**Early career teachers’ research literacy: What does it look like and what elements support its development in practice?**

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This article reviews the effectiveness of two projects: *NQT and Beyond; Developing Resilience in Learning and Teaching*,and the underpinning conceptual framework (PLSP) in supporting early career teachers’ (ECTs’) development of their research literacy. Evidence of effective integration of research into practice is illustrated through reference to six articles each presenting an individual ECT project, alongside data from a total of 80 ECTs. Thematic analysis of ECTs products from the projects (critically reflective portfolios; resilience pedagogy implementation/analysis) identified three over-arching themes impacting ECTs’ research literacy. These inter-related themes included: (i) adequacy of the pedagogic/project design (i.e. authenticity, relevance, manageability, accessibility, tools to support critical reflection / self-evaluation; focused incremental feedback; modelling research through investigation of beliefs and values); (ii) self (i.e. readiness; energy to effect change; confidence in being able to apply ideas; willingness to act as a broker/change agent; ability to identify and make use of opportunities); (iii) self-in-context (i.e. time and space to effect change; opportunities to use ideas in real contexts; support from pupils, colleagues and senior management; access to a range of support networks). The importance of sustaining ECT research literacy and reconfiguring school - higher education partnerships to facilitate this are emphasized.

**Keywords**: research literacy; early career teachers; Personal Learning Styles Pedagogy

**Introduction**

A challenge for 21st century professional teacher education is to promote research literacy; that is to see research embedded within the every-day practice of teachers, and as an integral element of professional development throughout a teacher’s career (DfE 2016; Greany and Brown 2015). In developing programmes such as the *NQT and Beyond*, and *Developing Resilience in Learning and Teaching* a key consideration was the extent to which the early career teachers (ECTs) could integrate research into their own practice.

The aim of this summary article is two-fold. Firstly, to consider evidence of effective integration of research into ECT practice and secondly, to highlight the key factors impacting the transfer and integration of research into ECT teaching practice. Themes emerging from the six ECT articles included in this special issue and cross-referenced to records from the entire cohorts of ECTs involved in the two programmes were explored as part of examining the efficacy of the Personal Learning Styles Pedagogy framework (Evans and Waring 2009; Waring and Evans 2015), which underpinned both programmes designed to support the development of ECTs’ research literacy.

Eighty four ECTs undertook the *NQT and Beyond* programme with 81% of them submitting a critically reflective portfolio based on their own classroom practice. All submissions (including re-submissions) were successful in completing work at the Masters level. There were twelve ECTs involved in the *Developing Resilience in Learning and Teaching* programme who worked collaboratively to develop a resilience pedagogy framework. All twelve ECTs then implemented and evaluated the effectiveness of their own interpretation of that framework in their own context. ECTs’ perceptions of the value of the programmes in developing their understanding, application and integration of research was explored drawing on data from interview, email, discussion group, presentations, and portfolios/products of their work. The research was informed by BERA’s (2011) ethical guidelines and subject to ethical approval from each University’s ethics panels.

**Integration of research into practice**

Drawing on the six articles presented in this special issue, there is evidence of transformational change in ECTs’ conceptions of the role of research in their teaching and themselves as teacher researchers, the use of critical reflection in informing practice, engagement with their communities of practice in research-related activities, and more sophisticated understandings of individual and contextual variables impacting learning and teaching. In line with Mezirow’s (1996, 162) conception of transformative learning where ‘learning is understood as the process of using a prior interpretation to construe a new or revised interpretation of the meaning of one’s experience in order to guide future action”, there is evidence that the ECTs’ understandings of the learning and teaching process has been transformed as a result of engaging in and with research. Not only have they changed their views of what research is and how it can be used in everyday classroom practice (ECT59) but they have also changed the way they interpret/make sense of new experiences, and most importantly there seems to be a positive influence on subsequent understanding and action, as a result of this sense-making process (e.g. Bedford, Kerr).

