Teacher leaders as teacher educators: recognising the 'educator' dimension of some teacher leaders' practice

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Abstract

The functions of teacher leaders and teacher educators, what they do, are critical in teacher education. This article presents the seemingly unexamined concept that some teacher leaders' practice includes a teacher educator dimension. Evidence that supports this claim is provided by exploring the interrelationship between teacher leader and teacher educator functions using a focused analysis of the literature and findings from qualitative research. This research investigated the impact of a professional development programme for primary science leaders. Data were collected from strategic-level informants, programme mentors and science leaders using interviews, questionnaires and a focus group. The findings are analysed to provide a critical overview of the participants' views of the requirements for successful leadership and development of primary science and to illustrate how educator and leader functions are intertwined in science leaders' activities. The article considers the implications of recognising the educator dimension of some teacher leaders' practice and asserts that these implications extend beyond the primary science context of the research. Acknowledging the contribution made by 'unrecognised' teacher educators and enabling them to contribute to and gain from the professional knowledge of the teacher educator community has significant potential to enrich practice in teacher education internationally, nationally and locally.

Keywords: leadership; narrative; primary science; teacher educator; teacher leader

Introduction

The purpose of this article is to present the seemingly unexamined concept that some teacher leaders' practice includes a teacher educator dimension and to provide evidence to support this claim. This evidence is drawn from findings from an analysis of the literature and from qualitative research. The findings from both the literature analysis and the research study are used to examine what teacher leaders and teacher educators do and to critique the interrelationship between their functions, where functions are conceptualised as described by Korthagen (2004). When discussing the challenges of defining the qualities of a 'good teacher' Korthagen (2004, 79) proposed an 'onion model', in which each layer provides a different way of looking at how teachers function. Korthagen's (2004, 80) adaptation of an earlier model displays 'mission' as the innermost ring and moves through 'identity', 'beliefs', and 'competencies' to 'behaviour', which is encompassed by the 'environment'. This article explores the behaviour aspects in Korthagen's (2004) model, focusing on teachers as teacher leaders and teacher educators; recognising that their practice is shaped by both the external environment and the inner levels portrayed in the model. The term *function*, defined as 'An activity that is natural to or the purpose of a person or thing' (Oxford Dictionaries 2018), is used here to describe these practice or behavioural aspects of teacher leaders and teacher educators work; that is, what they do. This draws on terminology used by York-Barr and Duke (2004) for teacher leaders and by Koster, Korthagen and Wubbels (1998) for teacher educators.

This article uses findings from the literature analysis to begin to develop the argument that some teacher leaders' practice includes a teacher educator dimension. It discusses the functions of teacher leaders and teacher educators and then supports the argument using empirical evidence drawn from findings from a research study in primary science. The article considers the implications of recognising the educator dimension of some teacher leaders' practice and asserts that these implications extend beyond the primary science context of the research. It suggests that acknowledging the contribution such educators make to teacher

education; enabling their professional learning; and developing their professional knowledge has significant potential to enrich the practice of teacher education. The term teacher education is used here to encompass the education of teachers 'from initial training, preparation and induction for beginning teachers, to on-going professional development to help update their knowledge, deepen their understanding and advance their skills as expert practitioners' (Tatto and Furlong 2015, 145).

The important part that teacher educators play in the context of ongoing teacher education reform globally (Ellis and McNicholl 2015) suggests this article will be both relevant and of interest to an international audience. This audience will include policy makers, leaders, teacher educators, teachers, and student teachers.

Teacher leaders

Definitions and recognition

Teacher leadership has been defined as 'the process by which teachers, individually or collectively, influence their colleagues, principals, and other members of school communities to improve teaching and learning practices with the aim of increased student learning and achievement' (York-Barr and Duke 2004, 287-288). Teacher leaders are teachers who 'lead within and beyond the classroom; identify with and contribute to a community of teacher learners and leaders; influence others toward improved educational practice' (Katzenmeyer and Moller 2009, 6). For the purposes of their follow up to York-Barr and Duke's (2004) review, Wenner and Campbell (2017, 140, original emphasis) adopt a definition of 'teacher leaders as *teachers who maintain K–12 classroom-based teaching responsibilities, while also taking on leadership responsibilities outside of the classroom.*' This definition suggests greater differentiation of the teacher and leader responsibilities than is portrayed by Katzenmeyer and Moller (2009). Authority as teacher leaders derives from their reputed expertise as teachers (Snell and Swanson 2000).

