How Initial Teacher Training programmes integrate research: A case study of insights from module expectations and teacher educators' implementation

Teacher Education Advancement Network Journal

Online First pages 74-89

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Abstract
Different approaches to the integration of research in Initial Teacher Training (ITT) programmes have given rise to terms like, 'research tutored', 'research-based', 'research-orientated', and 'research-led' teaching. This study examines current practice in a university by considering how these four approaches are manifest in module handbooks from undergraduate and postgraduate courses and in what teacher educators say about their sessions. In the case study, six compulsory undergraduate modules favoured a 'research-tutored' approach, while three compulsory postgraduate modules emphasise a 'research-led' approach, mainly transmitting knowledge of research and ethics. Twenty-seven teacher educators reported a lesser emphasis placed on research processes (as might be expected of a 'research-based' or a 'research-orientated' approach). The findings have policy implications for the contribution of Higher Education Institutions to pre-service and in-service teachers and how they might update skills and knowledge relevant for the professional role.

Key words
Initial teacher training; Research-teaching nexus; Integration of research and teaching.

Introduction

Initial Teacher Training (ITT) programmes have been navigating twin challenges. On one hand, they must work towards the external expectations of the National Curriculum and the Department for Education's award of qualified teacher status to trainees) (Hallett, 2010). This necessitates a functional approach, emphasising time spent in school placements to meet the outcome demands, and for which assessment models support the achievement of the expected standards (Fraser, 2001; Khuzwayo, 2020). On the other hand, the designers of teacher training programmes often advocate a competence-based approach, focused on affording the development of both theoretical and practical understanding and competence (Moreno-Pino, et al., 2021; Serdenciuc, 2013; Vega-Marcote et al., 2015). This approach is less directly linked to a particular school context, but is more tied to knowledge of various aspects of research, such as how to engage with research, how to critique it, and how to use it as a theoretical guide for pre-service teachers' own evidence-based practice. Courses that bridge the gap between functional and competence-based approaches have been labelled 'research-informed' programmes (Burn and Mutton, 2015; Fairley, 2020).

Looking through an international lens, the OECD (2015) has called on the international education community to embed research skills in ITT programmes. Tatto (2015), for example, selected four countries as case studies to explore the role of research in outcomes associated with different approaches. These case studies exemplified what was described as, *excellent*, *great*, *good*, and *fair* levels of interest in research in these approaches. The *excellent* approach, that of Finland, positioned research as a key skill in its inquiry-based learning – learning that incorporates a 'certain degree of flexibility and autonomy'. The *fair* approach, that of Chile, saw research as important but attached more weight to knowledge of school content (Tatto, 2015, p.178). The case studies illustrate the association of integrated research with high-quality ITT programmes. There is, however, little research on the micro level which explores approaches, the integration of research, and how this is the understood by teacher educators involved in those programmes.

Citation
Wang, Y. and Newton, D.P. (2024) 'How Initial Teacher Training programmes integrate research: A case study of insights from module expectations and teacher educators' implementation', *TEAN journal Online First*, pp. 74-89.

Here, 'pre-service teachers' refers to students studying for government-recognised teaching status. 'Initial Teacher Training' (ITT) is the term commonly used in England for courses led by the government's 'Initial Teacher Training and Early Career Framework' (ITTECF, published on 30 January 2024). The framework has eight strands with two types of content, referred to as 'Learn that…' and 'Learn how to…' in each strand. The 'Learn that…' parts are 'informed by the best available educational research', while 'Learn how to…' expects there to be evidence from academic research (DfE, 2024, p.5). When the quality of ITT curricula is assessed, how these strands are incorporated plays a significant role. It is, therefore, worthwhile taking a closer look at this aspect of training practice.

Three main questions were proposed:

1. How do module handbooks in a university's ITT programmes set out expectations for the integration of research in teaching?
2. What are the intentions among teacher educators for integrating research into their university-based sessions? In particular:
    2.1. Do teacher educators consider integrating research into teaching useful and important, from the points of view of teaching, learning outcomes within teacher training programmes, and research itself?
    2.2.What kinds of activities do these educators use to integrate research into teaching?
3. How do the expectations appear in teacher educators' practice?

