

**AMENDMENT OFFERED BY MS. BONAMICI OF OR-
EGON TO THE AMENDMENT IN THE NATURE
OF A SUBSTITUTE**

At the end of title II, add the following new section:

1 **SEC. 205. NATIONAL RESEARCH COUNCIL REPORT ON**
2 **STEAM EDUCATION.**

3 (a) SENSE OF CONGRESS.—It is the sense of Con-
4 gress that—

5 (1) the Science, Technology, Engineering, and
6 Mathematics (STEM) Talent Expansion Program
7 set an important goal of increasing the number of
8 students graduating with associate or baccalaureate
9 degrees in the STEM fields, and this should con-
10 tinue to be a focus of that program;

11 (2) to further the goal of the STEM Talent Ex-
12 pansion Program, as well as STEM education pro-
13 motion programs across the Federal Government, in-
14 novative approaches are needed to enhance STEM
15 education in the United States;

16 (3) STEAM, which is the integration of arts
17 and design, broadly defined, into Federal STEM
18 programming, research, and innovation activities, is
19 a method-validated approach to maintaining the

1 competitiveness of the United States in both work-
2 force and innovation and to increasing and broad-
3 ening students' engagement in the STEM fields;

4 (4) STEM graduates need more than technical
5 skills to thrive in the 21st century workforce; they
6 also need to be creative, innovative, collaborative,
7 and able to think critically;

8 (5) STEAM should be recognized as providing
9 value to STEM research and education programs
10 across Federal agencies, without supplanting the
11 focus on the traditional STEM disciplines;

12 (6) Federal agencies should work cooperatively
13 on interdisciplinary initiatives to support the inte-
14 gration of arts and design into STEM, and current
15 interdisciplinary programs should be strengthened;

16 (7) Federal agencies should allow for STEAM
17 activities under current and future grant-making
18 and other activities; and

19 (8) Federal agencies should clarify that, where
20 appropriate, data collection, surveys, and reporting
21 on STEM activities and grant-making should exam-
22 ine activities that involve cross-disciplinary learning
23 that integrates specialized skills and expertise from
24 both art and science.

1 (b) NATIONAL RESEARCH COUNCIL WORKSHOP.—
2 The National Science Foundation shall enter into an ar-
3 rangement with the National Research Council to conduct
4 a workshop on the integration of arts and design with
5 STEM education. The workshop shall include a discussion
6 of—

7 (1) how the perspectives and experience of art-
8 ists and designers may contribute to the advance-
9 ment of science, engineering, and innovation, for ex-
10 ample through the development of visualization aids
11 for large experimental and computational data sets;

12 (2) how arts and design-based education experi-
13 ences might support formal and informal STEM
14 education at the pre-K-12 level, particularly in fos-
15 tering creativity and risk taking, and encourage
16 more students to pursue STEM studies, including
17 students from groups historically underrepresented
18 in STEM;

19 (3) how the teaching of design principles can be
20 better integrated into undergraduate engineering
21 and other STEM curricula, including in the first two
22 years of undergraduate studies, to enhance student
23 capacity for creativity and innovation and improve
24 student retention, including students from groups
25 historically underrepresented in STEM; and

1 (4) what additional steps, if any, Federal
2 science agencies should take to promote the inclu-
3 sion of arts and design principles in their respective
4 STEM programs and activities in order to improve
5 student STEM learning outcomes, increase the re-
6 cruitment and retention of students into STEM
7 studies and careers, and increase innovation in the
8 United States.

9 (c) REPORT.—Not later than 18 months after the
10 date of enactment of this Act, the National Research
11 Council shall submit a report to Congress providing a
12 summary description of the discussion and findings from
13 the workshop required under subsection (b).

