Supplemental Material

CBE—Life Sciences Education

Ziadie and Andrews

SUPPLEMENTAL MATERIALS

Table S1. Exact terms used in Boolean search in ERIC database. Shortened words (e.g. Lab) and abbreviations (e.g. PCK) allow for a more inclusive search.

Evolution topic	Teaching and learning	Study population
Natural selection	Student learning	K-12
Genetic drift	Student thinking	High school
Gene flow	Misconception	Primary
Evolutionary tree	Naïve conception	Secondary
Phylogenetic tree	Case study	Post-secondary
Phylogenetics	Active learning	College
Macroevolution	Instruction	Undergraduate
Evo-Devo	Prior knowledge	University
Speciation	Teaching strategy	Higher education
Sexual selection	Pedagogical content knowledge	Graduate
Human evolution	PCK	Instructor
Molecular evolution	Pedagogy	Teacher
Kin selection	Subject matter knowledge	Faculty
Plasticity	SMK	Professor
Gene by environment	Threshold concept	
Hardy Weinberg	Lesson	
Population genetics	Activity	
Dominance	Exercise	
Allele	Lab	
Lamarck		
Tree thinking		
Adaptation		
Genome		
Variation		
Heritability		
Artificial selection		

Directions for using the Collective PCK for Undergraduate and High School Evolution Education Database

We have made the database generated by this research available as a resource for education researchers and instructors. This database is stored in two Excel worksheets, one for work that includes undergraduates and one for work on high school students. You can open it using a free program like Google Sheets if you do not have access to Excel.

Both worksheets are formatted the same way. Each line of the worksheet corresponds to one paper and lists the full APA citation, journal title, publication year, PCK component(s), type of work, and evolution topic(s). Some evolution topics are organized into overarching categories, as shown in Table 2. Overarching categories are indicated using all caps for column titles.

You can use the "Sort" function in Excel to find papers of interest to you. For example, imagine you want to learn about student thinking related to tree-thinking. Select the full data set by selecting the cell in the uppermost left. Select the dropdown list "Data," then select "Sort." This opens a box. Make sure "My list has headers" is selected. Sort first by the Column titled "Tree-thinking" and then the column titled "Student thinking." The rows will rearrange and the those at the top will be papers describing undergraduate's thinking about tree-thinking. You can use the journal, publication year, and type to give you more information about the paper to determine if it meets your needs.