

RESEARCH METHODS PREPARATION IN THE
FACULTY OF EDUCATION

INVESTIGATIONS INTO THE RESEARCH PREPARATION OF
MASTERS STUDENTS FOR INDEPENDENT STUDY (RPIS)

Gavin T L Brown, PhD; Principal Investigator

Research commissioned by the Dean of Education and ex-Head of School of Education in consultation with the

Research Preparation for Independent Study Advisory Group:

- Dr Graeme Aitken (Assoc Dean Academic),
- Dr Mavis Haigh (HoD Postgraduate Programmes), &
- Dr Mary Hill (Assoc Dean Research).

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One of the academic understandings that formed the basis of the merger of the Auckland College of Education and The University of Auckland, School of Education to form the Faculty of Education was that evidence-based research would inform faculty teaching. For three years prior to the merger, the School of Education and Auckland College of Education had cooperated in offering postgraduate programs through the Institute of Education. During this time, the role of research methods courses became a source of discussion. They were made compulsory in the new qualifications but the Institute was faced with requests to include a range of courses within the 'research methods approved' category. This gave rise to discussions about the purposes of the regulations and of the research methods courses themselves. It was generally agreed that they were 'required' because of the preparation they offered for independent study for either a thesis or dissertation. However, the criteria for evaluating the suitability of particular courses remained ill-defined. In response to these emerging concerns and with the intention of promoting high quality research within the Faculty, it was decided to formally evaluate the quality of research preparation provided by the Faculty.

Thus, from September 2005 to December 2006, a series of studies and investigations into the preparedness of masters students in the Faculty of Education for independent study was conducted. The research was commissioned by the Dean of Faculty and the former Head of the School of Education, City Campus. The studies were designed and conducted by Dr Gavin Brown and a research advisory group consisting of the Head of Postgraduate Programmes and the Associate Deans of Research and Academic. All studies were conducted with the approval of the Human Participants Ethics Committee (Ref. Numbers: 2006/Q/004 and 2006/207) and data were collected through voluntary participation of the faculty's staff.

The major goal of the studies was to inform the review of research methods courses and curriculum within the Faculty, and contribute to decision making about future regulations for masters level research preparation. The involvement and cooperation of the Faculty masters supervisors was sought in an initial meeting held in November 2005 where it was agreed a multi-project process should be undertaken. Three studies were proposed and undertaken:

- (1) a review of (a) current regulations and research methods provision in the Faculty of Education and (b) literature on the preparation of masters students in education for independent research;
- (2) a survey of supervisors' opinions about requirements for and responses to identified needs; and
- (3) surveys of student satisfaction and current quality of assessed student performance in research methods classes. It should be noted that due to low levels of participation this group of studies could not be completed and are not reported here.

This report brings together the literature and regulation review studies and the supervisor survey studies and provides discussion points to assist decision making within the Faculty of Education about provision of research methods instruction.

Current regulations & requirements in the Faculty of Education

In late 2005, the 2005 UoA Calendar, RAP 02 Restructuring Amendment 2006/101 Faculty of Education New Regulations for 2006, and the UoA Transition Regulations Handbook 2006 were consulted to determine current regulations and current provision of research methods instruction. The Faculty of Education has a number of routes into post-graduate study and a number of different levels of post-graduate study options.

Arts

There are two types of post-graduate study (below the doctorate level) in the ARTS faculty related to the study of education. The first is BA HONS which requires a BA degree completed with a B average or higher in 45 points in Education above Stage II. Students who wish to do a masters by research need to take a research methodology paper as part of the BA Hons in Education. The second is MA in Education which requires a BA HONS (2nd class Honours, 2nd Division minimum grade) for entry. The MA can be completed either by Research (Research Portfolio or Thesis) or by taught papers. The first option requires completion of thesis or a research portfolio, while the second permits students to take 700 level papers in an educational area of their choice. Although not precluded from entry to doctoral studies, few such candidates would have completed the taught masters only.

Education

Studies towards professional teaching qualifications constitute the bulk of the qualifications offered by the Faculty of Education. These include various undergraduate degrees (e.g., BEd (Tchg), BEd (TESOL), BEd (ECE), BPE, BEd (Hons), etc.), post-graduate diplomas (i.e., GradDip, PGDipEd, PGDipEdMgt), and post-graduate degrees (masters) (e.g., MEd, MEdMgt). Of interest to this investigation are the entry requirements to the post-graduate diplomas and degrees which have independent research within them (Table 1). Professional qualification as a teacher or similar, 3 or more years relevant experience, and a B grade average are required for entry to the masters (e.g., a B average in PGDipEd or BEd (Hons) degree). The various MEd degrees can be completed either through research track (by thesis or dissertation) or through taught papers. The BEd (Teaching)(Hons) can also be completed either as a research portfolio option or a taught option..

Current Research Methods Provision

The courses that provide research methods preparation are listed in Table 1 with the level of the course and its status. Note for postgraduate degrees, only courses that lead to research thesis track are listed. Although there is a selection of courses, most are optional and few are offered every year because of low enrolments or lecturers not being available. Thus, it may be concluded that the majority of students arrive at independent research with only 30 credits completed in research methods. Since research methods is a huge field, it is assumed that the majority of students obtain only a cursory introduction to research methods through the 30 credits they are required to complete prior to commencing their independent research. Thus, it would seem that most students learn their methodological craft 'on-the-job' directly from their supervisors while conducting their research.

Table 1 *Faculty of Education Research Methods Preparation Provision*

Degree/Diploma	Papers	Status
Undergraduate		
BEd (Tchg)	Educ314	optional
BPE	Educ335	optional
BEd (Hons)	Educ789	compulsory
BA	Educ380	optional
Post Graduate		
MEd	EdProfSt756; EdProfSt757A & B; EdProfSt700; EdProfSt788	Optional (30 credits required)
MA	Educ 727; Educ774; Educ777; Educ787	Optional (30 credits required)

However, this review of regulations and research methods preparation provision did not establish the level of skill, knowledge, or understanding either expected by faculty or attained by students. Thus, the project moved to a survey of faculty masters supervisors' expectations and recommendations concerning research methods preparation.

Note that the Faculty of Education does provide research methods instruction for masters in social work—this aspect is excluded in this document. However, it is assumed, though to be proven, that issues of research methods in a practice-profession apply equally in teaching and social work.

Review of Literature on Research Methods Preparation of Masters in Education

The purpose of this section is to review the literature about the preparation of postgraduate education students for independent research at the masters level. Although every supervisor of masters thesis students will have expectations as to what a student needs to know, understand, or be able to do prior to commencing the independent research, we had little public consensus as to what those expectations were or should be. The literature is largely focused on social sciences in general and the doctoral level specifically, from which inferences about education students might be drawn. This review is organised around three major topics; first, a description of the postgraduate research preparation context in education with a discussion on the competing purposes for that research preparation. Second, the main recommendations for the design of effective research preparation programs are reviewed. Finally, means and resources for the evaluation of research preparation effectiveness are described.