What teacher leaders do

York-Barr and Duke (2004) designed a framework, which conceptualised a route by which teacher leaders can influence student learning. From this foundation, Fairman and Mackenzie (2012) developed a conceptual framework that described teacher leadership contexts and ways that teachers demonstrate leadership. Using this work and illustrative citations from other literature the following examples of activities describe what a teacher leader might do.

- *Model.* Crowther, Ferguson, and Hann (2009) highlight the importance of modelling excellent pedagogical practice for teacher leaders' continued success. They model leadership concepts (Crowther, Ferguson, and Hann 2009); professional attitudes, characteristics and behaviours (Fairman and Mackenzie 2015) and a commitment to engaging in personal professional learning (Mullen and Jones 2008; Fairman and Mackenzie 2015) and reflective practice (York-Barr and Duke 2004; Fairman and Mackenzie 2015).

- *Coach, mentor.* More formal functions might involve teachers having a mentor role whilst informal examples of leadership might involve coaching colleagues on aspects of teaching practice (York-Barr and Duke 2004) or on ways of implementing new curricula, pedagogic approaches and activities (Fairman and Mackenzie 2015).

- *Develop curricula.* As leaders, teachers work together to develop and improve curricula, teaching and assessment practice (York-Barr and Duke 2004; Fairman and Mackenzie 2012).
- *Broker.* Harris (2002) identified mediating and brokering as two important aspects of teacher leaders' work in school improvement. Thus, brokering was seen as supporting practice change by taking school improvement principles and working with colleagues to find ways of linking them to pedagogic practice in the classroom, whilst mediating might involve finding extra resources and support (Harris 2002).
- *Provide professional development.* Teacher leaders provide professional development for colleagues (York-Barr and Duke 2004; Collinson 2012).

In addition to these functions and integral to some of them, teacher leaders: work in teams and share innovations (Collinson 2012); reflect and empower (Snell and Swanson 2000); collaborate with colleagues and the broader school community (Snell and Swanson 2000; York-Barr and Duke 2004; Fairman and Mackenzie 2012; 2015); stimulate and advocate for change (Fairman and Mackenzie 2012; 2015); influence; and question current practice and take part in school-wide improvement activity (Fairman and Mackenzie 2012).

Teacher educators

Definitions and recognition

Lunenberg, Dengerink, and Korthagen (2014, 5, original emphasis) 'define teacher educators as: *all those who teach or coach (student) teachers with the aim of supporting their professional development'* including 'all those who, in teacher education institutions and in schools, are responsible for teaching and coaching future, beginning and experienced teachers'. More recently, Boyd and White's (2017, 126) 'working definition' suggests teacher educators are:

> … all those who have a formal active role in the facilitation of professional learning by student teachers and teachers. They may be workplace-based or university-based. In some cases they may specialise in pedagogy or in the teaching of a specific curriculum subject.

Whilst teacher educators might be based in teacher education institutions or in schools (Lunenberg, Dengerink, and Korthagen 2014; Boyd and White 2017), in many countries government policies promote school-led rather than university-led models of teacher education (Zeichner 2014).

What teacher educators do

Lunenberg, Dengerink, and Korthagen (2014) identified six roles for teacher educators: teacher of teachers; coach; curriculum developer; broker; researcher; and gatekeeper. These and other examples of activities, explored below, illustrate what teacher educators might do.

- *Teach teachers.* Like teacher leaders, teacher educators are seen as exemplary teachers (Murray and Male 2005). As a 'teacher of teachers' (Swennen, Jones, and Volman 2010, 131) teacher educators *model* the practice of teaching (Smith 2005; ATE 2018). They also model what a teacher should be (ATE 2018).

- *Coach, guide, mentor, facilitate.* Koster, Korthagen, and Wubbels (1998) cited earlier work by Koster et al. (1996) that identified a teacher educator function as facilitator of the student teacher's learning process. Lunenberg, Dengerink, and Korthagen (2014, 44, original emphasis) align this role of *'workplace facilitator'*, associated with provoking learning, with terms such as coach, guide and mentor.

- *Develop curricula.* Lunenberg, Dengerink, and Korthagen (2014) suggest that the function of curriculum development shows considerable variation across settings.

