

# Students report greater learning gains in traditional science courses

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Students taking traditional, in-class science courses reported higher perceived learning gains than students enrolled in online distance education science courses. Notably, African-American students taking traditional science courses self-reported greater affective and psychomotor learning gains than students taking online science courses.

These are the key findings of a new study co-authored by a Clemson University researcher and published in the most recent issue of *Black History Bulletin*.

The purpose of the study, funded by a grant from the National Science Foundation sub-awarded to Clemson through Fayetteville State University, was to estimate the effects of online distance education and explore African-American college students' perceived learning outcomes in [science courses](#).

"Given the dramatic shift in the way that many postsecondary institutions now offer educational programs to students, it is imperative that we examine the effects of online distance education programs on student outcomes," said Lamont A. Flowers, lead author on the study, distinguished professor of educational leadership and executive director of the Charles H. Houston Center for the Study of the Black Experience in Education at Clemson.

The expansion of online distance education courses in science, technology, engineering and mathematics disciplines challenges the

higher education community to examine the efficacy of online courses on [students'](#) educational outcomes at postsecondary institutions, the researchers said.

"It is imperative that researchers continue to conduct studies that employ rigorous procedures to examine the cognitive effects and educational impact of online distance education experiences institutional types, including historically black colleges and universities," stated Flowers.

The study suggests that faculty who teach in online learning environments may need to incorporate innovative instructional designs that enhance student-faculty interaction in online courses.

"The statistical results indicate that faculty should develop strategies to ensure that online courses provide similar learning gains as traditional face-to-face courses by utilizing instructional approaches and educational technologies to strengthen online [distance education](#)," stated Flowers.

Provided by Clemson University

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