The notion of the Research-Teaching Nexus (RTN)

To answer these questions, notions of integrating research into teaching in ITT were examined through prior, European-wide studies of the research-teaching nexus (RTN). A look at recent guidelines for the ITT programmes of various European Union countries revealed that most acknowledge the importance of developing pre-service teachers' knowledge and skills in educational research (Caena, 2014). But there also exists a concern about the so-called *theory-practice divide* – the gap between the theory of teaching as espoused in literature and teaching practice (Koutselimi and Persianis, 2010). Lillejord and Borte (2016) hold the view this should be an important concern in training programmes. Different aspects of the nexus between the two have been explored over several decades of research, with some positioning theoretical reflection on practice as no less than an overarching ability that is essential (Burchell and Westmoreland, 1999). With the reality of school placements focusing on daily practicalities (Golding, 2015), action research has been advocated as a way of restoring the balance. It approaches theory in action as a way of combining theoretical knowledge and purposeful practice (Ryan, et al., 2017; Lattimer, 2012; Tsafos, 2009). Systematically assessing what, how, and why something works requires engagement with pre-service teachers' everyday practice and exploring what knowledge they value (Evans, et al., 2017). This all comes down to pedagogical practice, which has been generally a central pillar of ITT curricula (Hutchinson, 1994; O'Flaherty and Beal, 2018). However, integration is about more than action research.

A systematic review to synthesise the various ways that research is integrated into ITT reached a working definition of the *research-teaching nexus* (Wang, et al., 2023, p.15): 'The research-teaching nexus is a relationship between agents, both teacher educators and pre-service teachers, and research—both research products and research processes within a teaching-learning institution. It forms the foundation of an ITT programme's structure. The full panoply of ways in which this nexus is manifest, and its impact enhances the effectiveness and quality of teacher education as well as the learning experience, in both on-campus teaching and school placement practice'. The processes by which research is used by teacher educators (the implemented level) is closely linked with and of equal importance to the content stated in module handbooks (the intended level) (Wang, et al., 2023). The latter reveals something about teacher educators' beliefs and values concerning research. Finnish teacher educators, for example, view research as integral to their work and professional identity which

is an indicator of their positive perceptions of it (Maaranen, et al., 2019). Teacher educators bring their experience and knowledge of research to the curriculum design process. Thus, this study explores how, in the context of the academic modules of ITT courses, teacher educators interact with and present research in their teaching of pre-service teachers.

Approaches towards the research-teaching nexus

Fundamental to this topic is how the RTN is manifest in the intended learning outcomes expressed in module handbooks. Schapper and Mayson (2010) make the point that the integration is complex and political and that it is vital to consider different ways it is structured and practised in individual contexts. The design of modules forms the foundation of this integration, with module handbooks stating learning outcomes, specific understandings pursued, and the knowledge and skills that are to be developed (Deakin, 2006). But merely looking at the documents' objectives is not enough to understand the nature of the integration. Teacher educators' epistemologies and how they interpret the objectives play a key role in what happens at the delivery stage, the point of convergence between academic knowledge (for example, research) and knowledge about the relevant communities and contexts (Zeichner, 2010). The RTN work draws upon findings from the literature and the curricula for ITT, and identifies three approaches to developing a successful ITT curriculum (Ofsted, 2019, p.19):

- a joined-up approach to theory and practice,
- integrated inclusivity, and
- a research-informed approach.

In this study, we pay particular attention to the last, research-informed approach, and use the Healey (2005) framework in the Ofsted review. This framework is useful here as it allows meaningful reference through a shared terminology, and it specifically encompasses the role of research in structuring approaches to the curriculum. For convenience, a brief description follows.

Healey's Framework

Griffiths (2004) developed a framework to capture in more detail links between the curriculum and how the curriculum is taught. He concluded that:

1. teaching can be considered 'research-led' when the curriculum is structured around content selected to reflect specialist research interests. This reflects a traditional model of information transmission;
2. teaching might be called 'research-oriented' when the curriculum emphasises the process of researching, with attention focused on the *skills* of inquiry;
3. teaching may be thought of as 'research-based' when the curriculum is driven by inquiry-based *activity*;
4. teaching is called 'research-informed' when the curriculum has systematic inquiry at its heart.

