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students understand the environment and the role of humans as participants in ecosystems, as well as develop their skills, attitudes, knowledge and commitment concerning the natural world. While instructional activities vary somewhat across the outdoor education programs participating in the study, the content of the curricula is consistent, focusi

Based on an analysis plan developed for the study, two independent sample t-tests were used to detect statistically significant differences between various student groups and subgroups (e.g., treatment versus control groups, male versus female, Hispanic versus non-Hispanic students). Paired-sample t-tests were employed to examine significant gain scores within groups. Similar analyses were conducted for survey data from parents and teachers. The criterion used for statistical significance was $p < .05$.

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Conclusions

Fifty-six percent of the treatment group reported that outdoor school represented the first time they had spent time in a natural setting. Participation in outdoor school was associated with higher ratings of conflict resolution skills and cooperation (longer-term student assessments), and environmental behaviors (parent reports). Strong evidence of the benefits of outdoor school is seen in teachers' ratings of students – students who attended the program received significantly higher ratings than children who did not participate in six of eight constructs: self-esteem, conflict resolution, relationship with peers, problem solving, motivation to learn, and behavior in class. Children who attended outdoor school significantly raised their science scores by 3 points (27 percent), as measured by a pre- and post-survey administered immediately upon their return to school. The increase in science knowledge was maintained six to ten weeks following program participation, with no significant loss in science scores. The positive outcomes associated with students' participation in the five-day outdoor science school are promising, especially given the relatively short timeframe of the program.

It is important to note that this study focuses on 255 students enrolled in schools serving at-risk populations, attending three outdoor science schools. Findings cannot be generalized to all students attending outdoor education programs in California, particularly given the range of programs that exist. However, this research indicates a large number of positive outcomes for at-risk children who attend resident outdoor science schools certified by the California Department of Education.