The Roles and Use of Computing Terminology in Non-Computing Disciplines

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Background & Approach

Aspects of computing are used in nearly all professions. Regardless of discipline, graduates require ever-improving computing competencies – applied in their own disciplinary contexts – to be proficient experts and informed citizens. However, teaching and learning contextually relevant computing competencies to non-computing students is fraught with challenges. One of those is the effective use of computing terminology. Terminology is fundamental to most human activities and is particularly critical where disciplines meet. We seek to investigate the nature of, and barriers presented by, computing terminology used in non-computing disciplines.

The terminology of computing poses challenges within computing [1] and likely for non-computing disciplines that teach computing competencies. To explore this we interviewed 20 non-computing university-level lecturers from a particularly broad set of disciplines covering every UNESCO ISCED [2] top-level field other than ICT which we intentionally did not recruit from. Participants were from the following areas: Adult & Community Education, Archaeology, Architecture, Biochemistry, Dentistry, Economics, Education, Educational Development, English, Library Studies, Marketing & Entrepreneurship, Nautical Science, Occupational Safety & Health, Organic & Medicinal Chemistry, Pharmacy, Physics, Sociology, and Student Skills Centre. Interviews focused on the role of computing terminology in terms of the teaching and learning of contextually relevant computing competencies in their own disciplines, including barriers presented, and methods to overcome them.

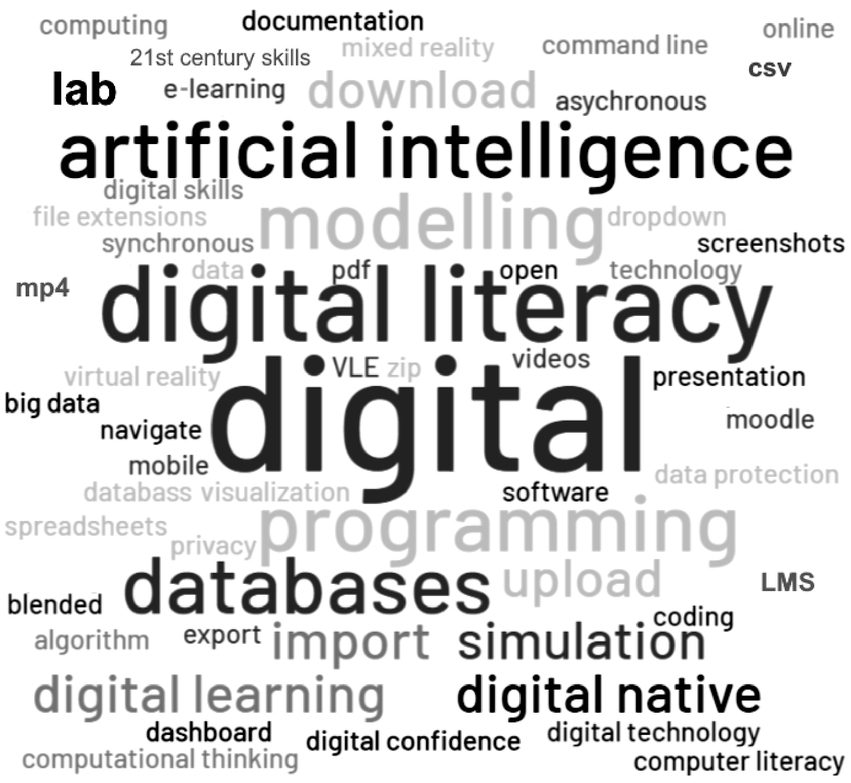

Figure 1. All computing terms mentioned by interviewees. Larger font indicates words mentioned by more than one interviewee. The smallest font corresponds to one interviewee and the largest corresponds to six.

Term	#	Term	#
Digital	6	Digital learning	2
Databases	4	Digital native	2
Digital literacy	4	Download	2
Artificial intelligence	3	Import	3
Modeling	3	Lab	2
Programming	3	Simulation	2
Upload	2		

Table 1. All terms mentioned by more than one interviewee. # is number of interviewees.

Findings & Discussion

We observed a much stronger focus on 'digital' including the most-mentioned term digital literacy. Computational thinking, coding, and programming were relatively infrequent, mentioned less than artificial Intelligence and virtual learning environments. Interviews also revealed interesting diversities in how computing terminology is used and the barriers presented. Some reported that computing terminology is not used much while others reported heavy use. Reported barriers included: the assumption of knowledge; a wide disparity in the understanding of computing terminology understanding in the same student groups; vagueness of terms such as digital; differing uses of the same terms in different sources or contexts; and continuously changing terminology. Several participants outlined explicit strategies they utilise to deal with computing terminology including: glossaries; dedicated lessons; peer support; learning centre support; and ensuring consistency across staff and stages of degrees Interviews also revealed several unexpected themes including:

- Linguistic terminology: A striking number of linguistic terms came up during these interviews, indicating the nuance and complexity that surrounds computing terminology, including: acronym speak, fluency, jargon, lexicon, lingo, natural language, parlance, pigeon language, slang, translate, and vernacular.
- Staff disparities: A picture emerged of differences between colleagues: younger and older; 'tech proponents' and 'stalwarts' / 'hold-outs'; and simply the 'less knowledgeable'.
- Age: Although not explicitly asked, it is notable that nearly half of interviewees mentioned student age as a factor when discussing terminology as a barrier.

Acknowledgments

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References

[1] Alison Clear and Allen Parrish. 2020. Computing Curricula 2020 (Draft Version 44). (Nov 2020). https://cc2020.nsparc.msstate.edu/wp-content/uploads/2020/11/Computing-Curricula-Report.pdf

[2] Unesco Institute for Statistics. 2014. ISCED Fields of Education and Training 2013 (ISCED-F 2013): manual to accompany the International Standard Classificationof Education. (2014).