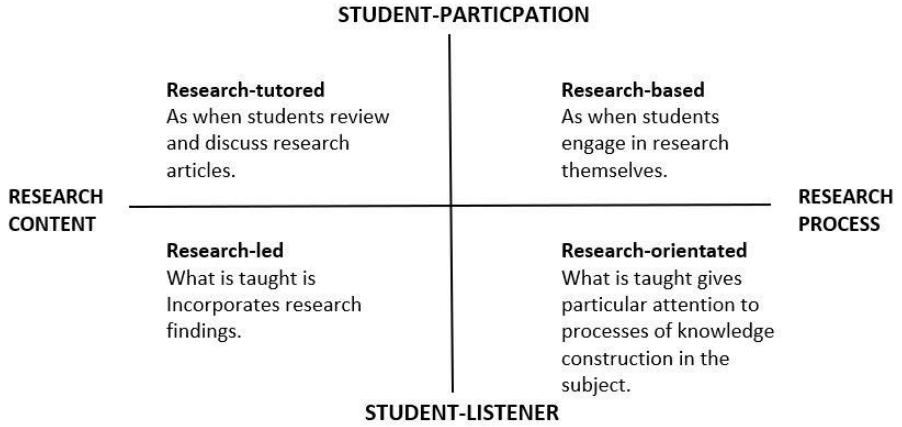

Figure 1: Four approaches towards research-teaching integration Healey (2005).

Based on this, Healey (2005) proposed four kinds of curriculum: research-tutored, research-based, research-oriented, and research-led curricula (see Figure 1.). To the left of the vertical line are approaches where research is seen as a noun and focus on research content. To the right, research is seen as a verb and focuses on the research process and problems. The horizontal line separates two contrasting views of the role of teacher: above are curriculum approaches with students playing an active role, pursuing their own interests and displaying 'student agency' (OECD, 2019). Below are approaches with teachers taking most of the responsibility for the selection and delivery of knowledge. A research-tutored curriculum (in the top-left quadrant), therefore, sees pre-service teachers leading the discussion of research content, while a research-led curriculum (in the bottom-left quadrant) predominantly has teacher educators introducing research content. In a research-orientated curriculum (in the bottom right quadrant), educators teach pre-service teachers about the research process, while a research-based curriculum (in the top right quadrant) puts theory into action by, for example, having pre-service teachers undertake a small-scale research project. With these curriculum approaches as a starting point, Afdal and Spernes (2018) identified four related types of teaching priorities:

- research-led teaching, focusing on learning about current research in the discipline;
- research-oriented teaching, developing research skills and techniques;
- research-tutored teaching, engaging in research discussions, and;
- research-based teaching, prioritising the undertaking of research.

The two quadrants above the horizontal line (research-tutored and research-based approaches) are student-focused. A potential strength is that they can deal directly with the perceived closeness between theory and practice, and between the training institution and pre-service teachers' school placement. From the trainee's point of view, teachers and institutions adopting these approaches can be divided still further into three varieties:

1. the *proceduralist* who uses research to guide what is done but is not concerned with *why* this should be done (for example, showing a functional purpose);
2. the *understanding-oriented* who actively engages with the research from different perspectives to improve practice and who value the research for its own sake for practical reasons;
3. the *education-oriented* who view research as background information (prioritising practice over theory) (Hobson, 2003).

These represent differences in the *meaning* of research, that is, the extent to which it is perceived as distinct and apart from teaching skills or as a potential source of good and informed practice. In academic modules, this can depend strongly on the degree level in which a module falls (either undergraduate or postgraduate). But for the *teaching* approach, the key factor seems to be the teacher educator's research experience (Aspfors, et al., 2021). A possible approach to achieving desired *meaningfulness* as a whole, that is, the coherence between academic modules and the teaching approach, is to link the course assessment directly to the practicum (Allen and Wright, 2014). Thus, in reality, *products* of research (as manifest in research-led and research-tutored curricula and teaching) become a body of knowledge for teacher educators to transmit and articulate a critical orientation to what curricula set out to achieve.

Research-based and research-oriented approaches (quadrants to the right of the vertical line) have been widely applied around the world, including in Portugal (Flores, et al., 2016), the USA (Manak and Young, 2014), and China (Nuangchalerm, 2014). They have appeared in ITT programmes for various disciplines, from history (Martell, 2020) to STEM subjects (Silm, 2017). These approaches encourage systematic inquiry into pedagogical practice in the local context, including through action research and case studies, often (but not necessarily) leading to dissertation-based modules. Pedagogy becomes a site for connecting practice and research, either using research findings to inform or nurture good practice, or generating new knowledge about teaching through pre-service teachers theorising about their own pedagogy (Wang et al., 2023). The right side of the quadrant does not merely discuss the transformation of teaching practice, it *actions* transformation by turning away from simply applying or adapting current theory (Flores, 2018). Thus, the *process* of research, leading to research-oriented and research-based curricula and teaching, is the beginning of a cascade of professional development. It sees pre-service teachers structuring the research process by enacting new ideas and continually translating them into practice to improve their teaching.

