Fair Processes for Allocating Students to Undergraduate and Postgraduate Final Year Projects in Computing Education

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Abstract

Allocating students to undergraduate and postgraduate final year projects is routine but under-examined in computing education. Practices vary widely across institutions, with decisions about fairness towards students and staff often left implicit and inconsistently applied. This is exacerbated by growing and more diverse cohorts, with proposed technical solutions raising doubts about fairness. This RIPPA will study allocation processes and their impact on procedural fairness across institutions. It will investigate project allocation as a socio-technical design challenge through a systematic literature review and studies with academic staff and students. By comparing allocation processes and stakeholder perceptions across contexts, the project will develop shared language, identify key trade-offs, and produce practical recommendations to support fairer project allocation practices.

CCS Concepts

• **Social and professional topics** → **Computer science education**.

1 Introduction

The allocation of students to undergraduate and postgraduate final year projects is a routine component of computing degree programmes [7, 18, 20]. Despite its impact on student experience, staff workload, and learner outcomes, it remains under-researched.

Allocation practices differ substantially in their goals, procedures, and decision criteria. Some prioritise student choice through preference ranking [14], others emphasise academic preparedness or suitability, some model lecturer preference over projects [13], and many rely on informal negotiation between staff and students. Allocation processes may be centralised or devolved, automated or manual, and more or less transparent to those affected by them.

This diversity reflects legitimate differences in institutional context, cohort size, staffing models, and educational philosophy. However, it may also indicate that allocation practices have evolved through local custom rather than evidence-based design, and that decisions about *fairness towards students and staff* are often implicit and inconsistently applied. As a result, similar challenges may be addressed repeatedly in isolation, limiting opportunities for shared learning and improvement. Existing literature tends to focus on team-based capstone projects [9], narrow algorithmic matching problems [1, 10], isolated institutional case studies, or bespoke practice emerging from specific contexts [4]. There is little synthesis across practices and limited engagement with questions of fairness.

Furthermore, the complexity of allocation decisions may increase due to growing and more diverse cohorts, widening participation agendas, interdisciplinary and industry-linked projects, and uneven supervisory capacity [3, 6]. Given the high-credit-bearing nature of undergraduate/postgraduate final year projects [17], the fairness implications of these allocation decisions are significant for a learner's final outcome. Practices that are manageable through informal processes or manual coordination for small cohorts are increasingly strained for larger groups. Yet efforts to introduce automation or formal methods may raise concerns around fairness, particularly when the rationale behind allocation decisions is opaque [2, 16].

The computing discipline represents a particularly demanding instance of the student-supervisor-project allocation problem due to its diverse sub-disciplines and varying project dependencies on hardware, stakeholder networks, datasets, and expertise. Mismatches between the student, their supervisor and the project may impact student interest in the project, the availability of the necessary resources and expertise, as well as supervisor workload.

We aim to learn where and how the processes used for allocating students to undergraduate/ postgraduate final year computing projects uphold fairness. Rather than reducing fairness to a single number through a *distributive* fairness definition [15], for this RIPPA we propose to follow a *procedural* fairness lens, based on Leventhal [11] *justice rules*: consistency (treat similar students similarly), bias suppression (avoid influence of personal interests), accuracy (avoid errors), correctability (make recourse possible), representativeness (give voice to stakeholder groups, push for diversity), and ethicality (adhere to societal/institutional norms and values). Embracing these rules would improve both fairness and the *perception* of fairness [19], as these rules encode positive traits that enhance the transparency of the allocation processes, and have shown to increase the acceptance of decision-makers [12]. Different stages in the allocation process may be more or less relevant to specific rules, and this should be informed by practitioners and literature.

2 Goals and Outcomes

Building on momentum from our ITiCSE Working Group [8], this RIPPA addresses the limited attention given to undergraduate and postgraduate final year project allocation in computing degrees by developing a shared language, research agenda, and design considerations for fairer allocation processes. We aim to answer the following research questions: **RQ1:** What processes (including approaches and tools) are currently used for undergraduate/postgraduate final year project allocation across computing degrees, and how are these justified in literature and practice? **RQ2:** What constraints, objectives, and values do academic staff prioritise when designing and operating project allocation processes? **RQ3:** How do students and academic staff perceive the procedural fairness (towards students and staff) of current project allocation processes?

This RIPPA positions undergraduate and postgraduate final year project allocation as a socio-technical challenge situated at the intersection of pedagogy, institutional governance, and educational technology. We seek to explore the broader design space in which allocation processes operate. By bringing together perspectives from computing education research and practice, the RIPPA aims to surface common patterns and points of difference in current processes. While the specific areas of focus will be shaped by participants' interests and contexts, the project will also maintain an overarching taxonomy of allocation processes and justifications. This will allow findings to be situated within the broader landscape of varying project types, institutional and national contexts.

2.1 Methodology

We use a mixed-methods design [5] with concurrent triangulation, combining evidence synthesis and stakeholder perspectives. We propose four work packages (WPs):

WP1: Systematic Literature Review (RQ1-RQ3). Research and grey literature on allocation processes and tools, adoption considerations, and perceptions of fairness will be reviewed using PRISMA-style reporting. Members may, where permitted and without expectation, provide guidance from their contexts. WP1 offers a structured classification of processes, rationales, and impacts.

WP2: Academic Staff Practice and Perspectives (RQ1-RQ3). Surveys and semi-structured interviews will explore allocation processes, constraints, objectives, values, and perceptions of fairness among project coordinators, programme leaders and management.

WP3: Student Perspectives on Allocation Processes (RQ1, RQ3). A survey will provide space for students to reflect on their experience with allocation processes and their perceptions of fairness. Educator replies (WP2) from the same institution will help identify student misunderstandings about allocation processes.

WP4: Recommendations for universities and academic staff. Findings from WP1-3 will inform the development of a set of recommendations towards fairer allocation of students to undergraduate and postgraduate final year projects in computing degrees.

2.2 Timeline

The leads will secure initial ethics approval before UKICER, with additional local approvals sought as required. WP1 will run from September 2026–March 2027; WP2–3 from January–April 2027; and WP4 from April–May 2027. Papers reporting WP1 and WP2–4 will be prepared by May and June 2027, respectively.

3 Participant role

The RIPPA format is central to the work: participants will contribute local knowledge of allocation practices, support cross-institutional data collection, and co-develop guidance that is credible across different programme structures and institutional contexts.

Participants will be asked to select two or more WPs that they can contribute to. One of the RIPPA leads will coordinate each WP. Activities will include literature review and synthesis (WP1); ethics, student survey design, recruitment, data collection and analysis (WP2–3); staff interviews and thematic analysis (WP2); and synthesis of findings into recommendations (WP4).

4 Take-away knowledge and skills

Participants will develop an understanding of project allocation as a socio-technical design problem, balancing student choice, academic preparedness, staff workload, and institutional constraints. Through the WPs, they will gain experience with multi-institutional computing education research. They will develop skills in reasoning about fairness identifying constraints, values and trade-offs in allocation processes, comparing staff and student experiences, and making recommendations based on their findings. Collaboration with colleagues from different institutions will strengthen their ability to compare local practice, reflect on their own allocation processes, and contribute to shared sector guidance. Overall, participants will leave with experience of collaborative research, research-practice translation, and community-building within computing education.

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