The impact of the PLSP framework is evident in the emphasis ECTs have placed on the role of individual and contextual variables in learning and teaching, and particularly on those variables impacting pupils’ regulation of learning. From a critical pedagogy perspective, there is awareness of the differential impact of learning interventions on pupils taking account of individual dispositions towards learning. Furthermore, the complex nature of the interaction of individual and contextual variables is implicated, for example in Bedford’s discussion of ‘science capital’, Cropp’s ‘socio-cultural maths anxiety’, and Nation-Grainger’s discussion of the ‘quantified self’ with the researcher acknowledging the nested nature of pedagogy and the role of individual, classroom, school, government, and wider social and cultural factors (Kek and Huijser 2011).

Through discussions of self-efficacy, goal orientation, task value, and motivation the importance of supporting pupil self-regulation of learning and pupil autonomy in learning are emphasized (e.g. through the use of appropriate support, choice in tasks, and creating an effective atmosphere) although, as noted by Nation-Grainger, some pupils will need more support than others in the selection of appropriate targets. In addressing individual differences in learning, the role of inclusive curricula in supporting pupil and teacher autonomy is highlighted (Bedford, Hayes and Rigby). Inclusion here is about enabling all learners to participate fully in learning activities, which includes having a voice and stake in the community in which they are partaking (UNESCO, 2005). By considering the inclusion agenda, physical and epistemological access is highlighted which raises issues as to the extent to which teachers are equipped to implement research-informed innovations linked to what assumptions are made regarding pupils’ knowledge. In implementing research and developing research networks from an inclusive perspective, it is important to consider how: individual research connects with current knowledge within the community; the relevance of what one is doing for pupils and ECTs; and how it can be used flexibly to suit the needs of different learners in order to enable individuals to connect with and support the development of such initiatives.

The six articles draw attention to the relational dimension of learning and the importance of attending to pupils’ perceptions of the learning environment and of engaging pupils directly in investigating their own learning as part of a self-regulatory approach. Kerr’s article argues the importance of translating research into the school context; the key issue here is responsible and informed transfer of ideas. All six ECT researchers have highlighted individual difference constructs that they have found important in impacting learning within their teaching and learning environments.

In the six articles ECTs played an important role as information brokers (Goswami, 2006) who translated research into a medium that was accessible for schools to be able to use; a feature that was mirrored in the *Developing Resilience in Learning and Teaching* programme*.* In considering measuring what we value (Biesta 2008), in the *Developing Resilience in Learning and Teaching* programme*,* ECTs worked with a university-based researcher to develop a shared understanding of a resilience pedagogy, and then developed this further to suit their own contexts and what they perceived to be the key learning and teaching areas that needed addressing (see Appendix A). Importantly, ECTs produced a resilience framework that was accessible to teachers and pupils in their own schools and school networks. They produced their own resilience pedagogies based on research evidence, implementing, and evaluating their research using a range of measures having clearly articulated what was meaningful to them. They were able to demonstrate impact on pupils’ attitudes and performance and at the same time, cope with the messiness of school-based research. ECTs, when evaluating the impact of what they had achieved, valued the use of soft measures (attitudinal to include pupil perceptions) and hard measures (pupil learning outcomes). Through their own evaluative work, sophisticated conceptions of learning and teaching were evident.

The completion of the Masters programme has inspired me to continue to explore research, whether it is part of a formal qualification or not, and enjoy the process, keeping up to date with new ideas. This leads to the consequent trialling of new practices, reflecting and evaluating them, both independently and with my colleagues. (ECT 59)

ECTs conducted individual and collaborative research effectively within their school contexts as evidenced in their portfolios and resilience pedagogy interventions working with school-based mentors and colleagues, and with support from university colleagues. The projects impacted on how ECTs taught and researched their practice. Of particular note was the impact of ECT research on their relationships with pupils as highlighted by Kerr: *“through this research I have learnt to listen to students, not only as a teacher but as a researcher… I have learnt a considerable amount about my students and classroom delivery, which is in itself permanently irreversible and has, and will continue to have, implications for my practice.”*

A dominant focus for ECTs was around supporting pupils’ autonomy as part of self-regulatory practice. Nation-Grainger noted the foremost component of the PLSP, in his opinion, “*is supporting learner’s autonomy through choices in learning thus supporting the basic psychological needs in order to progress to more intrinsic health related behaviour.”* Bedford’s view on developing pupil autonomy, as exemplified in the following quotation, is also representative of the wider ECT cohort.