A diagonal line drawn from the bottom left (the research-led approach) to the top-right (the research-based approach of Figure 1) charts a path from a static to a dynamic view of research. Nijhawan (2023) described this movement as a progression through the four paradigms of *teaching*, *learning*, *discovery*, and *creation*. Teacher educators' perceptions of these approaches are often based on how they understand their role. Finnish teacher educators, for example, prioritise teaching rather than research and, therefore, the integration of research into their teaching predominantly takes the form of teaching research-based content (Cao, et. al., 2021). The primary concern for these teacher educators is to transmit and assimilate research findings. In their systematic review, Wang et al. (2023) concluded that teacher educators face challenges in addressing the epistemic connections between research and school practice. In this study, we explore the role of research in modules, in teachers' actions and, most crucially, how well these two parts relate.

Method

Our aim is to shed light on the most commonly used approaches to the nexus in undergraduate and postgraduate ITT programmes. Here, we are not particularly interested in the array of specific module design features, but rather we investigate the predominant approaches to integration of research in teaching lying behind module design and pedagogy.

Case Study

Approaches to the integration of research constitute a multi-layered reality in which the influence of module designs and the work of teacher educators are co-constructed and co-generated. We therefore follow Merriam's guidance (Merriam, 1988) on designing qualitative research, emphasising purposive sampling as the way to answering the first two research questions. Merriam (1985, p.206) described the *case study* as 'an intensive, holistic description and analysis of a single instance, phenomenon, or social unit'. Likewise, Goodman (1984, p.10) pointed out that examination of a

singular setting can 'yield insight into subtle areas of educational concern'. The present qualitative investigation adopts a single case-study approach; specifically, it employs Merriam's heuristic type of case study, one intended to increase understanding of the case and to capture its complexity and entirety. Ethical approval was sought and obtained by September 2022 from the Ethics Committee of the university where the authors work for.

Purposive Sampling

The sample selected is a research-intensive university, one with a long history of training teachers at both undergraduate and postgraduate-degree levels. The data was collected during the 2022-23 academic year when the impact of the COVID-19 pandemic on the programme was minimal, with all university-based teaching having return to face-to-face. We conducted two studies: Study 1 was a content analysis of the module handbooks, and Study 2 was a survey of the educators who taught these modules.

Selection of module handbooks

The ITT programmes comprised different academic modules. Each module had a handbook describing aims, learning outcomes, content, structure, teaching methods, assessment, reading, and regulations. The selection included only the compulsory taught modules that all students must complete.

The data collection was conducted through an independent gatekeeper who invited the convenors of the compulsory modules to participate and provide access to their module handbooks. These comprised six undergraduate handbooks (two for each academic year), three postgraduate (one year) handbooks.

Content analysis

The process of content analysis followed that of Cohen, Manion, and Morrison (2007), namely:

Step 1. 'Define the research question(s)' i.e. those listed above;
Step 2. 'Define the population' i.e. academic module handbooks;
Step 3. 'Define the sample to be included' i.e. handbooks for compulsory modules, excluding that for the dissertation module;
Step 4. 'Define the context to generate the data.' We chose to look only at the content part of the module handbooks, ignoring reading lists and parts focusing on logistics;
Step 5. 'Define the units of analysis.' This involved a search for keywords, such as, 'research', 'theor*', and 'literature'. We take these as key words because they can indicate the presence of well-founded, substantiated thinking. Coding (identifying text containing the key words) conducted by two researchers who are familiar with ITT programmes. The keyword, 'research' however, was supplemented with words that contextually had the same meaning (e.g. 'investigation').
Step 6: 'Construct categories for analysis.' Healey's four categories of approach were used.
Step 7: 'Categorise the data' involved matching content selected in Step 4 to Healey's four approaches. This was conducted by one researcher, followed by another researcher with a 25% sample. For example, content such as 'theories and evidence relating to the teaching and learning of English, Mathematics and Science' was coded as reflecting a research-led approach. Into the research-tutored approach category was placed content such as 'developing an informed and critical awareness of research in primary education'. Under research-oriented approach was, 'allowing you to engage in self or small-group study guided by your course tutor'. Content such as 'to enable students to research a small-scale topic or issues of professional interest or relevance through the use of appropriate research strategies' was coded as research-based.

Step 8: 'Conduct data analysis.' The frequency of occurrence of each keyword was noted, as was the number of words in each category/integration approach. Within each category/integration approach, similarities and differences across the four different year groups were noted.