- *Broker.* Teacher educators function as a 'broker' in the partnership process between schools and institutions responsible for teacher education (Lunenberg, Dengerink, and Korthagen 2014).

- *Research.* Teacher educators are seen as researchers (Koster, Korthagen, and Wubbels 1998; Lunenberg, Dengerink, and Korthagen 2014); not only using research as a basis for practice but engaging in research and sharing findings (ATE 2018). This function aligns with the questioning, 'inquiry stance' described by Cochran-Smith and Lytle (1999, 289). A teacher educator's research 'has to focus on both the improvement of local teaching practices and its transformation into more public knowledge' (Tack and Vanderlinde 2014, 300).

- *Gatekeeping.* As gatekeeper, teacher educators introduce students to the teaching profession (Koster, Korthagen, and Wubbels 1998). Like the research function, gatekeeping is distinctive; a responsibility of teacher educators who work with student teachers as they enter the teaching profession.

- *Stimulate teachers' professional development.* Koster, Korthagen, and Wubbels (1998, 79) referred to a teacher educator as a 'Stimulator' of colleagues' professional development. More recently, it has been suggested that teacher educators are involved in leading professional development (ATE 2018). Smith (2005) suggests they are also responsible for enabling student teachers to engage in independent and perpetual professional development.

In addition to the functions described above, and implicit in some of them, teacher educators: work in teams; encourage reflective skills; and collaborate with a range of stakeholders (Koster, Korthagen, and Wubbels 1998); and provide leadership in teacher education; contribute to improving teacher education; and advocate 'for high quality education for all students' (ATE 2018, 6).

The research setting

Empirical evidence for this exploration of teacher leader and teacher educator functions comes from a research study in primary science. This research investigated the impact of Primary Science Quality Mark (PSQM), a professional development programme for science leaders, which has been implemented within the UK, Netherlands, Germany, Cyprus, Singapore, Indonesia, Malaysia and the USA. The PSQM Director and co-founder, a former primary school teacher, is a curriculum advisor and developer with expertise in primary science. The PSQM provides schools with a framework and professional support for developing science learning, teaching and leadership. Within the UK, two cohorts of schools are recruited annually and science leaders from these schools join local PSQM networks or hubs. Hub leaders (programme mentors) include teachers, independent consultants and initial teacher education colleagues. They have expertise in primary science and support the science leaders throughout the year-long programme (Turner et al. 2013). The science leaders work with their colleagues to conduct an evaluation and implement an action plan designed to

develop science pedagogy and leadership in their school. On conclusion of the programme each science leader submits a reflective account and evidence on school practice in primary science to achieve an award. These science leaders are not science specialists but primary teachers with responsibility for leading the development of science pedagogy in their school. Such leaders 'should have a whole-school vision for science and be able to lead its development by instigating appropriate initiatives, including providing CPD to colleagues, monitoring progress and contributing to the strategic development of learning in their school' (Wellcome Trust 2014, 10).

Research methods

Aims, participants and data collection

The research aims included exploring the impact of PSQM and investigating views of good science pedagogy and leadership (White et al. 2016). The research team, from the University of Hertfordshire School of Education, comprised: the research lead in initial teacher education (study lead); the associate dean, research; a research fellow; and a primary science tutor. The researchers were independent of the management of the PSQM. Ethical approval was obtained through the relevant University Ethics Committee. Participants were informed of the purpose of the research; how data would be used; and that they would not be disadvantaged if they did not participate or if they withdrew at any stage.

This article addresses the following research questions:

- How is science successfully led and developed in primary school? (What is needed to successfully lead and develop science in primary school?)

- What can we learn about the functions of primary science leaders from two of the science leaders' accounts of their practice? (What do these science leaders say about their activities and practice? What do they say they do? How does their reported practice relate to the functions of teacher leaders and teacher educators identified from published literature?)

- What can we learn about the interrelationship between the functions of teacher leaders and teacher educators? (How do the functions interrelate? What are the areas of overlap and difference?)

Data are presented from: two key informants; the PSQM Director (viewed as a third key informant to maintain confidentiality); and six hub leaders who were asked: 'What, in your opinion, is needed to successfully lead and develop science in primary school?' The key informants were selected because of their strategic-level knowledge and understanding of PSQM and of primary science. They completed digitally recorded telephone interviews, which were partially transcribed and sent to them for review. The PSQM Director and hub leaders completed emailed questionnaires. All hub leaders who had worked with cohorts 6 and/or 7 were invited to contribute. Six (coded HL1-HL6) completed the questionnaire.