The PLSP has encouraged me to take a different approach to developing my teaching practice… It has also required me to consider in more depth the variety of factors that affect a child’s learning environment and the significance of learner autonomy….it has reminded me of the importance of developing an adaptive environment in which the learner is at the centre of the learning process, something that is all too easy to neglect… as a result of this project and the significant changes in mind-set that are associated with the interventions, my approach to teaching has changed. I am now able to identify the importance of providing autonomy over learning to enhance self-regulation. (Bedford)

Finally, there is much evidence of ECTs developing greater understanding of key concepts and integrating them into their practice and furthermore, demonstrating sophisticated understandings of learning and teaching which are very much in line with the findings of the Stoll/NCSL report on good pedagogy (2015), in that ECTs demonstrated: engagement with pupils and colleagues about their learning in order to build a lexicon around learning; openness to new challenges, persistence, flexible use of a range of strategies to meet pupils’ needs and to develop self-regulatory behaviours, effective use of assessment to support learning; valuing of what pupils knew and could do.

In developing in me the need to identify core concepts and reduce cognitive load I now recognise the fact that often I crowd key mathematical ideas with other information that I find interesting. Planning around a core theme and aiming to eradicate un-necessary details in the first instance has, I hope, made my lessons clearer and resulted in greater understanding for my students. (TF1)

My classroom practice is now developing around a philosophy of working and learning *with* students…As teachers and leaders we should be answerable to (that is in consultation with, not measured and labelled by) our young people as much as we may be to external performance management around data tracks and single lesson observations. For me, though schools and Ofsted regularly pay lip service to the importance of student and community voice, we need to set this at the centre-stage of how we lead and evaluate the direction of learning, and be cautious about tokenistic methods of student voice collection in which it is instrumentalised for attainment or school improvement agendas. (TF3)

**Factors facilitating transfer and integration of research into teaching practice**

A transfer system model considering “*all factors in the person, training and organization that influence transfer of learning to job performance”* (Holton, Bates, and Rouna 2000, 335) was used as a frame of reference to consider those factors that facilitated ECTs’ research literacy development. From a thematic analysis (Braun and Clarke 2006, Clarke and Braun 2013) of the entire ECT data set, and application of deductive and inductive approaches to exploring the evidence drawing on the resilience framework outlined by Evans, Waring and Christodoulou in this special issue, a ‘research transfer and integration model’ was created (see Figure 1). Three core themes are identified: adequacy of project design; individual (self) factors; and context (self-in-context) factors. These findings align with those of Rea, Sandals, and Parish (2015) from their examination of effective research in schools. It is important to note the complex interaction of the themes in Figure 1 as part of facilitating ECT ability to integrate research into practice. For the purposes of this summary article, a selection of some of the key themes will be highlighted.



Figure 1. Research transfer and integration model

***The adequacy of the pedagogic/project design and delivery***

If higher education institutions made more frameworks such as the PLSP readily available, I believe more teachers would be willing to read and apply recent educational research and literature to their teaching practice. (Rigby)

The perceived adequacy of the project design and delivery to include ‘housekeeping issues’ (Scott et al. 2015) was a key theme impacting ECT’s ability to access, use, apply, and develop research. Housekeeping issues refer to features of the assessment design that support learning (e.g. provision of resources; rubrics; explicit guidance; clear frameworks). The underpinning PLSP was seen as a solid foundation on which to build their practice; with exploration of beliefs and values seen as powerful in enabling ECTs to look at their own learning and that of their pupils. Key delivery features highlighted by the majority of the ECTs included: good use of formative feedback including rubrics (e.g. *“it forced me to define my question. It also caused me to research my focus and select readings at an early stage so I was able to see …where the gaps were in the theory that I could look into”* (ECT 6)); Focused and early feedback *(e.g. “let me know early on that my idea was workable which given I had little experience of [post secondary education] was important to me (ECT 5)*)*;* tight focus based on classroom practice (e.g. *‘helped me to narrow down what I wanted to achieve…I started off quite broad but the feedback helped me to fine-tune each aspect of my portfolio* (ECT 7)); incremental support (e.g. “*Worked perfectly, good step by step way into writing the real thing as a constructive tool to get initial thoughts down that can then be refined whilst going along”* (ECT 9)); sensitivity to teacher context (e.g. “*tailored to meet the needs of full-time teachers, meaning that all tasks and research could be completed effectively around a busy teaching schedule”* (ECT 44)).