Questionnaire

Participants

Twenty-seven teacher educators returned the survey (a return rate of 90 percent). Female staff formed the majority (19 out of 27). Sixty percent of the participants taught undergraduates and postgraduates, while the rest teach only postgraduates. Twenty-six of these described themselves as having research experience (scholarly activity as a contractual expectation), although some of these were not currently or extensively active. In effect, the participants comprised a mixture of research- and school practice-led teacher educators.

Research Instrument

This research used a questionnaire to measure teachers' perceptions on the use and practice of integrating research into teaching (Arnau-Sabates, et al., 2022*)*, which aims to reveal what teacher educators do to integrate research into teaching and their perceptions of these processes. The questionnaire was designed, tested and developed by the part of the research team based at Universitat Autònoma de Barcelona in Spain, and adapted for the UK and Poland to measure teacher educators' views of the integration of research. There were five sections in the predominantly Likert-scale questionnaire:

1. background information, e.g. years of teaching experience and gender;
2. use and importance of integrating research into teaching (totalling eight items);
3. activities to integrate research into teaching (23 items, including two open-end questions) to identify which of the four approaches were undertaken by the participants;
4. perceptions of initial training in the faculty (four items); and
5. perceptions of research in education and preparation to integrate it (eight items). The findings from Section D and E, and part of Section B, address Research Question 2.1 about the extent to which teacher educators consider integrating research into teaching useful and important. Findings from Section C and a part of Section B answer Research Question 2.2 concerning the activities that are normally used to integrate research into teaching.

The internal consistency of the questionnaire was tested in the Spanish version, with an adequate internal consistency coefficient in the opinion factor (0.69; Blocks B, D, and E) and an excellent alpha coefficient in the activity factor (0.92; Block C). Then, the questionnaire was adjusted and translated into English. The second-round questionnaire was verified through several cycles of validation: (1) within the research group in Spain, the UK and Poland respectively to check the content and language comprehension; (2) among external experts in the field to reflect what they thought each item was asking them to consider; and (3) by academics from three locations, i.e. face validity. The normality test shows a non-significant result, 0.90, which indicates normality. The Cornabach alpha coefficient was reported at 0.93, and the inter-item correlation was 0.19. This suggests that there is no strong relationship among the items.

Results from Study 1: Content analysis for module handbooks

Overall distribution

Table 1. shows how frequently the keywords, such as 'research', 'theory', 'theoretical', and 'literature', were mentioned in each undergraduate module handbook. Across undergraduate modules, the number of the keyword mentions is similar in each year, but the postgraduate modules use the keywords more often (Table 2.).

Table 1. Overall distribution in undergraduate modules.

Cohort	Module 1	Module 2	Total
UG Year 1	10	4	14
UG Year 2	6	10	16
UG Year 3	9	5	14
Total	25	19	44

Table 2. Overall distribution in postgraduate modules.

Module 1, targeting curriculum	Module 2, targeting students	Module 3, targeting subject specific pedagogy	Total
8	17	37	62

The sentence containing each keyword was categorised as reflecting one of the four approaches established by Healey (research-tutored, research-based, research-oriented, or research-led curricula). Figure 2. shows the distribution of sentences reflecting the different approaches. The key difference between undergraduate and postgraduate levels, then, is that the predominant approach shifts from employing research-tutored to research-led curricula. However, both research-tutored and research-led approaches emphasise research content. In the next section, therefore, it is worth examining these two predominant approaches in more detail.