Additional data are presented as narratives (used as 'vignettes') from two of three science leaders who attended a focus group session, which was digitally recorded and transcribed. The science leaders, from different primary schools, registered in cohorts 8 and 9. Their hub was selected partly because of its location; their hub leader attended the session.

Data management and analysis

As noted, the key informants, the PSQM Director and hub leaders were asked: 'What, in your opinion, is needed to successfully lead and develop science in primary school?' Although the sample size was small, the data were rich. The participants' responses were content analysed (Krippendorff 2013) and provide contemporaneous contextual information for the science leaders' accounts. The researchers developed a set of main themes and corresponding sub-themes or codes for the data relating to 'good' science leadership and pedagogy. These themes and codes were derived from the questions, the responses and the subject area during a process involving deduction and induction (Patton 2002). Initially, the research fellow identified five 'theme sets' relating to learning and teaching and/or leadership; one set had been developed previously within the School of Education; the others were informed by published literature (e.g. Wellcome Trust 2013). The theme sets relating to leadership were collated and developed to provide two main themes and a series of sub-themes or codes. At this stage, the main theme of interest in this article, *Theme 4: Leadership (what teacher leaders do),* had 13 codes. This deductive stage was followed by induction as the researchers used the collated themes as the basis for creating a bespoke coding frame. Using the preliminary frame two colleagues working together, the research fellow, present each time for consistency, and another team member, content analysed the responses according to participant group. They read each response; suggested relevant theme(s) and codes (or added new codes); and agreed the categorisation and length of each extract to be coded. The units of analysis included multiple linked phrases, sentences, and paragraphs (Lune and Berg 2017).

This article includes responses to the question about leading and developing primary science collated into *Theme 4: Leadership (what teacher leaders do)*, which had 21 codes in the final frame. The following extract illustrates the coding process:

Key informant response:

Question: What, in your opinion, is needed to successfully lead and develop science in primary school?

> … *[Sentence 1]* And you also need to be able to analyse what is going on, use good assessment for learning to be able to be confident about how that assessment can be used in formative and summative ways, to make the greatest use of the environment that you have, and the assets and resources around you from both within the school and without in the community and parents. *[Sentence 2]* Subject leadership is an important job, it is not just a one-off, and whatever you do needs to be fitting in with the whole school vision and ethos as well.

Theming:

> Sentence 1: *Theme 4: Code 4f Resource and budgetary management; Code 4j Evaluation (monitoring teaching and learning and achievement)*
> Sentence 2: *Theme 4: Code 4p Subject leadership*

The two science leaders' accounts (Nadine and Kapila, both pseudonyms), stories of their practice recounted during the focus group are apposite here as:

The action feature of story would seem to make it especially appropriate to the study of teaching and teacher education. Teaching is intentional action in situations, and the core knowledge teachers have of teaching comes from their practice, i.e., from taking action as teachers in classrooms. (Carter 1993, 7)

These accounts were identified using 'purposeful sampling'; they are 'information-rich cases' for study to provide 'insights and in-depth understanding rather than empirical generalizations' (Patton 2002, 230). The research fellow analysed the accounts using a more 'holistic approach', which was informed by narrative analysis and differed from the categorical approach used to content analyse the survey responses (Lieblich, Tuval-Mashiach and Zilber 1998, 12). Each narrative was viewed as a whole, and parts of the account were interpreted within that context (Lieblich, Tuval-Mashiach and Zilber 1998). Initially, two concepts that emerged through repeated reading of the accounts, changing practice and inclusion, were used sequentially as frames of reference with which to examine the narratives. These concepts were seen as 'foci', a feature of a 'holistic-content approach' to analysis of life story and using them contributed to gaining an overall impression of what these teacher leaders 'say they do' (Lieblich, Tuval-Mashiach and Zilber 1998, 62). The next stage involved analysing the way the science leaders' reported practice relates to the functions of teacher leaders and teacher educators identified from literature and this research. Findings from this two-stage analysis are documented as commentaries in the next section.

Some identifiers have been deleted from the findings and minimal editing carried out. Excerpts from the interview and focus group transcriptions and questionnaire responses are shown as quotations.