Methodology

A search of the empirical education literature was conducted using the ERIC database. The first group of searches identified literature around the preparation of postgraduate students in research methods. Boolean descriptor searches used the terms: HIGHER EDUCATION and TRAINING and [RESEARCH METHODOLOGY or RESEARCH PROPOSALS or RESEARCH DESIGN or RESEARCH PROJECTS or RESEARCH SKILLS] with results limited to years 1990 to 2005. From a total of 90 citations found, abstracts and titles were used to select those most likely articles. Additional searches used descriptors and titles: (a) descriptors--RESEARCH and GRADUATE STUDY and [DEGREE REQUIREMENTS] or [MINIMUM COMPETENCIES or STANDARDS]; (b) titles (with truncation)--[MASTER* or POSTGRAD*] and RESEARCH and [SKILL* or ABILIT* or KNOWLEDGE].

Another group of searches focused on the research skills or needs of practicing teachers for effective functioning in their professional practice. Multiple Boolean searches using abstracts, descriptors, abstracts, and keywords (using truncation) with the following terms were used: [REQUIR* or EXPECT* or STANDARD* or BENEF*] and [TEACH* or SCHOOL* or EDUC*] and [RESEARCH] and [METHOD] and [SKILL* or KNOWL* or ABIL*]. Additional citations were found through the reference lists of the selected articles and through correspondence with current researchers in the field. A total of 81 sources are used.

These searches have excluded examination of university calendars or course descriptions and guides for the preparation and completion of research theses. Those documents are a large literature expressing craft knowledge and experience rather than empirically validated research on the research methods preparation requirements for successful independent research at the masters level.

Students, contexts, supervision, time and purposes

To understand the issues of preparing postgraduate education students for independence in research, it is necessary to examine who the students are, where the preparation is taking place (i.e., contexts), how the preparation takes place (i.e., supervision), the time constraints being imposed, and the various purposes for research methods in education.

Students

Candidates entering postgraduate research preparation in education are generally certified or licensed practitioners who are competent professionals in the classroom. This context is like the research preparation of practicing counsellors (O'Brien, 1995; Peacock, 2001) or distance educators (Jones & Cleveland-Inners, 2004) and is quite different to that of 'hard' science disciplines (Eisenhart & DeHaan, 2005); and quite possibly different to that associated with many other Arts disciplines. In the latter situation, postgraduate students, as part of their undergraduate education, would already have had experience of directed research studies and many opportunities to learn and practice basic methods of research in their disciplines (Eisenhart & DeHaan, 2005). In contrast, the counselling and education practitioners, upon entry to postgraduate research, will most often have worked and become experienced, competent professionals in fields that require high levels of interpersonal and social skills where 'craft' or experience-based knowledge is most highly prized (Eisenhart & DeHaan, 2005; Labaree, 2003; Leder, 1995; O'Brien, 1995). Many practice-oriented applicants have a limited understanding of and expertise in the steps of the systematic and rigorous research process; typically they have had little or no undergraduate preparation in research design or data analysis (whether it be quantitative or qualitative), and lack knowledge of the epistemological foundations for social science research (Jones & Cleveland-Inners, 2004). Even business administration students at the masters level are increasingly not arriving with the mathematical skills needed to learn quantitative research skills in MBA programs (Albright, 1996). A case study of a graduate school of education at the University of West Australia reported that "students often have little exposure to research or a research base for educational practice. Their postgraduate education needs therefore to imbue them with a sense of how people conduct educational research and how it informs the practice of teaching" (Zubrick, Reid, & Rossiter, 2001, p. 119).

It has been suggested by some that teacher education does not produce in certified teachers the analytic turn of mind needed to do inquiry (Lampert, 2000; Lortie, 1975). Labaree (2003) argued that there is an intellectual segregation in education between systematic inquiry and the practice of personal teaching truths that are immune to the research-based teaching truths. Lampert (2000) has suggested that this phenomenon is in part attributable to the individualistic nature of teaching practice, the dearth of time to examine one's own practice, and a lack of political insistence that teachers examine their own practice. Others have suggested that teachers do not use research-based evidence to evaluate and improve their educational practices so that student outcomes are raised, partly because research has not been successfully translated into useful information for teachers (Burkhardt & Schoenfeld, 2003; Hiebert, Gallimore, & Stigler, 2002). Page (2001) described the students in her school's doctorate program as being naïve about the nature of research—the students assumed real research was positivistic, that qualitative methods were friendlier and more enlightening, while quantitative methods were daunting and difficult. If teachers do lack appropriate personal attributes, prior education, or an appropriate mindset towards conducting research, then any research methods preparation will need to take into account these realities. The failure may well be the prolonged and artificial separation of the practice and research communities (Hiebert, Gallimore, & Stigler, 2002; Labaree, 2003).

This places such students at a disadvantage when research requires them to engage in theoretical, propositional, or analytic knowledge (Eisenhart & DeHaan, 2005). Additionally, research in social science and education is often very individualistic, unlike the research team oriented projects associated with hard sciences (Collinson, 1998). There is a considerable lack of financial support for education doctoral students

compared to other disciplines (Eisenhart & DeHaan, 2005; Pellegrino & Goldman, 2002). The argument is also made that such practice-oriented professionals learn best by doing (Knight, 1997b), though at the same time candidates are expected to learn theory or academic knowledge as well as practice—a difficult proposition.

In addition, postgraduate education for professionals has been focused on meeting or responding appropriately to their occupational needs; that is, being ‘relevant’ not theoretical from the students’ perspective (Athanasou, 1997; Garner & Wallace, 1997). Relevance rarely seems to include research methods. In fact, the pressure to ensure research methods preparation is relevant to students is that the preparation becomes highly procedural (i.e., students learn how to do a procedure without understanding why or how the procedure works); this situation means that intellectually curious students have to be referred to advanced courses (Albright, 1996). Moreover, not surprisingly, a relevant research preparation program may fail to produce students ready to undertake independent research—if students do not know how or why a procedure works; their preparation will probably not prepare them for some new wrinkle in their own research that was not addressed in the procedural ‘relevant’ program.

Labaree (2003, p. 16) captured well the fundamental tensions involved in bringing practice oriented teachers into the researcher community: “the shift from K-12 teaching to educational research often asks students to transform their cultural orientation from normative to analytical, from personal to intellectual, from the particular to the universal, and from the experiential to the theoretical”.