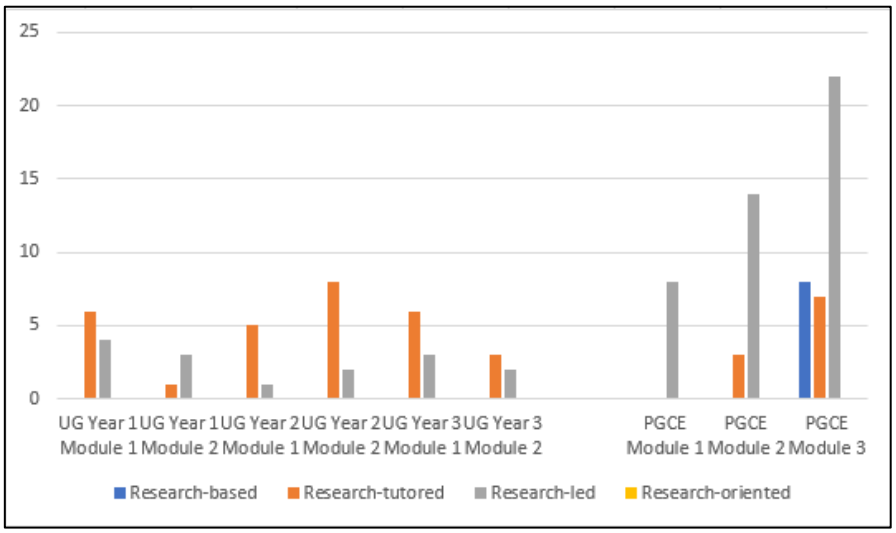

Figure 2. Evidence of each approach contained in module handbooks.

Predominant approaches

Research-tutored approach

There is evidence that a research-tutored approach predominates across modules at the two degree levels. This approach facilitates students' critical engagement with research, but in different directions as training progresses. At postgraduate level, it mainly means to 'understand' research methods and their application, to 'analyse and evaluate', and to 'reflect on' the literature. Hence, the emphasis is the process of the research. In the third year of undergraduate study, however, passages reflecting this approach highlight the aim to 'study the findings from research', to 'develop an informed and critical awareness of research', and to 'relate educational practice to theory'. The emphasis, therefore, is making connections unidirectionally, the interest being in how to relate research findings to pre-service teachers' practice, with research being used as a stimulus and source in the changing of

preconceived notions. Second-year undergraduate modules introduced important aspects of education theory and expected pre-service teachers to understand research pertaining to particular issues, such as Special Educational Needs. These modules offer space to discuss the issues critically.

In summary, a four-layered, research-tutored approach built up across the undergraduate and postgraduate modules offers four complementary ways for pre-service teachers to engage actively with research as a product:

- The postgraduate layer: engaging with the research process;
- The third-year undergraduate layer: using research as a stimulus and source for changing preconceived notions, relating research findings to practice;
- The second-year undergraduate layer: engaging with key educational theories, and understanding why these are key issues;
- The first-year undergraduate layer: being aware of the gap between research findings and practice, and making sense of practice via research findings.

The Research-led approach

Research-led approaches offer what can be a rare opportunity for staff working on modules to link their own research to theory and practice. The postgraduate modules featured lectures on areas such as intelligence and self-efficacy. A general message is that the quality of research findings should not be assumed without an understanding of the research field. Pre-service teachers were encouraged to question the extent to which research findings can be trusted and generalised. One key thread was the centrality of 'theoretical underpinnings' and opportunities to 'promote theory-practice links and clarification'.

The third-year undergraduate modules reflected on research about subject-specific pedagogy. For example, teaching for mastery has been a prominent pedagogy advocated in England. In the second-year undergraduate modules, research evidence used in the classroom mainly concerned teaching practice and focuses on the core subjects of English, Mathematics, and Science. Areas covered included English as an Additional Language, concepts of race and ethnicity, and deep dives into classroom practices. In the first-year undergraduate modules, research areas such as curriculum, assessment, creativity, and engagement were introduced.

In summary, a four-layered research-led approach across undergraduate and postgraduate modules offered four ways for teacher educators to structure the curriculum:

- The postgraduate layer: drawing on research findings in the field as a whole alongside lecturers' own research, as well as research methods and ethics;
- The third-year undergraduate layer: focusing on subject-specific pedagogy;
- The second-year undergraduate layer: bringing evidence into the classroom, especially for English, Mathematics, and Science;
- The first-year undergraduate layer: discussing generic aspects such as curriculum, assessment, creativity, and engagement.

Results from Study 2: Teacher educators' views

Perceptions of integrating research into teaching

Perception 1

Importance of integrating research into university-based teaching (findings from Block B).

Most of the respondents viewed integrating research and teaching as 'important' or 'very important'[1]. The participants strongly agree on the importance of students reading and discussing research material, that is, engaging with the products of research (with a mean rating of 1.33). There are similar scores for the importance of students acting as researchers and undertaking their own research, that is, engaging with research processes (mean 1.59), participating in basic research training (mean 1.74), and interacting with other researchers (mean 2.15).

Perception 2

Readiness to integrate research into university-based teaching (findings from Block D).

This perception concerns what teacher educators consider to be the role of research. All of the participants either 'agree' or 'totally agree' that it is useful for making educational decisions and solving problems, that it plays a facilitating role for critically reflecting on teaching-learning perspectives, and that it improves professional practice. Likewise, all either 'agree' or 'totally agree' that 'to research' (as a verb) represents a learning opportunity and generates knowledge. All disagreed with the suggestion that research might be disconnected from professional practice.