Findings and discussion

This section starts by providing a critical overview of the participants' views of the requirements for successful leadership and development of primary science with clear implications for subject leadership and teacher leadership more generally, before critiquing the two science leaders' accounts. In a contribution to the broader areas of knowledge of teacher leadership and teacher education, it then identifies learning about the interrelationship between teacher leader and teacher educator functions. This section concludes by providing implications for theory and practice in teacher education. The first three sub-sections address each research question in turn.

Leading and developing primary science

Research participants identified aspects of science leadership that were both generic and subject-specific. Their responses imply particular forms of leadership, portraying their understanding of what primary school communities 'should do' to lead and develop science and illustrating the complex layers, intersections and players involved.

School environment, school leadership and culture

School culture has an important influence on the practice of teacher leaders and teacher educators. Supportive school leaders and colleagues, designated time and resources, and specialist leadership professional learning and development aid the work of teacher leaders

(York-Barr and Duke 2004). Participants recognised these factors as requirements for successfully leading and developing primary science. For example, hub leaders acknowledged the importance of 'A supportive head and SLT [senior leadership team] who give subject leaders a mandate to lead' *(HL5)* and 'Possibly statutory time to be spent learning science' *(HL2)*. There were emphases on *valuing* the science leader, which might be exemplified through their conditions of work or through a shared understanding of the *value* of science within the curriculum. Whilst some responses suggest a hierarchical leadership structure where power is held by the senior leadership team (Harris 2003), the science leader is also seen to have potential to shape their own opportunities. These views of leadership imply 'that leadership is socially constructed and culturally sensitive' (Harris 2003, 314). One hub leader's view of leadership involved:

> A confident subject leader … who is valued and supported by the leadership team and staff. This support may include things like giving science its rightful status as a core subject, providing the SL with dedicated time for subject leadership, providing a budget for developing the subject … *(HL4)*

Another participant noted the importance of:

> Vision, time for monitoring and development, resource (budget), SLT support, incentive (either or both intrinsic or extrinsic)… *(key informant)*

Pedagogy, such that the science leader 'needs to have clear expectations for teaching and learning' *(HL3)*, championing science, and clarity about the purpose of science education were also seen as important. Hub leaders referred to the 'Profile being high' and 'People who see the value of STEM [science, technology, engineering and mathematics] education in schools' *(HL6; HL5)*. The following response illustrates a science leader's responsibility for modelling excellent pedagogical practice (Crowther, Ferguson, and Hann 2009) and mentoring and coaching colleagues (York-Barr and Duke 2004; Fairman and Mackenzie 2015). These overlapping, sometimes integrated functions of teacher leaders and teacher educators, shown subsequently in Table 1, portray a leader teaching teachers; a leader as educator. These functions then diverge as the informant transitions to the strategic, visionary functions associated with the practice of a primary science leader (Wellcome Trust 2014).

> … you need that good subject knowledge that needs to be a little bit deeper so you can support your colleagues who have got difficult questions, and give them that confidence in what they're dealing with. You need to have a range of pedagogical ideas as well, and lots of different ways of exploring different content which are new and fresh and exciting … Subject leadership is an important job, it is not just a one-off, and whatever you do needs to be fitting in with the whole school vision and ethos as well. *(key informant)*

Teacher educators are also seen as advocates (ATE 2018) (Table 1); and whilst the immediate foci, nature and purpose of the advocacy of 'leaders' and 'educators' sometimes differ, the final destination, 'high quality education' (ATE 2018, 6) is the same.

The challenge of being an exemplary teacher of primary science, necessary for the role of science leader, is addressed by another key informant who expanded on the purpose and nature of science leaders' professional learning. This would allow them to model attention to

their own professional development (Mullen and Jones 2008) instead of providing or leading professional learning of others, shared functions of leaders and educators (Table 1):

> … of course most primary teachers are not science graduates, so they're not naturally into the scientific way of thinking, they're not naturally used to challenging evidence, doing experiments, refining and all of that scientific method approach. So they have to learn how to do that. Very often that comes through science leadership, professional development. It doesn't come through generic school management stuff. So specialist leadership training is critical. *(key informant)*

Science leaders' practice and behaviour

Science leaders are seen to act from strategic through to personal levels. Thus, participants assert that science leaders should engage in strategic and curriculum development and evaluation (monitoring teaching, learning and achievement) in order to successfully lead and develop primary science. They need:

> Energy, enthusiasm, good understanding of science teaching and learning, curriculum and assessment (or a willingness to learn), time, backing from SLT, networks of support and information, being organised, an understanding of leadership and a process to make it happen, reflection. *(HL1)*

At a more personal level, science leaders, like teacher educators, were expected to 'work alongside' colleagues, modelling (team teaching and demonstrating), coaching and mentoring them, as already noted, one-to-one or in teams.

