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Pre-service teachers' shifting perceptions of cross-curricular practice: The impact of school experience in mediating professional insight

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ABSTRACT

Contemporary educational debate in curriculum organisation and pedagogy has focused on the merits or otherwise of integrating disciplines for more effective learning. A wide range of terms is used to describe the various traditions associated with the presentation and structure of the curriculum and there are various perspectives on the purposes and efficacy of such approaches. Terms such as cross-curricular, thematic and interdisciplinary learning encompass a broad range of interpretations that place different emphases on the process of interdisciplinary organisation. It is often suggested that integration in its various forms promotes understanding through building connections in meaningful learning contexts. However, the delivery of a more integrated curriculum depends on teachers' abilities to integrate knowledge appropriately such that pupils are able to make productive links between subjects. This presents a particular challenge in initial teacher education; this paper explores how student teachers' conceptualisation of these practices is mediated and influenced in relation to their experience in school.

1. Introduction

We begin with Krull and Mikser's (2010) claim that contemporary curriculum theory has failed to provide a coherent overarching theoretical perspective that can be used as an explanatory framework for the organisation and presentation of knowledge, and that 'consequently, as there is no higher principle for organisation of the curriculum, the content and transmission principles should be reconsidered' (p. 36). However, the issue as to what rational bases would underpin such a reconsideration of curriculum content and pedagogy within the context of current concerns with personalised learning, the 'every child matters' agenda, learning for creativity and preparation for twenty-first century life presents a significant challenge. These terms are not neutral and do not derive from some appeal to an intrinsic notion of reason to which all reasonable parties involved in education could or should subscribe to; rather, they are made 'intelligible and "reasonable" within historically formed rules and standards that order, classify, and divide what is seen and acted on in schooling' (Popkewitz, 2009: 301). It is not necessarily the case, for example, that international comparison of performance (Oates, 2010) presents 'reasonable' evidence for supporting change towards emulating more successful nations' approaches to curriculum and pedagogy, not least because it marginalises the significance of context and reduces complexity to a simple set of measurable achievements.

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Recognising the significance of context is particularly important when we consider how student teachers respond to and become encultured into the communities of practice of school placements, and their developing conceptualisation of curriculum planning and organisation for learning within those communities. This study took place within a transitional period of significant variation in school approaches to curriculum within the UK as the Coalition government seeks to review the National Curriculum for primary schools in England. The review has included an 'expert panel' to consider the structure and content of what should and should not be included, and there are some searching questions regarding pupil entitlement to essential knowledge and curriculum structure, both of which influence approaches to pedagogy. One approach which has some currency within current debate is cross-curricular teaching aiming to develop higher order thinking skills in which 'the synthesising mind takes information from disparate sources... and puts it together in ways that make sense to the synthesiser and also other persons' (Gardner, 2007: 3). Supporting such a synthesis requires an integration of knowledge bases from different disciplines, each with their own particular epistemological and cognitive perspective. Clearly, the epistemological and philosophical bases that underpin advocacy for a particular approach to curriculum organisation has significant professional implications for teacher education (Alexander, 2012), and cross-curricular teaching presents considerable pedagogic challenge. This study explores some of the implications of such a paradigm in the preparation of teachers.

1.1. Cross-curricular education

There is an international dimension to the introduction of cross-curricular approaches in which contemporary practice has witnessed a move towards increasing integration of curriculum subjects (see for instance The National Curricula of New Zealand (2007), Northern Ireland (2004) and contemporary national reforms in the US (Czerniak, 2007)). The organisation and presentation of the curriculum for more effective learning has been a central concern of policy makers (Venville, Wallace, Rennie, & Malone, 2002) and it has been postulated that integration in its various forms promotes understanding through building connections between central concepts in meaningful learning contexts. Educational claims are often underpinned by case studies reporting pupils' increased interest and motivation in learning (Barnes, 2007), and the development of higher order reasoning and problem solving (Barnes, 2007; Collins, Brown, & Newman, 1989; Marzano, 1991; Savage, 2011; Thaiss, 1986). Important as these attributes in learning are, it is interesting to note that the extent to which such approaches support conceptual understanding is less well articulated and more elusive (see Czerniak, 2007; Venville et al., 2002).

There is a lack of consensus on what is a desirable degree of integration, and several continuum models have been proposed (see for instance Drake, 1998; Fogarty, 1991). Nomenclatures associated with such practice include the terms *integrated*, *interdisciplinary*, *multidisciplinary*, *trans-disciplinary*, *blended*, *cross-curricular*, *cross-disciplinary*, *thematic* or *topic-based* approaches to learning (Czerniak, 2007) and there are different interpretations as to what the process involves. The terms are sometimes used interchangeably in literature and different curriculum guidelines express particular preferences (see Carr, 2007; Klein, 2006; Venville et al., 2002 for further discussion). One way of conceptualising integration, for example, is that of blending, in which separate disciplines are subsumed within an overall coherent core conceptual or skill focus. The term 'interdisciplinary' can be understood as indicative of a process of combining subjects where disciplines remain discernible in a similar way to that of *thematic* learning where a unifying topic is used to transcend traditional subject boundaries (Lederman & Niess, 1997). Cross-curricular learning has also been used to describe the application of skills, knowledge and attitudes of different disciplines to a single experience, theme or idea (Barnes, 2007). For the purposes of this research, the term cross-curricular is used as it currently drives curriculum guidelines and debate (see for example Rose, 2009) in England, where this study is set. Thus we define it as the interdisciplinary linking of two subjects, (here art and science) with a conceptual focus of developing knowledge and understanding of a particular topic (in this case, the properties of materials).

1.2. The challenges of cross-curricular education

The successful implementation of a cross-curricular curriculum depends on teachers' abilities to integrate knowledge so that pupils are able to make productive links between subjects. Subject integration is likely to present a challenge for teachers in navigating between contributory subject-specific discourses and the particular demands of cross-curricular activities. Indeed, interdisciplinary syntheses are 'among the most epistemologically complex endeavours that humans can attempt' due to the 'deep differences of perspective that must be bridged in order to carry out interdisciplinary projects' (Stein, Connell, & Gardner, 2008: 401). This process requires an integration of disciplinary knowledge and methods to generate a 'kind of higher order knowledge that is more than the sum of its parts'. The pedagogic task becomes one of synthesising subject disciplines effectively in order to maximise learning potential for pupils. Because interdisciplinary synthesis is a distinct (and relatively new) mode of knowledge production it is not as well understood as disciplinary research and gives rise to its own unique 'quality control' challenges (Boix-Mansilla, 2006). In some contemporary education initiatives this has resulted in 'weak' integration that can have limited impact on disciplinary understanding (Carr, 2007).

Thus the assumption that teachers will be easily able to make links within and across areas of learning to support pupil understanding is questionable, and Venville et al. (2002) found that although enthusiastic, teachers themselves were often unable to articulate clear goals for their actions. These are multiply influenced by curriculum requirements and guidance, the