
Bringing together knowledge and capabilities: a case study of engineering graduates

Jennifer M. Case and Delia Marshall

Abstract

In contemporary times there is a renewed focus on the purposes of university education in science or engineering, especially in emerging economy contexts like South Africa where the massification of higher education is in its early stages. The contributions by Muller (*High Educ* 70(3):409–416, 2015) and Walker (*High Educ* 70(3):417–425, 2015) both recognise the crucial importance of expanding epistemological access for students from disadvantaged backgrounds, but their visions offer different emphases on how to proceed. Muller (2015) argues for the centring of disciplinary knowledge, while for Walker (2015) it is the concerns of society that should be central. In this article we argue that both of these are partial answers. We draw on a longitudinal study with ten South African engineering graduates, who were interviewed both in their third year and then approximately a decade later. Our analysis shows how the engagement with disciplinary knowledge is at the heart of the shaping of ‘graduateness’. Thus we argue for a coming together of the two perspectives in this issue towards a nuanced perspective on graduateness that recognises the significance of disciplinary knowledge but that also holds a space for the development of student agency in higher education.

What should a university degree in science or engineering look like in contemporary times of rapid technological and social change, and especially in a context like South Africa? Muller (2015) and Walker (2015), in the thinkpieces which inspired this response, offer us contrasting—but, we will argue, potentially reconcilable—positions. Both recognise the crucial importance of expanding real epistemological access for students from disadvantaged backgrounds, but their visions offer different emphases on how to proceed.

In this article we argue that both Muller and Walker offer partial answers towards the question which is the departure point for this issue. Drawing on an analysis of empirical data from telephonic interviews conducted with a group of South African engineering graduates, we explore the place of both capabilities and knowledge in graduates’ accounts of their personal and professional development. This analysis allows for the development of a position which does not dispute the central significance of knowledge in higher education but also allows for other personal development to be part of the full experience. Significantly, we propose that the engagement with complex and specialised knowledge is a key to the development of ‘graduateness’.

that is significant, but rather the broader ways in which graduates felt they had a particular ‘way of knowing’. This disposition towards knowledge involved confidence to tackle problems, thinking systematically, working independently and responsibly and being able to learn new knowledge. The role of knowledge in these professionals’ lives is thus much more than the simple application of a body of knowledge; it is the formation of a whole person who engages with the world and with knowledge in particular way. Crucially, many graduates were able to articulate how their struggles with knowledge in the undergraduate curriculum had been central to this formation of character.

Some of these graduates had experienced failure of courses and the consequence of falling behind a year in their undergraduate studies. Compared to Walker’s (2015) perspective which focuses on the possibility of this being an ultimately alienating experience, these accounts (albeit of students who did ultimately graduate) suggest that failure, in a context where the environment is supportive of the student, can contribute to personal development.

Drawing together the findings of this study across both research questions, we obtain a distinct picture of the relationship between knowledge and agency in the formation of the graduate professional. These graduates signal their capabilities predominantly in terms of knowledge and skills needed to be an engineer, but also point to the ways in which a challenging undergraduate degree formed them in particular ways. In conclusion then, this study points to a synthesis of the positions articulated by Muller (2015) and Walker (2015)—knowledge matters, but so does the development of individual capabilities, and it is the engagement with knowledge that is central to the development of capabilities in the graduate professional.

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