> They [subject leader] need to have the confidence to guide and support others e.g. team teaching, shared planning, leading INSET [In-Service Education and Training] etc. … The subject leader needs to have clear expectations for teaching and learning and be prepared to make it clear when teachers fall short of these expectations supporting them where necessary. *(HL3)*

As well as taking part in ongoing professional learning themselves, hub leaders thought science leaders should be 'required to lead training and to carry out monitoring activities' *(HL6)*. Leadership activities would involve collaborating with colleagues, the broader school community and beyond. A key informant referred to the need for 'collaboration with others' and hub leaders recognised the value of 'networks of support and information' and the 'Science lead having access to other science leads at other schools' *(HL1; HL6)*.

Learning about the functions of primary science leaders

The findings presented so far contextualise the following science leaders' accounts, which portray their behaviour and practice, 'what they say they do'. Each account suggests that the science leader was engaged in teaching, seen as 'essential for teacher leaders because their authority cannot rest on the basis of formal positionality and, instead, must stem from their

credibility as expert classroom practitioners' (Snell and Swanson 2000, 4). Authority, in different forms, is threaded discreetly through both narratives. The texts were explored by overlaying them sequentially with concepts that illuminate the text in new ways. Thus, changing practice and inclusion provide an initial explication before each narrative is critiqued in relation to the functions of teacher leaders and teacher educators identified from literature and this research.

Vignette 1 - Nadine: Sharing knowledge and practice

Nadine described her practice in the course of the dialogue arising from the following question during the focus group as participants identified examples of how they knew the profile of science had changed for pupils: '*Do you think the pupils feel differently about science now; has the profile for pupils changed?*'

> … We had a problem with writing in books where some teachers liked to give out worksheets and take them in and the children hated that but then using the scientific enquiry and the teachers then being creative with the lessons and saying this is what we want to get to – how will you create a question, how are you going to solve it, these are the resources you can pick from; the children have all that ownership and they loved it because it was their project and they didn't mind to write it down because it was all their own doing and that's a lot of what I learnt that from some of the people doing PSQM when we shared our knowledge, and shared what we were doing, and then I took that back to my school. For some of the lessons, something that I shared was the badges that we created for inclusion so the kids had normal teaching badges, they were all job roles for science, so one might have been a reporter, a photographer or a health and safety inspector and that ensured that the children all were involved and so then when they were working in the groups there wasn't overpowering children, the quiet ones and the children really started to shine a lot more. We have a lot more after school clubs running … now we have three different types of science clubs running at the moment and the waiting list is two pages long …

Nadine's narrative provides examples of changes towards enquiry-based and inclusive teaching approaches in response to problems in the classroom. She centres on 'the children'; their dislike of worksheets and their response to ownership of their project and to inclusion in activities, illustrating what van Manen (1994, 160) described as 'qualities that make up the ethical sphere of teaching as a professional practice' that every 'teacher expresses in his or her active relations with children'. Nadine links two examples of pedagogic change with an explanation of the two-way, two-stage process she engaged in that led to them: she shared knowledge with and learned from colleagues outside her school, within the PSQM network, and then shared her new knowledge and learning with her school colleagues. She reports influencing practice in ways reflective of the process York-Barr and Duke (2004) define as teacher leadership. Identifying a problem, questioning current practice, learning about practice, experimenting and innovating in class, sharing views on pedagogy and sharing work both inside and outside her school are examples across the spectrum of leadership activity in Fairman and Mackenzie's (2012; 2015) framework. The extent to which Nadine modelled pedagogic practice to colleagues is not clear but her account does suggest that she modelled a commitment to engaging in professional learning (Mullen and Jones 2008; Fairman and Mackenzie 2015). Within the classroom, teachers led the learning towards scientific enquiry,

transferring some 'ownership' of activities to the pupils suggesting some re-balancing of leadership at this level. Nadine's account suggests evidence of work as a teacher educator, a facilitator of colleagues' professional learning (Boyd and White 2017) and implies that she is a 'teacher of teachers' (Swennen, Jones, and Volman 2010) as she makes explicit, at least in her account, the purpose of giving every child a badge.