Contexts

In addition to the personal differences for postgraduate students in education, significant changes in the structure of tertiary institutions and social expectations have taken place. Non-university tertiary institutions (e.g., polytechnics and colleges of education) have been amalgamated into research universities creating a great deal of pressure on the faculty and students to engage in research (Athanasou, 1997; Gold, Gold, & Reville, 1997; Labaree, 2003; Leder, 1995; Turpin & Curtis, 1995). It may well be that in such institutions the faculty may not themselves have written a postgraduate dissertation, having largely focused on preparing students for employment in a profession (McMichael, 1993; Middleton, 2001). The development of course-work based postgraduate programs, in part to cater to the needs of working professionals, has reduced enrolments in research-oriented masters and doctorates (Athanasou, 1997; Connell, 2004; James & McInnis, 1997; Knight, 1997b; Turpin & Curtis, 1995). There are powerful benefits (e.g., promotion, pay increases) to students in the workplace for completing higher qualifications such as the masters whether the degree contains a research component or not (Athanasou, 1997). Other significant changes in tertiary education (e.g., increased enrolments, higher teacher-student ratios, and a larger proportion of part-time enrolments) have increased the difficulties in graduating students who produce original and substantial contributions to a discipline (Gold, Gold, & Reville, 1997; Leder, 1995; McMichael, 1993). Further, governments and universities have tightened the time allowed to complete postgraduate degrees, putting significant pressure on the ability of students to master the competencies expected from having completed research methods preparation (Collinson, 1998). It should also be noted that the research agenda is becoming less oriented towards pure science and ‘blue-sky’ research and much more focused on answering political, economic, or social agendas (Turpin & Curtis, 1995).

Partially in response to these new directions or purposes for research preparation and certainly in response to the greater number of post-graduate students coming

through tertiary institutions a variety of new course structures and curriculum changes for initial researcher preparation have been introduced (Connell, 2004). These have included professional masters courses, new coursework elements, shorter programs, a focus on reducing completion times, work experience in trans- and multidisciplinary teams, and, especially in doctoral programs, a conscious vocational orientation with work experience in teaching as well as industry (Connell, 2004). Thus, the masters degree can be understood in multiple ways: for example, it may be seen as the 'Baby Doc' degree mimicking the requirements of the doctorate at a junior level, it may be the 'Consolation Prize' for those who fail or choose not to finish a doctorate, it may be the 'En Passant Prize' for those successfully working towards the doctorate, it may be the 'Promotion Ticket' to be finished at lowest possible effort to maximize promotion or remuneration opportunities, or it may be the 'Professional Development' tool to improve the quality of the candidate's practice. Academics and practitioners may have significantly divergent opinions as to the desirability of these ends but these competing goals or conceptions support the contention that no one research methods course at the postgraduate level can fulfil all these possibilities.

Supervision

Under the British approach to postgraduate study implemented in New Zealand and Australia (Evans, 1995; Middleton, 2001), masters thesis or dissertation research preparation is modelled on an apprentice relationship with a supervisor (Evans, 1995). What this implies, is that regardless of any course-work completed by the student prior to the thesis research, the real work of preparing students in research methods is done by the supervisor in the course of the student completing the research work. In this approach, expectations around preparation for independent study may be much more focused around personal skills or attributes rather than around methodological knowledge or expertise. The supervisor, having taken on responsibility for methods training during the research process, may only expect that the student knows the basics of data collection and analysis, have theoretical competence in the domain being investigated, and have good skills at writing and literature searching. Within this approach to research methods preparation, the student must be able to relate well with the supervisor and be independently competent at setting and meeting goals and timelines. Thus, supervision may be the main method of equipping students with methodological competence and make explicit research methods preparation irrelevant.

Although the majority of the literature on supervision relates to doctoral degrees, the issues of supervising novice researchers are assumed to be constant regardless of level. Considerable attention in addressing the issue of student preparedness for independent research has focused on improving the quality of the supervision as well as any changes to the nature of research preparation (Blume, 1995; McMichael, 1993; Rodrigues, Jr., Lehmann, & Fleith, 2005; Shannon, 1995). More recently, the apprentice-master model has been challenged by a view that there is a contractual relationship between a consumer and a service provider, which raises interesting issues about what is expected by and through research preparation relationships (Blume, 1995; Garner & Wallace, 1997).

Reported exploitation of research candidates by supervisors has included making them do low-level research work or large amounts of unwanted teaching (Blume, 1995); let alone the disastrous consequences of simply ignoring them or expecting them to teach themselves (Middleton, 2001; Rodrigues, Jr., Fleith, & Alves, 1993). The student's experience of the apprentice-supervisor relationship is often unsatisfying in part due to the narrowing effect of a supervisor's interests and preferences (Leder, 1995). Further,

students may also be frustrated by the lack of social interaction and emotional support from their supervisors (Leder, 1995; Rodrigues, Jr., Fleith, & Alves, 1993).

Supervisors themselves have identified issues of concern, including interpersonal relationships with students, management of the dissertation, the academic knowledge and skills required of supervisors, the student's level of academic preparedness, the student's level of teachability, and the level of institutional support available (McMichael, 1993; Rodrigues, Jr., Fleith, & Alves, 1993). An interesting tension is the demands placed on supervisors by fee-paying international students with weak command of the language of instruction (Gold, Gold, & Revill, 1997). Likewise, postgraduate students in education are about the same age as their supervisors, may be earning more than their supervisors, and may be studying only part-time; these create an interesting set of tensions between student and supervisor (Anderson, 2002; Evans, 1995; Labaree, 2003; Shulman, Golde, Bueschel, & Garabedian, 2006). In New Zealand, where many university education lecturers are experienced classroom teachers, there is an additional tension of having a supervisory relationship with one's own colleagues (Middleton, 2001). A significant tension exists for supervisors about how to ensure that students take charge of and responsibility for the management and the content of research while ensuring that the work meets the expected standards and the required time constraints for completion (Anderson, Day, & McLaughlin, 2006; Rodrigues, Jr., Lehmann, & Fleith, 2005). It has been suggested that highly effective supervisors are capable of detecting and responding appropriately to early warning signs of student failure (Manathunga, 2005); appropriate strategies included provision of personal guidance, regular and individualised supervision, using a scaffolded pedagogy to focus learning on the student's personal and professional development, building of a student's confidence, and providing students access to research cultures.

As can be seen by this brief review, that the supervisor-student relationship is a complex and fraught one. Thus, reliance solely on the supervisor to provide research methods instruction is probably misplaced. Nevertheless, if this model is the dominant paradigm, then it likely to have significant impact on what supervisors expect as indicators that students are adequately prepared for independent research at the masters level.

Time

Whatever the research preparation mechanism provided, developing any set of meaningful research skills, knowledge, or understanding takes time. Two major models of competency in research have been used to define what is expected because of research preparation: personal attribute models and outcome models (Collinson, 1998). The personal attribute approach locates research competency in the personal possession of required levels of skill or knowledge and has led to the design of preparation programs that identify generic skills, core skills, and subject-specific skills/knowledge. An outcome model of competency focuses on the functions that are met in actual performance of work tasks or specific function of an occupational role. However defined, reaching research competency requires significant time and practice opportunity (Collinson, 1998). The apprenticeship model of serving time with gradually increasing responsibility under the mentoring of a master is the mechanism most used in postgraduate research preparation (Collinson, 1998). Becoming competent, even if the standard for the masters does not include originality and substance, in research methods in the short time allotted to the research masters will be challenging (Collinson, 1998; Rodrigues, Jr., Fleith, & Alves, 1993).

