progress made in the development and implementation of student-led, inquiry-based learning opportunities using zebrafish. The special issue features scientific papers co-authored by students in grades K-12, articles describing educational programs and curricula, and a selection of abstracts from the 10th International Conference on Zebrafish Development and Genetics (Madison, WI, June 2012) that feature student, teacher, and parent authors.

The student-authored research articles are scientifically rigorous and contribute useful new data to several fields, including toxicology and developmental biology. One of the papers describes a set of experiments performed by all of the students in Lincoln K-8 Choice School in Rochester, MN, that demonstrate zebrafish produce more eggs when housed in larger tanks. This research came out of an educational program called Integrated Science Education Outreach (InSciEd Out), which began three years ago as a partnership between the Mayo Clinic, Winona State University, and the Rochester, MN Public Schools. InSciEd Out is one of several educational

programs that incorporate zebrafish into the curricula to give students of all ages the opportunity to learn about the process of science.

The special issue of *Zebrafish* also includes five papers detailing a variety of curricula using zebrafish. These include lab activities, sample lesson plans, rubrics for assessment, and experimental results collected by primary and secondary school students as well as undergraduates.

All of the articles in the *Zebrafish in Education* special issue are open-access and free to everyone.

Related Links:

- [Zebrafish journal](#)
- [Special Issue: Zebrafish in Education](#)