Vignette 2 - Kapila: Building confidence, team teaching and modelling

The following vignette is drawn from Kapila's account of practice in response to the following question: '*Do you think there were things from the PSQM programme that helped you in your own teaching and learning or was it more the leadership?*'

> In terms of my own teaching it was building up my confidence to show the others we can do practical work; we can get water out and we can get candles out and we can get equipment out, and every child can have these in front of them, and it's doable and it's safe. When they saw me doing that they thought, she did that lesson on Monday and there wasn't a fire, so we can have a go and she's resourced it. I teach science on a Monday so I have everything ready so they know she has organized it and she's supporting us in the sense that I will pass it to my colleague, and she will do the lesson next as there is a line of colleagues; there's four of us in a team. So that was building up my confidence and then they're seeing me doing it, knowing it's doable and that was helping raise them in their confidence. Then also the team teaching and they were observing me teach and so they could see how I am managing thirty children with these things because that was a worry for them, the behaviour and have we got equipment, and controlling the children in terms of what they are and are not allowed to do. So that has helped me and made me confident and also made me realise I can team teach, I can go in and model lessons and that's been helpful for the staff.

Kapila implies a change in pedagogic practice as she describes how she shows her colleagues how to 'do practical work'. Whilst referring to inclusion of both the children ('every child can have these in front of them') and team members, the type of lesson means colleagues are concerned about safety, behaviour and classroom management. Kapila explains how she organises and resources the session and then shows or 'models' the lesson and supports other team members. As Kapila's colleagues observe her teaching and feel they can 'have a go' themselves, the nature of this showing or modelling is not clear. Is Kapila showing or telling (Desforges 1995) in place of modelling here, thus enabling her colleagues to '"teach like me"', rather than making the underlying pedagogy explicit (Loughran 2006, 95)? Modelling, which involves the explication of practical knowledge, is a form of professional knowledge which teacher educators share as part of their practice (Smith 2005). Kapila acknowledges that she has gained confidence through this experience and asserts that her colleagues are also more confident. As with Nadine's account, Kapila's narrative suggests activities described in Fairman and Mackenzie's (2012; 2015) leadership framework, such as sharing pedagogical ideas, working with and influencing the practice of colleagues. The 'exemplary' teaching practice expected of both teacher leaders and teacher educators (Snell and Swanson 2000; Murray and Male 2005) might be inferred as Kapila's colleagues follow her example. She describes 'a thoughtful considerateness' (van Manen 2008, 2); she is attentive to her colleagues' concerns and seeks to allay them by engaging in team teaching that could be reminiscent of both teacher leadership and teacher education, revealing complexity.

Learning about the interrelationship between the functions of teacher leaders and teacher educators

Both vignettes reveal practice in which some functions of teacher leaders and teacher educators seem to coincide, representing points of congruence and of divergence. This raises questions about whether an experienced teacher, unaware of the origin of the texts, would identify the authors as teacher leaders, teacher educators, both or neither. Such questions highlight the interrelationship between what teacher leaders and teacher educators do and areas of overlap and difference between these functions, which was also apparent in the questionnaire and interview responses. Perhaps this overlap is not surprising; the following description of leadership might also apply to educators:

> … leadership is about learning together and constructing meaning and knowledge collectively and collaboratively. It involves opportunities to surface and mediate perceptions, values, beliefs, information and assumptions through continuing conversations. It means generating ideas together; seeking to reflect upon and make sense of work in the light of shared beliefs and new information; and creating actions that grow out of these new understandings. (Harris 2003, 314)

Definitions of teacher leadership and teacher leaders (York-Barr and Duke 2004; Katzenmeyer and Moller 2009; Wenner and Campbell 2017) and of teacher educators (Lunenberg, Dengerink, and Korthagen 2014; Boyd and White 2017) cited earlier, provide starting points for exploring this interrelationship. York-Barr and Duke (2004, 288) viewed the line of sight for teacher leadership as 'increased student learning and achievement' through improving pedagogic practice. Although the same endpoint is implicit for teacher educators their immediate focus is teachers' professional learning. Both teacher leaders and teacher educators engage with adult learners. As exemplary teachers (Snell and Swanson 2000; Murray and Male 2005), the literature suggests they maintain and model their practice; they might also coach, mentor, develop curricula, broker, advocate, question and share, working through collaboration and engaging in teams or groups. Whilst teacher leaders and teacher educators might have some overlapping functions, there are also differences in what they do, or are said to do, and in the nature, purpose and emphasis of some apparent areas of overlap (Table 1).

