A Redesigned Pedagogy in Introductory Programming Reduces Failure and Withdrawal Rates by Half

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Abstract : It is well documented that introductory computer programming courses are difficult and that failure rates are high. The aim of this project was to reduce the high failure and withdrawal rates in learning to program. This paper presents a number of changes in module organization and instructional delivery system in teaching CS1. Daily out of class help sessions and tutoring services were applied, interactive lectures and laboratories, online resources, and timely feedback were introduced. Five years of data of 563 students in 21 sections was collected and analyzed. The primary results show that the failure and withdrawal rates were cut by more than half. Student surveys indicate a positive evaluation of the modified instructional approach, overall satisfaction with the course and consequently, higher success and retention rates.