More than half of the participants (15 out of 27) hold a neutral position on whether their students are equipped to have careers in research, and 19% of them (5 out of 27) think their students are not prepared to become researchers. Two thirds (18 out of 27) believe that they are 'totally prepared' or 'prepared' to integrate research into their teaching, with the rest feeling they are 'not well prepared'.

Perception 3

The purpose of the initial teaching training programme as related to research ability (findings from Block C).

Overall, the participants 'totally agree' that training must equip students with a critical vision of the field (mean score 1.2) and with knowledge of up-to-date research and its contributions (mean 1.4). On the other hand, almost all participants (26 out of 27) 'totally disagree' or 'disagree', that training outcomes are only orientated towards the professional side (for example, concerning teaching in the classroom). They pointed to a need to include activities to develop students' research competence in its own right. In contrast to these strong views, the participants generally 'agree' that training programmes should prepare students to carry out research of some kind in the future (mean 2.0). Nearly one fifth (19%) of the participants held a neutral view about the importance of research within the training programme and one participant disagrees that it is important.

Activities integrating research into teaching (findings from Block A)

When to use research.

Results in this section concern seven aspects of the utility of research in teaching, which we present in three layers:

1. When designing and planning activities teacher educators display a high degree of agreement with the statement - when designing and planning teaching, they integrate research activities (with a mean score of 1.79). This result closely matched responses concerning the use of research results in developing the content (mean 1.8). This points to a high level of use of research results to guide designing and planning.

[1] 1 = very important, 5 = not very important.

2. When deciding to include either quantitative or qualitative research results that teacher educators use in teaching, qualitative results (mean 2.1) emerge as slightly more common than quantitative results (mean 2.3). This suggests that these teacher educators are inclined to draw on research products in their teaching more or less regardless of their nature.
3. When research is used in personal teaching improvement, they conduct research in relation to the module they teach (mean score 1.9). There is a slightly lower incidence reported for research specifically aimed at improving their own teaching practices (average score 2.6).

These three layers illustrate what teacher educators do with research in their teaching preparation, and they point to the primacy of using research findings to develop teaching content (as opposed to using the research process to improve teaching).

What these activities are used for
Respondents were asked what activities they do, and how often their students do particular sorts of (research) activity, answering 'never', 'occasionally', 'each academic year' or 'not applicable'. Results showed the following four patterns:

Pattern 1: Choice of activities showing research-tutored tendencies
Questions on this topic concern respondents' expectations of their students at the individual level. Answers show a high level of consistency. The participants generally expect their students to engage in various kinds of research-related activity on a regular basis, suggesting a wide acceptance that students must develop skills of searching, reading, explaining, discussing, and critiquing research. Concerning the range of research, participants comment on enriching and bringing breadth to students' learning by, for instance, asking them to read articles focused on teaching English as an Additional Language (EAL) pupils.

Pattern 2: Choice of activities showing research-led tendencies
Activities that these educators provided tend to involve:

1. researchers contributing directly (63 percent);
2. students communicating research to others (61 percent), and
3. students participating in conferences or forums (76 percent).

This suggests that these participants were favourably inclined towards these three kinds of activity, integrating them into the normal teaching. Participating in research projects (52 percent) occurred only 'occasionally', and nearly one third of the educators 'never' took opportunities to collaborate with other researchers. As might be expected, educators may draw on their own scholarly activity to inform their teaching. One noted that 'I used some PhD findings in a lecture on motivation and engagement', and another mentioned using his/her published teaching package.

Pattern 3: Choice of activities showing research-based activities
Participants reported that most activities are used annually. The most common is undertaking various research tasks (with 92% of participants). Specifically, 76% asked their students to undertake fieldwork, meaning conducting research away from university premises, while 84% emphasised analysing and interpreting data. One provided examples of tasks given to students. For example, they were to construct 'a 10-slide presentation [about] their ideas and findings', and 'to create a portfolio of evidence for an essay'. The activity least used was designing research projects (68%).

Pattern 4: Choice of activities showing research-oriented activities
Participants also report the frequency of the following activities:

1. Conducting a literature review.
2. building theoretical foundations for research,
3. creating data production tools,
4. analysing quantitative and qualitative data, and
5. interpreting research data.
6. This gives a glimpse of the activities incorporated into the research project cycle. About half of the participants (49%) stated that each of these was practised annually, although creating data production tools was reported as used only occasionally. (These referred to software and related training courses.) Nevertheless, one comment was: 'I often show the students how they can use websites and apps in their research, such as using Facebook to gain larger sample sizes, Mentimetre, Jamboard, etc'.

