

Secondary School Students' Aspirations in Science: Understanding the Role of Out-Of-School Science Participation

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Australia has been experiencing declining participation and enrolment rates in science in both upper secondary and tertiary education. Students' participation in science out-of-school has long been identified and utilised as an effective approach for boosting students' interest, aspirations, and achievement in science. However, the research has largely focused on students who participate in "structured" out-of-school science programs, such as science camps or museum programs. Far less research has focused on students' participation in "unstructured" out-of-school science activities, such as watching science documentaries, using science kits at home, or reading science magazines. Although students' involvement in unstructured out-of-school science activities has been recognised as playing a role in students' academic involvement in science, there is a dearth of research about (1) the types and number of unstructured out-of-school science activities in which students participate and (2) the nature of the relationship between this participation and students' aspirations in science. The present study addressed this gap via a latent class analysis (LCA) of students' participation in unstructured out-of-school science activities. This study also examined the extent to which profile membership predicted students' aspirations in science. The study comprised a sample of $N = 996$ NSW secondary school students. LCA results indicated four distinct classes of out-of-school-participation in unstructured activities. Profile 1 was labelled "Optimal" and included students who reported high engagement in all of the activities indexed. Profile 2 was labelled "Minimal" and included students who reported low or no engagement in all activities. The final two profiles reflected opposite patterns of participation. Of the activities indexed, approximately half the activities required receptive participation, such as reading, listening, or watching science media. The other half required active participation, such as conducting experiments at home. Profile 3 included students who reported high participation in receptive activities, but low participation in active activities; thus, this was labelled "Receptive". The pattern was opposite for the Profile 4, which was labelled "Active". Notably, the Optimal and Receptive profiles were associated with the highest aspirations, and both were significantly higher than the Active and Minimal profiles. These findings suggest that encouraging students' participation in unstructured out-of-school science activities— particularly receptive unstructured activities— may be a viable target for improving students' aspirations in science.