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Devising Work-based Learning Curricula with Apprentice Research Software Engineers

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ABSTRACT

Work-based learning (WBL) is a delivery model that attempts to address the isolation of theory and practice by integrating them into a single programme. The concern is that through lack of experience and understanding, both universities and industry may devise 'Frankenstein' curricula, harming individuals rather than helping them. This poster introduces a small project to support curricula development by proposing universities act as both the learning provider and workplace for apprentice Research Software Engineers (RSEs).

CCS CONCEPTS

• **Social and professional topics** → *Computing education.*

KEYWORDS

work-based learning, research software engineers

1 INTRODUCTION

There are many different approaches to exposing industry to students, but Work-based Learning (WBL) is one delivery model that attempts to integrate academic theory in university with practical application in the workplace [3]. Devising WBL curricula is challenging and a significant concern is that universities will be 'reverse-colonised' by industry [2]. An alternative approach is for some universities to gain experience in the development of such programmes by acting as both the academic provider *and* workplace partner through apprentice Research Software Engineers (RSEs) [1].

2 POSSIBILITIES AND PITFALLS

There are many potential benefits from universities appointing apprenticeship RSEs for the purposes of curricula development:

- *Reliable authentic assessment.* The concern with some assessments is that while reliable, they are not valid as they are not informed by context [4]. Devising material with RSEs has the potential to increase validity while ensuring reliability.
- *Relevant curriculum coverage and staging.* The expectation is that apprentices should begin with legitimate peripheral participation, but this will require the academic partner to deliver valuable knowledge and skills as soon as possible. The expectation is that by working closely with research groups, lecturers gain experience in how to devise valid but relevant curriculum coverage and staging.

While there are potential benefits to the approach there are some concerns:

- *Curriculum with limited scope.* The scope and focus of the curriculum is a major concern when a university is essentially only 'talking to itself'. The shape of a RSE curriculum will be dependent on the breadth of disciplines and capabilities of research teams.
- *Limited awareness of software engineering.* The lack of exposure of generic industrial software engineering practices may result in a software engineer that has limited career progression outside of research.

3 FUTURE WORK

The initial project work has been investigating expectations of RSEs for a range of disciplines and plan for initial recruitment. The next stage is to devise appropriate structures to ensure curricula can be improved inline with the needs of the role.

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