Discussion

This case study explores the role of research in a research-intensive university's ITT programmes through the lens of expectations summarised in module handbooks (Research Question 1.) and through what teacher educators think and do (Research Question 2.). The undergraduate ITT programme moved through different aspect of research as it progresses (Table 5.). Individual experiences in practice become a foundation for understanding research, starting from generic aspects of education in the first year of training, then moving on to core subjects, and finally pushing the boundaries between current thinking and research findings during the final undergraduate year. Using diverse aspects of research in pre-service teachers' learning experiences probably signals to the students that engaging with research is valued seen as relevant to school teaching practices.

Table 3. Two curriculum approaches.

	Research-led approach	**Research-tutored approach**
The postgraduate layer	Drawing on research findings in the field as a whole alongside lecturers' own research, as well as research methods and consideration of ethics.	Engaging with the research process.
The third-year undergraduate layer	Focusing on subject-specific pedagogy.	Using research as a stimulus and source for changing preconceived notions, relating research findings to practice.
The second-year undergraduate layer	Bringing evidence into the classroom, especially for English, Mathematics, and Science teaching.	Engaging with key educational theories, and understanding why these are key issues.
The first-year undergraduate layer	Discussing generic aspects such as curriculum, assessment, creativity, and engagement.	Being aware of the gap between research findings and practice, and making sense of practice via research findings.

Findings from the point of view of teacher educators illustrated that research is emphasised in terms of its products, that is, content taught to pre-service teachers. This content shows evidence of research being present in the background, helping to facilitate pre-service teachers' professional development. Perhaps as might be expected, it stopped short of the point where pre-service teachers could be expected to progress independently towards being researchers. Teacher training is, after all, primarily concerned with preparation for successful teaching 'at the coalface' rather an apprenticeship in research. This study reflected this reality. ITT programmes, therefore, are like a research-readiness egg being laid but not yet hatched. This egg needs an incubator where research ability can be nurtured

as it grows to maturity. Perhaps the contribution of Higher Education Institutions to the professional life of in-service teachers could help to take it further.

To answer Research Questions 3. we examine how the two predominant curriculum approaches, research-led and research-tutored approaches, are realised in teacher educators' practice. In research-led approaches, the core characteristic of the engagement between research and university-based sessions is that it challenges and inspires pre-service teachers to incorporate current thinking by emphasising reading and peer discussion and through facilitating participation in 'in house' conferences or forums organised by the programme. On the other hand, research-tutored approaches advocate certain cognitive patterns: belief in data, and the extensive use of empirical methods. This introduces pre-service teachers with a reflective vision of research and with the knowledge of up-to-date research findings. Underlying this way of thinking is a belief in the value of timely objectivity, well-founded knowledge, and especially a sensitivity to its limits in classroom application. Generalisability, for instance, is a rare outcome of research about people, and students often need to apply Bassey's (2001) notion of relatability, adapting research findings to suit the unique contexts in which they practise.

Conclusion

Resting on a particular case study, this work, by its very nature, relates to the activity of one institution. But, of course, many other institutions engage in teacher training and face similar expectations. Clearly, a case study is unlikely to generalise in its entirety to other institutions' activities but, again, Bassey's notion of 'relatability' is relevant here (Bassey, 2001). Others engaged in teacher training should be able to reflect on and relate the findings, to a certain extent, to their own contexts. In that way, the study may inform thought and practice about the research-teaching nexus and open conversations about if and how it needs to develop.

Many who wish to become teachers in schools may feel little need to develop a high level of expertise in research, perhaps reinforced by the attitudes of the practitioner's disregard for theory in favour of experience-led practice. Educational research, however, has the potential to explain, inform, predict and improve practice, particularly when attention is given to students' thinking, bridging the theory-into-practice gap. 'Research-led' approaches which lean in this direction have some potential in this area. 'Research-tutored' approaches, on the other hand, may be used to confront conscious and unconscious beliefs about education and learning, and shape students' notions of education, its goals, and their identity as teachers. The two approaches are not mutually exclusive; a judicious blend of both may satisfy a variety of outcomes, especially for those teachers who go on to enjoy some freedom of practice and whose contributions to educational debates are valued.

Declaration of interest statement

The authors report there are no competing interests to declare.

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