

TABLE 2

Wilcoxon Rank Test for CURE course elements, spring 2020 (N = 49).

	Decrease	Increase	No change	z-value	p-value
Degree of structure					
Course elements 1: Scripted lab ^a	8	31	10	3.78*	< .001
Course elements 2: Semiscripted lab	11	27	11	2.84	.005
Course elements 3: Nonscripted lab	3	38	8	5.44*	< .001
Degree of student participation in project creation					
Course elements 4: Fully faculty created project ^a	9	20	20	2.30	.022
Course elements 5: Partially student created project	1	38	10	5.70*	< .001
Course elements 6: Fully student created project	2	40	6	5.30*	< .001
Student-student interaction					
Course elements 7: Work individually ^a	11	16	22	1.09	.275
Course elements 8: Work as a class	6	31	12	4.30*	<.001
Course elements 9: Work in groups	7	29	13	3.76*	<.001
Scientific practice skills					
Course elements 10: Responsible for part of a project	7	26	16	3.20*	.001
Course elements 11: Read primary literature	3	35	11	4.97*	< .001
Course elements 12: Write a research report	2	37	10	5.49*	< .001
Course elements 13: Collect data	4	40	5	5.38*	< .001
Course elements 14: Analyze data	4	37	8	5.19*	< .001
Course elements 15: Present results orally	6	30	13	4.17*	< .001
Course elements 16: Present results in written form	10	27	12	3.09*	.002
Course elements 17: Present posters	6	37	6	4.26*	< .001
Course elements 18: Critique other students' work	7	29	12	3.54*	< .001
Traditional activities					
Course elements 19: Listen to lectures ^a	16	8	25	-1.62	.106
Course elements 20: Read a textbook ^a	24	12	13	-1.91	.056
Course elements 21: Work on problem sets ^a	12	20	17	1.76	.079
Course elements 22: Take a test in class ^a	27	12	10	-2.71	.007
Applies to CUREs or traditional courses					
Course elements 23: Discuss reading materials in class	18	18	13	0.16	.871
Course elements 24: Maintain a lab notebook	14	25	10	1.69	.092
Course elements 25: Computer modeling	4	39	6	5.24*	< .001

^aFor these items we would expect no effect or a decrease in these outcomes given the goals of the CURE.

* $p < .002$