Purposes for postgraduate research preparation

Another significant aspect in examining what can or should be expected of masters students preparing for independent research is the growing debate as to the very purpose or nature of postgraduate research preparation. There are competing goals and purposes that complicate the design and delivery of research preparation at both the doctorate and masters levels. Again, the literature is primarily focused on advanced research preparation, at the doctorate level, however, this material is considered relevant for this report since it is likely that purposes are similar despite differences in degree of sophistication in the masters and doctorate degrees.

Doctoral research was traditionally a means of preparation for employment in academia as a researcher/teacher or in specialist research institutions (Blume, 1995; Connell, 2004). Further, the doctorate represented a licence to speak on behalf of the profession (Middleton, 2001). In social sciences, the doctorate degree represented “a mid-career peak achieved after many years of isolated labour”, whereas in the hard sciences, the doctorate was received early in the career as an indication of the candidate’s ability to conduct research (Shannon, 1995, p. 12). More recently, career destinations for researchers have extended to industry (Connell, 2004; Shannon, 1995), where many industrial employers may prefer candidates not to have completed a PhD but rather take those with masters and then provide in-house preparation (Blume, 1995). It has been suggested that there is a decreasing number of full-time academic positions for an increasing number of research graduates and that the classical doctorate research preparation does not provide appropriate and adequate preparation for the university teaching role or the ability to function in non-academic employment (Metcalf, Thompson, & Green, 2002; Shannon, 1995). The deficiency of research preparation may be due in part to its purpose; the objective of producing substantive and original research may not deliver employable research skills (Blume, 1995). To join the university faculty, who teach a discipline, required research and evaluation skills, while membership in the profession that carries out the functions of the same discipline did not necessarily require research and evaluation skills (Beatty & Stamatakos, 1990). Thus, it may be that non-academic and non-research institute employers do not require employees to have the ability to conceive and conduct original research over a period of time.

Masters programs face similar purpose tensions. This is acknowledged in that there are two main types of masters degrees in the British system: research and taught. The latter type of degree does not require that students complete a research dissertation or thesis. Indeed, preparatory to the masters, universities are now providing lesser postgraduate qualifications (e.g., Postgraduate Diploma in Education) in which even preparation for research may be absent. Such qualifications may entitle holders to salary increments and thus contribute to a significant decline in enrolments in those progressing to masters degrees of any type. Thus, three communities of interest exist around the purpose of the masters degree: the needs or wishes of the students, the priorities of pertinent professional associations, and the academic community itself (James & McInnis, 1997).

The various purposes for masters degree have been summarized in the context of taught degrees (Knight, 1997a). First, the masters could be seen as ancillary or preparatory to doctorate research with the degree being awarded to those unable or unwilling to progress to the PhD. Secondly, it could be conceived as a professional career advancement program for people with experience in a field and looking for advancement in employment. Third, the masters could be thought of as an apprenticeship program for those making a career change and entering a new profession. Finally, the masters could be perceived as a community-centred, transformational

program. It is difficult to imagine that one common research methods curriculum could serve equally well these divergent purposes. The comprehensive, full academic, multi-course research methods program is warranted for the first purpose, the second purpose merits clearly chosen research skills that improve professional practice, a short beginner's course may be required for those aiming for the third purpose, while those in the fourth purpose may not need any research preparation at all.

In a multi-country study of masters dissertation supervisors, these multiple purposes for the research dissertation were identified and rated by the supervisors to have different degrees of priority (McMichael, 1993). Highly rated were the preparation of a student to systematically problem solve, think critically, and the development of personal characteristics such as confidence, independence, responsibility, organization and motivation, and academic research. Less highly rated were extending the discipline and preparation for employment. Thus, it would seem that supervisors emphasized the model of academic preparation over the more vocationally oriented notion of the masters degree. The primary focus, as suggested by the priorities of supervisors reported by McMichael (1993), would have been on preparing students for doctorate-level education (and this may be the dominant expectation of enrolment in a masters in the United States). However, the focus, at least for the practice-oriented professional students who may well be employed full-time, may be on career advancement in their own applied service sector (Jones & Cleveland-Inners, 2004; Peacock, 2001). In other words, the master's degree may well be the terminal degree rather than a preparation for continued research-focused education. Indeed, students may prefer course-work degrees as advanced qualifications for economic reasons—salary increments may not distinguish between those who obtained a non-research higher qualification from those whose degree had a significant research component.

Investigation into the various purposes for undertaking taught masters degrees, as opposed to research degrees, identified multiple purposes: doing advanced experientially based professional studies, reflection on current practices, structured practice on work-based projects or artefacts, studying a new discipline, and production of independent, scholarly research or creative outputs (Thorne, 1997). Further, examination of the foundation students had for the masters influenced the nature of the program; those with general academic capabilities had different needs and requirements to those with professional qualifications and experience-based knowledge and skills (Thorne, 1997). Thus, at the masters level, let alone at doctorate, an emphasis on market-based programs that cater to the students' career goals or wants may result in postgraduate degrees devoid of research methods instruction or preparation.

In a small 4-student case study of postgraduate teacher trainees having to complete a classroom research project as part of their preparation, a number of problems were identified (Brinkman & van Rens, 1999). Students struggled to complete the research project in the time allotted, partly because they were still learning how to master the classroom, students lacked sufficient knowledge of educational research, and were unable to formulate researchable questions for use in classroom environments. These personal weaknesses were compounded by what the students considered inappropriate research methods instruction; too much attention was given, according to the students, to large-scale methods like questionnaires, there was not sufficient focus on small-scale classroom research techniques, and there was no opportunity to practice the various techniques before having to implement them.

Benefits of research methods preparation in education. Notwithstanding that practicing professionals may not want to become academic researchers, it can be shown that preparation in research does have a beneficial spin-off for practice oriented professions.

Examination of the second-order effects of research preparation on practicing counsellors has suggested that an understanding of the research process informs the counselling process (i.e., research approaches to uncovering sought after knowledge and data to answer problems are similar to counsellor-patient relations and objectives) (Barak, 1998; Benishek & Gordon, 1998; Borders, Bloss, Cashwell, & Rainey, 1994). Research preparation aids the counsellor by providing preparation in critical thinking, the testing of alternative explanations, self-awareness of personal biases, doubting of evidence and the obvious, and caution about inferences and generalisations (Barak, 1998). In the light of increasing demands from government policies for school leaders to practice evidence-informed planning and reporting, it seems likely that the quality of school leadership and classroom teaching would benefit from research methods preparation (Robinson & Lai, 2006).