Integral to the PLSP is a critical pedagogy which asks ECTs to judiciously consider the evidence-base for specific teaching approaches and importantly, from social justice and inclusivity perspectives, to consider who is advantaged and disadvantaged by specific learning and teaching approaches. The attention placed oncritical reflection, the tools to enable engagement with complex ideas, and the space to explore them was highly valued by ECTs and exemplified in the following excerpts, which are representative of the cohorts as a whole:

I feel that, especially in the early stages of a teaching career, the focus turns to simply meeting the day to day basic needs of all learners within a class, as well as completing all necessary paperwork associated with teaching. Therefore, the emphasis on critical reflection reduces at this time. During the ‘NQT and Beyond’ course, the PLSP framework provided ample opportunity for critical reflection and continued professional development. (ECT 44)

ECTs evidenced their experiences of trying to integrate research in a meaningful way utilising a broad range of evidence indicative of Brookfield’s (1995) four lenses of critically reflective practice.

This portfolio has provided me with the tools to explore and develop an area of my practice which I feel passionately about. I have been able to engage with the voices of my students and colleagues; reflect on theoretical writing and my own experiences in the creation of my own action research. As a result, I feel empowered to continue with this research to further align principles and reflective practice in the promotion of creating lifelong learners. (ECT 47)

Where the work presented more challenges was in critically reviewing and evaluating current research. Each reflection led me to new theories and research, which opened up new directions for thinking and learning. I found it demanding to absorb the information and synthesise it in such a way that it informed my professional practice. (ECT 56)

***Self***

HEIs have considerable responsibility as part of their gatekeeping role to provide objective and accessible research, and most importantly, to facilitate transfer of research into practice. The projects provided access to resources that the ECTs perceived as relevant to their context (stage of development/school needs)**;** ideas and theories that they would not necessarily have considered as exemplified in the following excerpts. Perceived manageability is also a common thread within ECT discourses.

To reflect and carry out independent research – opportunities to review literature – direction to information I would not have found on my own but could apply to my own context; I developed a far deeper understanding of issues…It enabled me to make my reflective activities relevant to my practice; it improved my practice as the reading and study was directly related to the day-to-day issues I was facing at the time. (ECT 2)

It allowed me to choose somethin**g** *relevant to me that I was motivated to research.* It also meant that I was able to choose a focus and *a way to research that was manageable within my setting* (ECT 3). It meant I could link it around my class at school instead of carrying out extra research I was able to do it ongoing throughout the year. It meant I had a close relationship with the parents to ask for permission (ECT 4)

The importance of all parties seeing the research as relevant to enhancing learning and teaching was powerful, suggesting the need for alignment between ECT, colleagues, pupils and parents in what is seen as valuable. In summary, significant buy-in was needed from all stakeholders and the skills of the ECT to manage such buy-in is crucial.

Readiness is another theme which combines self and self-in-context factors. The ECTs in the programmes were at the stage in their development where they wanted to explore their own learning and that of their pupils. ECTs saw the importance of understanding the processes of learning to support their own personal development and that of their pupils.

Having completed an initial teacher training programme which focused predominantly on the development of practical teaching skills, I was interested to examine exactly how I learned effectively and so the PLSP framework certainly broadened my understanding of my own existing and preferred cognitive styles and gave me the opportunity to take greater

responsibility for my own learning and professional development during the course. (Hayes)

A willingness to offer (i.e. to explore their own values and beliefs, and to share ideas with colleagues) was a key theme impacting ECT development and transfer of ideas. A success indicator of the projects was evidence of transformative practice as identified by Kerr “*I [gained] the tools needed to critically reflect on my practice and educational issues, this has generated an irreversible positive change in my approach which has become more reflective*.”