Table 1. Examples of functions of teacher leaders and teacher educators

Teacher leader	Functions	Teacher educator
pedagogical expertise, leadership[a], professional attitudes, characteristics and behaviours[b], commitment to personal professional learning[b,c], reflective practice[b,d]	*model…*	the practice of teaching[e,f], what a teacher should be[f]
teaching practice[d], implementing change[b]	*coach, mentor…*	guide and facilitate teacher's learning[g]
improve curricula[d,k]	*develop curricula…*	curriculum development[l]
in school improvement[i]	*broker…*	in the partnership process between schools and HEIs[l]
provide for colleagues[d,j]	*professional learning and development…*	stimulate[g] and lead[f] for colleagues and enable student teachers to engage[e]
and stimulate for change[b,k]	*advocate…*	'for high quality education'[f]
to improve educational practice[h]	*lead…*	in teacher education[f]

[a]Crowther, Ferguson, and Hann 2009; [b]Fairman and Mackenzie 2015; [c]Mullen and Jones 2008; [d]York-Barr and Duke 2004; [e]Smith 2005; [f]ATE 2018; [g]Koster et al. 1996; Koster, Korthagen, and Wubbels 1998; [h]Katzenmeyer and Moller 2009; [i]Harris 2002; [j]Collinson 2012; [k]Fairman and Mackenzie 2012; [l]Lunenberg, Dengerink, and Korthagen 2014

Implications for theory and practice

Kelchtermans, Smith, and Vanderlinde (2018, 121) use the term 'teacher educator' to include 'all types of people who are professionally involved and responsible for initial and on-going education of teachers'. This supports Cochran-Smith's (2003, 22) reflection that 'we need a broad answer to the question of who is called a teacher educator … if we are going to consider seriously the education of teacher educators'; explaining: 'If the subject matter of educators' education is ''the work'' of preparing teachers … then all of those engaged in the enterprise need to be participants'. Such inclusive views might share elements of distributed leadership cultures (Woods 2012) and could imply a distributing and distributed view of those engaged in educative leadership as educators of teachers.

Although these research findings are contextualised within primary science, they have wider implications. Using literature relating to the functions of teacher leaders and teacher educators to critique the participants' responses provides evidence to support the claim that some teacher leaders are also educators and reveals the nature and extent of their potential contribution to the education of teachers. The findings from the research and from the literature review raise questions about practice. Implicit in these questions is the nature of underlying knowledge and the forms of knowledge that are central to leadership and to

teacher education; as 'Teacher knowledge does manifest itself in practical actions. And we may "discover" what we know in how we act and in what we can do…' (van Manen 2008, 20). Here, narrative provides insight into that knowledge because story, with its different meanings, provides an appropriate way of revealing knowledge relating to action (Carter 1993). These teacher leaders' stories reveal the way leading and education are bound up in their everyday activities. Recognising the 'educator' dimension of some teacher leaders' practice has important implications for the theory and practice of the education of teachers internationally, nationally and locally. Attending to these findings by acknowledging the contribution such teacher leaders make to the education of teachers is important. Indeed, it might be suggested that in this context a teacher leader (as opposed to a 'manager') *should* be an educator, relating to the distinction between, and move from, being a subject co-ordinator to subject leader. Where a teacher leader enacts a function as an *educator* it is important to explicitly recognise this. Acting as an educator, they have the potential to extend the professional knowledge of individuals and the school community; and to contribute to the professional knowledge of the teacher educator community, and to gain from being part of that community. In practice, this might involve enabling them to engage in related professional learning and professional discourse; and to contribute to and draw from the developing teacher educator knowledge base discussed by Kelchtermans, Smith, and Vanderlinde (2018). Surfacing, generating and sharing relevant professional knowledge with each other, and with teacher educators, could significantly enrich the practice of teacher education.

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