In addition to the cognitive skill benefit, research methods preparation has been found to be occupationally beneficial. The professional work of practitioners is enhanced if practitioners are able to critique and make informed use of research findings rather than simply being forced to accept whatever fad or trend is being touted or resort to ignoring all research related to the improvement of their practice (Mayer, 2005; Richardson, 2006; Robinson & Lai, 2006). This means that research preparation has to include critical consumption of research (Jones & Cleveland-Inners, 2004; Shulman, Golde, Bueschel, & Garabedian, 2006). Additionally, professional practice has been shown to improve if practitioners know how to conduct robust evaluative studies on innovations or practices within their own employment contexts (Athanasou, 1997; Peacock, 2001; Robinson & Lai, 2006; Shulman, Golde, Bueschel, & Garabedian, 2006). Teachers who 'action-research' their own lessons (perhaps by seeking out or creating alternatives to current practices and testing those alternatives in multiple classrooms) have been shown to improve the quality of student outcomes (Hiebert, Gallimore, & Stigler, 2002; Lewis, Perry, & Murata, 2006; Robinson & Lai, 2006). Ultimately, teachers are able to improve the quality of their teaching if they learn how to conduct research into their own practices, policies, or problems (Anderson, 2002; Cochran-Smith & Lytle, 1999).

Research methods preparation may also contribute to the professional developing a set of qualities or attributes useful to their employment environment (Knight, 1997b). Professional competencies to be developed in the postgraduate masters include commitment to professional values, continuous learning, affective awareness, effective communication and action, effective grasp of a wide range of professional knowledge, and intellectual flexibility. The qualities sought by employers for professionally trained employees included willingness to learn, commitment, dependability, self-motivation and self-management, team work and co-operation, and oral and written communication skills. These are objectives that can be met through research preparation and the experience of conducting research, provided substantial opportunities to practice research are given.

Another potential benefit of teachers conducting systematic, intentional examination of their own practice is what it tells academia about the nature of teaching practice (Anderson, 2002; Cochran-Smith & Lytle, 1999; Lampert, 2000). Professional academic understanding of the truths of teaching is improved when teachers conduct inquiry in their own and colleagues' classrooms and when they collaborate with university researchers. The benefit of teacher knowledge about their practice is that it is directly and concretely related to real teaching practices and settings (Hiebert, Gallimore, & Stigler, 2002). Such 'craft' knowledge can become public, shared, and accumulated using collaborative analysis of lessons that are video-captured and disseminated through curriculum-indexed, internet multimedia libraries (Hiebert, Gallimore, & Stigler, 2002).

Multiple teacher observations of lessons and multiple replications of teacher-made innovations lead to dependable knowledge that can inform the complementary practice of academic research, resulting in research that is useful to teachers (Burkhardt & Schoenfeld, 2003; Hiebert, Gallimore, & Stigler, 2002). The example of Janusz Korczak is suggested as a model of practitioner research (Efron, 2005): Korczak, inspired by his previous experience as a doctor, took detailed child case studies including lesson-based observations, measurements, charts, and surveys from which he could test and develop theoretical notions about education. In a similar fashion, Burkhardt and Schoenfeld (2003) have argued that engineering's design-based research is a good model for developing a cumulative body of practitioner research; design-based methods involve exploring, designing, and iteratively testing (with prototypes in small scale contexts) solutions to real world problems before disseminating those solutions on a mass level¹. A related and profound benefit of research preparation for professionals is the ability it should give them to communicate formal educational knowledge "with those who are passionate about the improvement of education but have little understanding of the complexities of the system and the potential for reform" (Richardson, 2006, p. 258).

Many classroom teachers have to provide preparation in research to their own students (Thompson, 2005). Experience and understanding of inquiry processes are explicitly required in New Zealand's Social Sciences, Science, English, and Technology curriculum statements. Students are expected to develop Essential Skills related to inquiry and teacher-administered assessment programs have been developed for these skill sets (Croft, Dunn, & Brown, 2001). In Holland, completion of a research profile is a requirement of senior secondary school students (Stokking, van der Schaaf, Jaspers, & Erkens, 2004; Van der Schee & Rijborz, 2003). Research has found that students had most difficulty with formulating a central research question and conclusions; likewise, a small sample of geography teachers were assessed on their research skills and were found to be weakest at rewriting main research questions and evaluating research conclusions. It has also been found that teachers' abilities to assess student progress in research skills are also lacking (Stokking, van der Schaaf, Jaspers, & Erkens, 2004). Recommendations for the type of research preparation teachers would need in order to teach students how to do research in the coming information society have been identified (Thompson, 2005). The recommended research curriculum for teachers included: 1) robust theoretical frameworks and models, 2) clear and important questions, 3) clearly defined rigorous qualitative and quantitative methods, 4) well designed instruments validated for their purposes, 5) the possibility for replication, and 6) relevant predictions and careful generalizations. Certainly, inclusion of research methods preparation in undergraduate programs for practicing professionals would help teachers teach their own students the appropriate research or inquiry skills for their discipline.

We should not forget that some candidates for postgraduate studies in education might not be teachers. Students who have majored in education, but not trained as teachers, may be curious to pursue an aspect of the discipline that is not directly related to professional practice. Such candidates require research methods preparation that will permit them to investigate aspects of education beyond immediate practice. For example, research into the history or philosophy of education may have no immediate relationship to current practice and yet this remains a legitimate option.

Thus, we are left to conclude that there are several major purposes that masters students in education might have for learning about research.

¹ Harland's masters thesis is an example of a design-based research project in which a solution for the teaching of persuasive writing was designed and piloted. Harland, D. (2002). *Teaching argumentative writing to Year 9 students*. Unpublished Master of Arts thesis, University of Auckland,

- Teachers may be required by curriculum expectations to teach their own students basic research skills.
- Teachers' cognitive skills and inclinations to be critical, questioning, and evidence-based are developed through learning how to research.
- Teachers require specific research skills to do their own professional work. The literature suggests they need to be able to
 - evaluate their own practices, data, and innovations,
 - critically evaluate published or presented research, and
 - participate ethically and appropriately in research programs.
- School leaders need to be able to make decisions about professional development opportunities and policies and those decisions are greatly empowered if leaders have a robust basis for evaluating effectiveness claims.
- Postgraduate students in education may seek to satisfy their own curiosity about some aspect of education as a discipline.
- Teachers may wish to join the academy as researchers or research-based lecturers themselves.
- The study of education requires teachers to be research capable so that the body of research-based knowledge and understanding about education can grow.
- Candidates may wish simply to be sufficiently prepared so as to complete a masters thesis or dissertation efficiently and effectively.

What this review of purposes indicates is that, notwithstanding market resistance from the students themselves, postgraduate students in education would benefit from and should be required to take research methods preparation. However, what kind and how much research preparation and practice students are expected to complete may be more tightly focused to meet the requirements of either the professional occupation or academia.

Having identified relatively new constraints, contexts, and conflicting purposes for masters level research preparation for postgraduate students in education, who will be primarily practice-oriented professionals seeking to return to occupational employment in applied service sectors, it is important to identify strong frameworks for a research preparation curriculum. Various successful strategies and structures for research preparation have been found among undergraduate and doctoral courses.

