

Category Definitions and Key

The following definitions were used by the coders as a guide during the coding process. The Key is provided in order to tie each strategy to an appropriate category.

Table 1. The following definitions were used by the coders as a guide during the coding process. The Key is provided in order to tie each strategy provided to its appropriate category.

Category	Definition	Key
Conceptual Class Design	This bin is for anything that involves how a teacher designed their class and values they hope to project. This bin focuses primarily on long-term methods of affecting the classroom. i.e. Flipped classroom, 5E learning, promoting inclusivity, rewarding effort, etc.	C
Assessment	This bin collects anything that helps the teacher evaluate students' knowledge/achievement in the class. In order for student knowledge to be evaluated the teacher must receive some level of feedback. e.g. personal response systems, worksheets, exams, writing assessments, etc.	A
Discussion	Any strategy that includes people talking to one another e.g. group work, peer-evaluation, think-pair-share).	D
Group Work	Anytime 2-6 students are working together (Miller & Tanner, 2015). If "group work" is explicitly written, it will be grouped here as well as discussion because group work inherently involves discussion.	W
Practicing Core Competencies	These six core competencies are taken from the American Association for the Advancement of Science (2009) document, <i>Vision and Change: A Call to Action</i> . For a further breakdown of these six sub-categories, see Table 2.	P
Metacognition	According to Flavel (1979), the mental process of acquiring knowledge and understanding of cognitive phenomena through thought, experience, and the senses (i.e. oral communication of info, oral persuasion, oral comprehension, reading comprehension, writing, language acquisition, attention, memory, problem solving, social cognition, various types of self-control, and self-instruction).	M
Games	This category represents any active learning strategy that is "a form of play or sport, especially a competitive one played according to rules and decided by skill or luck" (Webster dictionary, 2019).	G
Live-Action Visuals	This bin encompasses anything used in class for student observation. Either produced or consumed by students (e.g. skits, role-playing, demonstrations, videos).	V
Paperwork	Any handouts given to be filled out by the student(s)	K
Other	Any strategy that was ill-defined or vague.	O

Table 2: A breakdown of the six sub-categories available for Practicing Core Competencies (PCC).

Category	Definition	Key
Apply the Process of Science	Formulating hypotheses practicing the skills of posing problems, generating hypotheses, designing experiments, observing nature, testing hypotheses, interpreting and evaluating data, and determining how to follow up on the findings. research experiences.	PPS
Use Quantitative Reasoning	Application of quantitative approaches.	PQR
Use Modeling and Simulation	Biologists must understand both the advantages and the limitations of reductionist and systems approaches to studying living systems. qualitative analyses, basic skills in implementing computational algorithms for models.	PMS
Communicate and Collaborate	Communicating scientific concepts through peer mentoring helps students solidify their comprehension and develop the ability to communicate ideas not only Communicate to other biology students, but also to students in other and Collaborate disciplines. Practicing the communication of science includes a variety of formal and informal written, visual, and oral methods	PCC
Relate Science and Society	This includes real-life case studies embedded in biology courses, or in social science courses designed specifically to explore the effect of science and technology on human beings.	PSS
Interdisciplinary Nature	All students should have experience applying concepts and sub disciplinary knowledge from within and outside of biology in order to interpret biological phenomena.	PIN