Another success indicator was seeing ECTs growing in confidence to develop and apply ideas to practice: “*The resilience project, for me, began as a complex series of research tied in by a loose narrative of practices. It was only when I begin to read more critically and see patterns in the research that I saw sense in my journey”* (TF2). In integrating theory and practice the development of understanding of self is fundamental. Confidence in using and applying research led to ECT self and school empowerment.

***Self-in-context***

There is evidence of an ECT mindset change with the development of an ‘inside and outside orientation’ (i.e. concern with own practice and looking beyond). ECTs demonstrate an ability to identify and make use of opportunities. They are mindful of the wider school context and their potential to impact practice within schools. The research was a strong vehicle in providing ECTs with access to school networks and as such was confidence boosting.

It …gave me knowledge and confidence in the early days of my teaching career to be able to contribute and influence more experienced teachers within a very well developed and knowledgeable department. (ECT 17)

It positively impacted my career mindset and pathway.  As a middle leader who aspires to become part of the school management team it has assisted me in viewing educational issues from a whole school and national perspective…it has  positively changed how I lead but also how a teach. (Kerr)

I am aiming to share ideas within my department, particularly with regards to challenge resources. I will be making a ‘challenge lesson’ section on the Maths area of our staff drive to signpost people to key websites, such as that of the UK Mathematics Trust. (TF1)

I now fully appreciate how important school-based research is for teachers to feel they can implement effective change in the classroom. (P 56)

Crucial to the success of the ECT projects and the development of ECT research literacy were collaborative opportunities for ECTs to reflect on, and share practice, and in doing so, develop and access a range of support networks within and beyond school with peers, pupils, university and school colleague, and wider discipline networks. There was strong evidence of ECTs working with others as part of a model of joint practice development (Fielding et al. 2005). Support both from the university and the school was essential in enabling ECT research.

It gave me the opportunity to continue to reflect in depth on my teaching and share my experiences as a learner and as a teacher with others in the same position, which has been invaluable. (ECT 59)

[It] allowed me to work with experienced and knowledgeable researchers to ensure that I engaged critically with all literature and research I encountered during my project. (ECT 44)

The examples provided in this special issue highlight how research-based knowledge and scholarship have been used to inform project design, structure and content; equipping ECTs to engage critically with research, and to conduct individual and collaborative research (BERA/RSA 2014). There is evidence that ECTs “*came to regard research tools less as abstract notions and more as effective and practical means of increasing their knowledge and understanding of teaching and learning processes*” (GTC 2003, 3). Finding the right balance between school and university support has been identified as one of the greatest challenges in supporting the research literacy of ECTs (Greany and Brown 2015). The exploration of individual differences and contextual variables in support of self-regulated learning is an important focus for ECTs in supporting the development of relational skills and in empowering their own pupils to be partners in research. Sustainability remains a key issue, regarding how ECT researchers are supported throughout their teaching life-course to continue to embed research within their own practice and build research-integrated practice within and across schools. The supporting research transfer and application model is useful in considering the interplay of individual and contextual variables in impacting ECTs’ take up and integration of research into practice. Finding the emotional and physical space in which to develop research literacy and to remain mindful about what we measure and how we measure it is a massive challenge for ECTs given the many competing and increasing demands on their time. However, research integrated practice is essential if ECTs are to ensure inclusive practice within their classrooms (Waring and Evans 2015). While there has been considerable growth in recent years in the provision of accessible research data to schools in England (Coe 2017), the nature of research partnerships with teachers working collaboratively with researchers as an integral part of practice needs more attention particularly regarding the ethics of pupil as researcher and quality indicators for research. Academic journals have an important role in offering a voice to teachers and importantly, in providing an illustration of innovative practice in universities and schools that can act as a catalyst to support understanding and development of further school-based research.

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Appendix A

**Resilience Pedagogy**

**What is resilience?**

Resilience is about how an individual can manage themselves successfully within a range of learning contexts. At a personal level it is about emotional, cognitive, and behavioural responses to daily life and how an individual can make best use of the environment to support the development of individual and group resilience. Resilience is about being adaptable, flexible, and persistent. It is about being able to anticipate and to respond positively to learning challenges. Building successful relationships, being able to connect and adapt ideas to the requirements of the context are all essential elements of resilience.