Design of research preparation programs

Discussion in the research literature of what is currently expected of research trained masters students capable of conducting independent research is limited, in contrast to the literature related to defining research preparation at the doctoral level. At the doctoral level, Little, Lee, and Akin-Little (2003) argued that North American students are required to take courses with an explicit attention to statistics, while other countries focus more on research methods or research design courses; though to the extent this remains a valid generalisation is uncertain. A survey of research methods used in doctoral dissertations in counselling psychology found a limited range of techniques; 45% used correlational, 31% survey methods, 30% experimental between-groups, and only 28% used any type of qualitative methods (Kopala, Suzuki, Goldman, & Galdi, 1996). In a Delphi study of 21 United States professors of educational research, over 100 desirable skills and knowledge outcomes were described for introductory educational research

courses at the postgraduate level (Todd & Reece, 1989). Of those, five were voted as essential by all 21 panellists: that is, identify questions or problem statements that do NOT lend themselves to the scientific method of analysis, understand concept of internal validity, understand concept of external validity, have familiarity with research-oriented periodicals in own field or area of interest, and critically evaluate a research report. It should be noted that the essential and important lists in their research were dominated by quantitative skills and knowledge, whereas qualitative skills were largely considered at best useful, or no consensus was reached. Despite the similarity of content amongst introductory texts in educational research, Todd and Reece (1989) indicated that in practice there is great diversity in what is actually taught and implemented in such courses.

In the UK, doctoral programs emphasized generic and subject-specific research skills with just over half of universities requiring such preparation, while employment related skills, teaching and demonstrating skills, and inter-personal skills were required and provided to less than half the candidates (Metcalf, Thompson, & Green, 2002). More recently, recommendations for doctoral research outcomes have included seven skills, knowledge, and habits of mind: substantive knowledge of the field, ability to think critically and theoretically, frame fruitful research problems, appreciate research as socially situated, design research, collect and analyse data, and communicate with various audiences about research (Richardson, 2006). Boote and Beile (2005) have argued that the doctoral candidate especially needs to be able to generate a meaningful synthesis of literature as part of the research preparation, rather than just a cursory list of all literature published on a topic. Although beyond the scope of this review, a very useful illustration of how a joint qualitative-quantitative research methods preparation program at the doctoral level in an American university was developed and implemented is given by Page (2001).

In Britain, a framework of eight quality standards for research degree programmes have been developed and illustrated with case descriptions from various UK universities (Metcalf, Thompson, & Green, 2002). These include institutional arrangements for research degree programmes; research environment; selection, admission, enrolment and induction of students; supervisory arrangements; initial review and subsequent progress; development of research and other skills; feedback mechanisms; and appeals and complaints procedures. Of most interest to this review are the standards related to the research environment, supervisory arrangements, and the development of research skills.

Investigations into research preparation for undergraduate students have shown that time and practice, as well as deliberate connection of subject knowledge to research methods, were required for effective preparation. The quality of undergraduate research preparation in sociology was enhanced by creation of a cumulative curriculum and requirement that students conduct out-of-class research (Kain, 1999). The requirement that 2nd year undergraduate students conduct a class research project was found to have beneficial impacts on student attitudes and skills (Andresen, Jackson, & Kirby, 1994). A number of Australian universities argue that active researchers who incorporate their research into their undergraduate teaching provide a superior quality of experience to their students (Zubrick, Reid, & Rossiter, 2001); students who are exposed to and are required to participate in research may well go on to do research. Preparing introductory psychology students in research by linking subject or discipline knowledge with a range of appropriate research methods related to a common topic was found to be effective in clarifying student understanding of research methods (Zucker, 1992). Students in a New Zealand university 3rd-year problem-based research methods course in geography, which required collaborative, authentic contexts for research skill

development, rated the experience positively (Spronken-Smith, 2005). Ball and Pelco (2006) reported similar results using a collaborative-group, problem-based learning research methods course with 2nd-year psychology students.

However, currently there is little agreement or consensus as to what research preparation graduate students need at the doctoral level, let alone the masters level (Eisenhart & DeHaan, 2005). Yet every tertiary institution offering postgraduate qualifications in education provides research preparation; perhaps an examination of course descriptions, assessment schedules, and contexts of high-quality institutions may lead to consensus. Nevertheless, various recommendations have been made largely around three major areas of research preparation: diversity of methods and contexts, practice in multiple contexts, and inclusion of personal, social, and managerial skills.

Diversity of methods

Throughout the literature is an emphasis on multiple and plural or diverse methods (Barak, 1998; Cochran-Smith, 2005; Larson & Besett-Alesch, 2000; Page, 2001; Siegel, 2006) including a wide range of qualitative and quantitative methodologies (Berliner, 2006; Jones & Cleveland-Inners, 2004; Maxwell, 2004) and evaluation research (Peacock, 2001). One of the reasons for advocating methodological plurality is the incredible complexity of educational research environments and the difficulty in coming to robust findings without taking account of such complexities (Berliner, 2002). These need to be contextualized in the student's relevant discipline and require the student to integrate methods with content (Larson & Besett-Alesch, 2000; McMichael, 1993). The diversity must also include awareness and understanding of the commonalities across methodological differences (Berliner, 2006). Methodological diversity implies recognition and respect for both teacher, practice-oriented knowledge and theoretical, research knowledge (Labaree, 2003). Thus, masters research preparation faces the daunting challenge of preparing novice researchers into a field which makes use of a wide variety of methods and philosophies.

Practice in multiple contexts

In order to respond to the amount that must be learned and the low level of initial preparedness identified in the education post-graduate student community, much emphasis is put on the necessity of providing cumulative and repeated opportunities to be part of hands-on research practice (Barry, 1997; Berliner, 2006; Constan, 1998; Larson & Besett-Alesch, 2000; O'Brien, 1995) where methodological understanding is applied in real world professional situations (Berliner, 2006; Peacock, 2001) preferably in trans- or multi-disciplinary research teams or partnerships (Burkhardt & Schoenfeld, 2003; Connell, 2004; O'Brien, 1995). Preparation has to address the complex political pressures, processes, and interaction patterns involved in completing research; students need to know how to deal with ego, politics, and misunderstanding, and so on (Sipe & Doherty, 1993). Students must have an opportunity to enter into a community of research scholars (Pellegrino & Goldman, 2002).

Personal, social, and managerial skills

Beyond research skills, methods, philosophies, and contexts, research preparation requires the development of a range of personal, social, and managerial skills not often conceived of as part of research. Students need to develop the intangible components of curiosity and intellectual excitement (Jones & Cleveland-Inners, 2004), the appropriate

skills to adapt to the great variety inherent in a research career and the ability to handle insecurities in a research career (Connell, 2004), develop a range of interpersonal and management skills (McMichael, 1993; Richardson, 2006), including the ability to evaluate one's own, and that of others, research performance (Connell, 2004). Students must also become able to attract research funding, manage projects, and understand the possibilities and hazards of intellectual property (Connell, 2004).

