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STRUCTURED ABSTRACT

The *Year in Computing* Initiative

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KEY WORDS: curriculum; student experience; non-traditional students

SUMMARY

The *Year in Computing* is a newly launched programme in the School of Computing at the University of Kent that allows students from any discipline (other than computing) to spend a year exclusively studying computing as part their degree. It is a structural innovation that addresses problems of underrepresentation and lack of diversity in Computing in a way that other Schools and Universities can adopt.

CONTEXT

The *Year in Computing* is a self-contained year which students take either between their second and third year of study (similar to existing structures for a *Year in Industry*) or after the third year. The idea of an intercalated year in another subject has origins within the UK in medical schools, who have long encouraged their students to take a year out of undergraduate medical studies to study another discipline (traditionally, a scientific discipline such as biochemistry; but, more recently topics such as medical humanities are offered). Such programmes typically involve students attending a selection of courses alongside early-stage students in that subject. Indeed, one of the precedents for our *Year in Computing* is a University of Birmingham programme where students are enrolled in existing first/second year Computer Science modules. Our approach is different: students are taught as a separate cohort, with a curriculum focused around a specific, coherent set of technologies, allowing them to reach a high standard of skill with those technologies whilst also learning broad informatics principles.

The programme's curriculum was purposefully designed to focus on the web which exposes students to both frontend and backend technologies. And as students in the programme are taught in a separate cohort, not together with other undergraduate students, all students (regardless of their "home" discipline) take the same modules at the same time, which obviates any scheduling problems. Students who successfully complete the *Year in Computing* graduate with their original degree title augmented with the designation "with a Year in Computing". While students' results in the *Year in Computing* appear on their transcript, they do not affect the classification of their degree, which is based purely on their performance in their "home" discipline.

The *Year in Computing* was first offered in the 2016/17 academic year when some 70 students applied for admission. Of those, 45 students were offered places and 35 started the programme. 40% of the students in this cohort were women. This is extremely unusual for a UK Computing programme, where the proportion of women is more typically 15%. The students in the programme also come from a wide variety of disciplines, including most

Schools at the University, with 47% of the students completing non-STEM degrees. The 2017/18 interviews have just finished with over 90 applications and 50 offers made (and similar proportions of women and students from non-STEM fields), justifying our assumption that this is a sustainable programme.

RATIONALE

This initiative adds value to existing degrees by offering students from other disciplines the opportunity to develop skills both employers and students are seeking. In doing so, the programme reaches students who would not otherwise have studied computing; it provides an opportunity for students to study computing later in their academic careers without committing to a conversion MSc course.

The model we have developed for the *Year in Computing* is pedagogically appropriate (students are taught in a cohort and not mixed with other undergraduate students in CS; courses are purposefully designed for the programme) and more sustainable than any given joint-honours offerings which require significant administrative overhead for students from each additional discipline.

AIM AND OBJECTIVES

We wanted to understand students' motivations for enrolling in the *Year in Computing*. Why did *these* students choose to study computing now, after having initially decided to study another discipline at university?

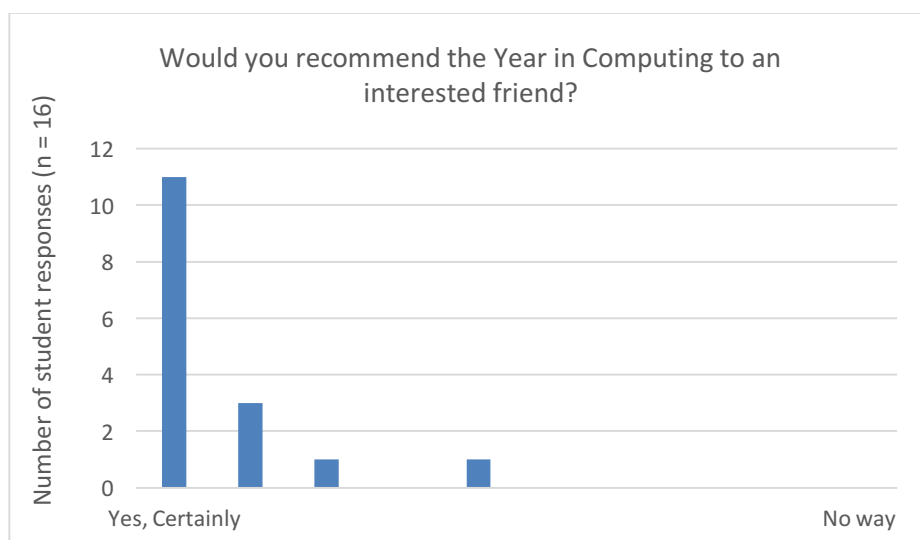
METHODOLOGICAL APPROACH

We draw on the application statements students were asked to submit indicating why they were interested in taking part in the *Year in Computing*. We also conducted two surveys (using Google Forms and SurveyMonkey), one at the end of each term, to better understand students' experiences in the programme. 12 out of 34 students (35%) responded at the end of the autumn term and 17 students (50%) responded at the end of the spring term. For the most part, these surveys contained questions about students' expectations, their personal and professional goals, and their experiences in the programme to date. We subsequently extracted themes from the free text responses.

EMERGENT FINDINGS

Students expressed different reasons for enrolling in the programme: some were interested in enhancing their employability (within their home discipline), others wanted to gain an understanding of technical systems. Again others took part to challenge themselves academically and for some it presented the chance to study computing they never had. We have reported an analysis of these themes, as well as the role of students home discipline in influencing their experiences, in [1].

Students also responded positively when asked whether they would recommend the programme to a friend: such indications of Net Promoter Score (NPS) are a highly regarded loyalty metric.



We intend to follow up with these students after their graduation to explore the longitudinal effect of the *Year in Computing*.

DISCUSSION

We have reported initial findings and examined the experiences of a group of non-traditional students in the *Year in Computing* in this work. The *Year in Computing* changes the status quo by providing opportunities and making computing attractive for students who otherwise would not have studied the subject.

CONCLUSIONS & RECOMMENDATIONS

This initiative is a novel approach that can be implemented within the existing structures of universities. Indeed, the University of Sussex has already adopted this model and other institutions (e.g. the Universities of Essex and Nottingham) have expressed interest in it. At the University of Kent itself other schools have begun using this model to explore offering a *Year in Arts* and a *Year in Quantitative Research*.

REFERENCES

- [1] S. Dziallas, S. Fincher, C. G. Johnson, and I. Utting, "A First Look at the Year in Computing," presented at the ITiCSE Conference, Bologna, Italy, 2017.