A resilience pedagogy involves the development of self-regulatory skills so that learners can have a better understanding of themselves, their contexts, the learning strategies and options available in order to provide them with choices in learning and life. (Evans, 2016)

**Overarching Principles of a Resilience Pedagogy**

* Resilience can be developed and building it should be an integral part of curriculum design.
* Resilience is about adaptability and persistence.
* The development of core resilience characteristics (confidence; control; relationships; and cognitive strategies) is important in supporting students to master their own learning and to support the learning of others.
* Supporting students to manage their own learning and sense of self within and beyond the classroom is a key aim of a resilience pedagogy.
* Resilience is relational and involves partnership between students, their peers, families, and teachers.
* It is important to consider who is advantaged and disadvantaged by the resilience approaches we use in teaching (this involves adopting a critical pedagogy).
* A resilience pedagogy is evidence-based.

**Resilience Pedagogy Dimensions**

A key aim of a resilience pedagogy is to support individuals to self-regulate their learning as part of enhancing student agency and autonomy in learning. There are four key inter-related areas:

**1. Building Confidence**

**2. Control**

**3. Relationship Building**

**4. Cognitive Strategies**

**1. Building Confidence**

* **Promote mastery in** learning by placing greater emphasis on the process of learning rather than just the product in learning.
* Support students to **learn from their errors** and to build a learning environment in which learning through risk-taking is seen as positive.
* Acknowledge the **uncertainty of knowledge** and support students to know **what to do when they do not know.**
* Provide students with structure / strategies to promote **independence** in learning.
* Support students to **articulate and evaluate how their own beliefs and values** about learning and teaching have an impact on their motivation to learn.
* Explore **different ways of learning with students** to give them the confidence to try alternative approaches and to work out which learning approaches are most suitable for specific situations.

**2. Control**

* Provide studentswith **negotiated choices** as part of curriculum design.
* Encourage and acknowledge **student voice** in learning.
* Encourage **positive growth mindsets** by fostering positive perceptions of what can be achieved.
* **Remove scaffolding** at appropriate points to encourage students to be more self-reliant.
* Challenge students to **critique and questions ideas.**
* Encourage studentsto develop their own **creative solutions** to problems.
* Support students in becoming more confident in **self-assessing** their own skills and knowledge.
* Encourage students to take responsibility for their own learning through the development of **self-motivation strategies** in order for them to initiate and sustain interest in learning.

**3. Relationship Building**

* Support students to **recognise and manage their emotions** as part of developing their emotional regulation strategies.
* Focus on developing students’ **relational skills** (their ability to connect to others, and their awareness of their impact on others - e.g. ability to notice, to listen, to support, to lead, to build their own networks of support).
* Support students to learn **how to ask for, apply, and give feedback**.
* Support students to **celebrate their successes and those of others.**
* Support students’ **development of mindfulness** (ability to be totally focused in the moment) and **ability to ‘switch-off/ disengage’** in order to find time for themselves.

**4. Cognitive Strategies**

* Focus on the development of students’ **self-regulation skills** (e.g.cognitive processing skills; metacognitive (thinking about how you learn); and affective skills).
* Allow **sufficient time for students to be able to process ideas** and transfer them to long term memory.
* **Reduce distractions** (e.g. non-essential information) in the classroom in order to reduce cognitive load.
* Less is more – **focus teaching on core and threshold concepts** (what students are likely to find difficult), and review what students can learn for themselves.
* **Teach and model critical reflection** **skills** in order for students to be able to set appropriate targets for themselves, and to have the capacity to evaluate their successes, areas for development, and future goals.
* Support students to **see connections** and to be able to apply, adapt, and transfer ideas to new and different contexts beyond the immediate classroom and discipline.
* Work with students to enhance their i**nformation processing skills** (how to access, filter, decipher, and manipulate informationeffectively).
* Use **formative assessment strategies to** support students in knowing what to do to improve.
* **Challenge students** to support the development of their brain capacity (acknowledging the plasticity of the brain).

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