In order to deliver such a challenging set of requirements, standards are being developed to ensure that research preparation environments are appropriate (Metcalfe, Thompson, & Green, 2002). These include providing research units that have at least 5 research active staff or post doctorates and at least 10 research students; adequate library and IT facilities; preparation programs that cover the diversity of research skills and knowledge, and the provision of access to seminars, conferences, presentations, and teaching/demonstrating experiences. Other actions noted in their report as successful include: a standard code of practice and responsibilities for the student and university; a series of generic skills courses; a student-held log that records research supervision, agreed action plans and courses attended; and the use of supervisory teams. Other strategies (such as, student meeting rooms, research conference, networking, seminar programme, information booklet, newsletter) have been shown to reduce isolation and increase degree completions and improve student induction into research and academia (Johnston, 1995).

Jones and Cleveland-Inners (2004) have offered an extensive specification of research methods goals and content for distance education masters students. They outlined six goals for practice-oriented students: the program should aim for all to become informed interpreters of literature, understand epistemologies underlying social science research, and attain personal attributes of audacity, reasoning, curiosity, rigor, and wonder, while some are prepared to become researchers (whether program related, practitioner-style, or doctoral). They specify basic and advanced content of research methods in both quantitative and qualitative domains. They signal a clear warning that the list they provide could not be taught in a single course, nor could students who have not had previous research experience master this material in one-term or in a single course. Considered reflection of their recommendations might suggest that their ambitions are really preparation of practitioners for doctorate level research, rather than necessarily a return to practice in the profession.

Perhaps more achievable, Peacock (2001) provided significant detail as to the research methods content taught in a practitioner-oriented masters program. Research-oriented objectives include making sure all students understand the common research methods used in their discipline, understand the scientific method and the process of scientific research, can differentiate between quantitative and qualitative methodology and determine the appropriate applications of each, gain exposure to computer analysis of data, and experience guided development of their research proposals.

Thus, although there are clearly no formal standards to adopt in establishing expectations, aims, curriculum, pedagogy, or assessment of research preparation, there is a growing sense of two directions at the masters level. One track involves most post-graduate education students returning to professional practice with abilities to consume, commission, conduct, and cooperate with research in their own contexts; and the road less travelled leads post-graduate education students to the conduct of advanced, original, and substantial research in a research institute or in a doctoral program. Maintaining a one size fits all program largely modelled on the Baby-Doc notion will result in significant frustration and failure for both faculty and students.

Evaluation of preparation effectiveness

The last question to be addressed in this literature review is that of monitoring or determining the effectiveness of research preparation. Once goals, curriculum, teaching, and practice opportunities are put into place, how is it possible to determine whether students are meeting expectations? The literature identifies three major methods: judgments of the faculty, examination of objective measures of research productivity, and examination of faculty and student perceptions.

In the preparation of doctoral students in the United States, students must prepare for and complete comprehensive examinations covering the content and methods that they are most likely to use in their dissertation research (Schwarz, 2000). These examinations are custom-created for each individual and candidate's supervisors determine when the student is ready for examination. Following this, the candidate prepares a dissertation proposal which is defended in a public forum; then and only then does the student go on to conduct the actual research. In this way, the professional judgments of a team of research academics are used to determine the success of the research preparation program for each candidate. No such mechanisms exist at the masters level. However, it has been suggested that the design of practice oriented postgraduate programs should begin with the specification of the assessments students would need to complete successfully in order to be awarded the qualification, much in the manner that assessments were developed first in order to specify what an accomplished teacher looks like (Shulman, Golde, Bueschel, & Garabedian, 2006). This tack would not only require clear specification of standards but also provide a means for determining whether candidates were ready to conduct research.

Examination of objective measures of research productivity is an indirect means of determining the quality of research preparation. The success of the undergraduate research preparation in sociology was partly determined by the placement of graduates in post-doctoral or doctoral programs some years later, the number of professional conference presentations, the number of honours thesis completions, and the placement of graduates in research or consulting employment in (Kain, 1999). Examination of doctoral students' research products (including national presentations, book chapters, articles published, articles in review, and grants won) five years after the implementation of a new research practicum program was used to indicate success (Larson & Besett-Alesch, 2000). The time students take to complete a degree, pass-fail rates, and comments from external examiners, funders, and employers can also be used to evaluate institutional quality (Metcalf, Thompson, & Green, 2002; Wright, 2003). Other quality assurance mechanisms include the external assessment of student research projects, comparison to other institutions' academic programmes, and student selection procedures (James & McInnis, 1997).

Examination of the perceptions of current and recently completed students is a powerful means for determining the quality of research preparation. In the last few years, several inventories for use at the doctoral level have been psychometrically validated, including measures of student research self-efficacy (Forester, Kahn, & Hesson-McInnes, 2004; Gelso, Mallinckrodt, & Judge, 1996; Holden, Barker, Meenaghan, & Rosenberg, 1999; Phillips & Russell, 1994) and student ratings of the research preparation environment (Gelso, Mallinckrodt, & Judge, 1996; Kahn & Gelso, 1997; Kahn & Miller, 2000; Kahn & Scott, 1997; Mallinckrodt, 1997; Phillips & Russell, 1994). The research preparation environment questionnaires largely focus on instructional and interpersonal aspects of preparation, while the research self-efficacy questionnaires have been shown to elicit responses related to four dimensions of research self-efficacy (i.e., data analysis, research integration, data collection, and technical writing). Missing from these instruments is a focus on qualitative research and

validation with students in education and at the masters level. Nonetheless, these inventories do provide useful adjuncts to determining the quality and effectiveness of research preparation. Questionnaires for use with doctoral candidates in the United States, but not including education, have been trialled for large-scale use (Ostriker & Kuh, 2003). UK research with doctoral candidates has used an informal questionnaire to rate a range of reasons students might have for engaging in or not completing their degrees (Wright, 2003).

Faculty of Education Masters Supervisors' Expectations and Recommendations for Research Methods Preparation of Students for Independent Study

In order to elicit, in as unprejudiced fashion as possible, the expectations and recommendations each individual masters supervisor had for research methods preparation a Delphi study was implemented. Delphi studies involve collecting opinions from a range of participants, assembling those opinions, and reflecting them back to the collective body of participants. Then, further opinion is elicited from the participants in response to the full range of collected responses. After a set number of iterations, the participants then establish priorities by a balloting system to establish consensus of opinion without one group or person dominating the process. Although originally devised for obtaining consensus among experts who were geographically distributed, the process has been applied into many contexts. In this research, two rounds were implemented.

In Round 1, all masters supervisors ($N=75$) were asked to list as many as they desired of the expectations they had of students prior to their starting independent research and to list any actions they thought needed to be taken in order to ensure expectations could be met. Participants were asked to focus on the skills, knowledge, and understanding students needed to commence a masters thesis. The responses from 30 participants (40% of total list) were collated by the Principal Investigator into major categories for ease of consideration. Each response was listed, even if it seemed redundant or highly similar to a different response in order to maintain the integrity of the original participants' contributions. 317 expectations in 13 categories and 197 actions in five categories were recorded. A summary report of these expectations and actions was circulated within the faculty in mid-2006.

