Remedial Activity for Computer Science Courses at the Two-Year Colleges: Preliminary Findings on the Elem. Data Structures and Algorithms Course

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Community colleges are well-known for offering a wide-range of class schedules and course formats. In addition to the more traditional face-to-face classroom setting, students are afforded the flexibility of online courses, weekend classes, night classes, minimester classes, and competency-based education courses.

Some community colleges have articulation agreements with four-year institutions, making the so-called "*reverse transferability*" possible. This allows students to transfer certain credits obtained from any state public college or four-year institution to a community college, which ultimately facilitates earning an Associates in Arts (AA), Associates in Science (AS), or Associates in Applied Sciences (AAS) degree or a certificate of completion. These variations in course formats and credit transferability undoubtedly generate numerous situations and give each student a different educational background. More specifically, each student may have unique preparation, or lack there of, in computer programming and/or in computing in general.

To address the heterogeneous property among courses and students, institutions implement placement tests, especially on subjects such as Math and English. Recently, four-year colleges have also adopted Computer Science placement exams that award credit to transfer students entering at the junior level. Since two-year institutions offer only lower division coursework, community colleges still lack in offering placement tests for the Computer Science program, which includes: CS I (Programming Fundamentals I); CS II (Programming Fundamentals II, a.k.a. Elementary Data Structures and Algorithms); CS III (Programming Fundamentals I, a.k.a. Data Structures); and Computer Organization.

In this presentation, we propose to administer a remedial activity and a quiz at the beginning of the semester which is used to gauge the preparation of students enrolled in the CS II, the most in-demand course for transfer students. The selected remedial activity and quiz implement the *ACM CCECC Computer Science Curricular Guidance for Associate Degree Transfer Programs with Infused Cybersecurity* to map the student's learning outcome. We demonstrate the different results obtained from evaluating 26 students. Finally, we provide recommendations to faculty and institutions based on the value obtained from this pedagogical instrument used on CS II.