Using Alice in an introductory programming course for non-CS majors

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Over the years, we have encountered numerous difficulties in using a traditional approach to teaching introductory programming courses to non-CS majors. The main problems are usually lack of interest and motivation, personal perception towards programming, little prior exposure to programming, and difficulty grasping concepts while learning syntax.

To address these difficulties we have developed a new lab based introductory programming course for non-CS majors which uses Alice 2.0. During lecture, programming concepts are presented, followed by several demos, where students have the opportunity to see how the different ideas work together. During labs, students work in groups on small projects to apply concepts presented in the lecture. Instead of a final exam, students work in teams on open-ended term-projects which encapsulate the stages of software development, including a user’s manual and design document, the animation itself, and an oral presentation.

The open nature of the project encourages creativity and allows for further exploration of concepts discussed in class as well as independent research of other programming features. Most students choose to develop games, but interactive story-telling projects are also frequently selected. Some examples of outstanding projects include: a DDR (Dance Dance Revolution) game, an interactive Japanese tutor, and an adventure story where the user gets to pick the end.

Initial results in terms of student performance and enthusiasm are positive. The course drop rate has decreased and grades have significantly improved since we switched from the traditional approach. Moreover, students taking the follow up C++ course have a better success rate.