In Round 2, all 75 masters supervisors were asked to rate each expectation and action collected in Round 1. A total of 150 actions and 210 expectations were assembled from the 30 responses to Round 1 and the literature review. Voting for Expectations asked participants to indicate when the expectation of the student should be fulfilled relative to the commencement of the research masters. The three categories were Before, Later, or Not at all. The Before category was further sub-divided into three quality levels—Basic, Proficient, Advanced—to indicate the level of proficiency the student needed to attain prior to commencing research. Voting for the Actions asked participants to indicate the importance of each action using a six-point, positively packed rating scale. Options were Very unimportant, unimportant, slightly important, moderately important, important, and very important. Responses from 20 participants (27% of total or 67% of round 1 participants) were received for the Expectations list and 16 participants (21% of total or 53% of round 1 participants) responded to the Actions list.

Delphi Findings—Round 1

Round 1 findings are presented in summary form only as the details are reported fully in Round 2. For each category of expectations the number of comments and the number of participants providing those comments is given. By dividing the number of comments by the number of participants, we can determine how verbose on average each participant was about that category. By dividing the number of participants giving at least one comment for each category by the total number of participants we can determine how generalisable the category is to the full sample of supervisors responding.

On average each category received 1.74 comments per participant (range 1.00 to 2.71), indicating that when a supervisor focused on a category of skill, knowledge, or understanding they expressed nearly two comments per category. In contrast, the average proportion of participants commenting on each category was only .47 or just about half (range .20 to .80). Thus, within each category half the participants tended to say two things related to the category. The three categories obtaining the highest proportion of participant response were evaluation of literature, literature search skills, and communication skills, while the categories with the lowest representation were nature of knowledge and research ethics.

Faculty of Education Masters Supervisors Expectations Categories—Delphi Round 1

Expectation Categories	# Comments	# Cases	Ratio Comments: Cases	Ratio Cases to Sample
Evaluation of Literature	36	24	1.50	0.80
Search Skills	21	21	1.00	0.70
Communication Skills	57	21	2.71	0.70
Data Analysis	31	17	1.82	0.57
Management/ Organisation Skills	29	15	1.93	0.50
Diversity & Plurality	16	13	1.23	0.43
Personal Dispositions	25	12	2.08	0.40
Data collection	26	12	2.17	0.40
Research Design	31	12	2.58	0.40
Question/Problem Specification	12	11	1.09	0.37
Prerequisites	19	11	1.73	0.37
Research Ethics	18	10	1.80	0.33
Nature of Knowledge	6	6	1.00	0.20
Total	327	185	1.74	0.47

For each category of actions the number of comments and the number of participants providing those comments is given. By dividing the number of comments by the number of participants, we can determine how verbose on average each participant was about that category. By dividing the number of participants giving at least one comment for each category by the total number of participants we can determine how generalisable the category is to the full sample of supervisors responding.

On average each category received 2.58 comments per participant (range 1.20 to 4.00), indicating that when a supervisor focused on a category of skill, knowledge, or understanding they expressed more than two comments per category. In contrast, the average proportion of participants commenting on each category was only .43 or just about half (range .17 to .67). Thus, within each category half the participants tended to say more than two things related to the category. The two categories obtaining the highest proportion of participant response were institutional arrangements and curriculum, while the categories with the lowest representation were assessment and student habits or dispositions.

Faculty of Education Masters Supervisors Actions Categories—Delphi Round 1

Action Categories	# Comments	# Cases	Ratio Comments: Cases	Ratio Cases to Sample
Institutional Arrangements	63	20	3.15	0.67
Curriculum	76	19	4.00	0.63
Minimum Competency Requirements	40	14	2.86	0.47
Assessment	12	7	1.71	0.23
Student Habits, Dispositions	6	5	1.20	0.17
Total	197	65	2.58	0.43

Delphi Findings—Round 2

The findings from Round 2 were analysed in two ways. First the relative rating of each statement and category was determined. Second, the suitability of each statement for teaching within the context of research methods courses was determined.

Each action was classified into an aggregate category to assist in analysis by the PI. Each rating point was given a score value (1=Very Unimportant to 6=Very Important). The number of votes at each rating point was multiplied by the score value and summed. The total number of raters for each action was found and turned into a percentage of the maximum number of raters. The raw mean was calculated as the sum of all ratings divided by the number of raters for each action. This value gives the importance of an action based only on those who chose to rate the item. This value can be artificially high if few participants rate it and give high scores. The weighted mean score was calculated as the sum of all ratings divided by the maximum number of raters for the survey. This value gives the most conservative and realistic value of how important the item is across all possible participants.

Each expectation was classified into an aggregate category to assist in analysis by the PI. Each of the BEFORE rating points were given a score value (1=Basic, 2=Proficient, 3=Advanced). This gives greater weight in the expectation score to items and raters who indicate an expectation should be met to an advanced level before starting a thesis. All other score points were given zero values as they did not indicate the expectation should be met before the student commenced the research thesis. The summed score was found by multiplying the number of voters at each rating point by the score value for the expectation. The number of voters for each expectation was found and a proportion of the maximum 20 was found. Note only 22 expectations obtained 20 votes. The effect of this is to reduce the absolute value of the summed score for most expectations but it prevents a few high scoring raters from skewing the relative value of an expectation for which most raters were silent.

Results*Actions*

The mean adjusted score weighting for the items was 3.75 ($SD=.83$), the mean raw score was 4.24 ($SD=.85$) with a Pearson correlation of .93 between the two scores. The high correlation was obtained by excluding two expectations which were rated highly by one rater. Thus, the adjusted weighted scores are used in this report. Items with their various scores are listed in Appendix 1 so this part of the report will report by categories associated with each class of expectation. Items having a score more than 1 SD higher than the mean were considered highly rated, while those more than 1 SD below the mean were considered to be avoided.

Mean Scores by Categories of Actions

Content	N	M	SD
Evaluation of Research Reports	5	4.18	.62
Proposals	5	4.16	.53
Preparation	18	4.16	.55
Communication	6	4.05	.54
Submission	2	3.94	1.24
Literature Review	10	3.93	.71
Institutional Arrangements	12	3.68	.77
Assessment	8	3.59	.37
Before Enrolling in Thesis proper	14	3.56	.80
Customisation	3	3.52	.13
Readings/Text	8	3.42	.87
Undergraduate	15	3.35	.59
Miscellaneous	9	3.10	.70
Faculty Self-Review	8	3.07	1.72
Pedagogy	12	2.80	.83
Methodological Diversity/Plurality	15	2.80	.79

Note. Details of categories are elucidated below.

High Scoring Categories and Actions (i.e., >1 SD above *M*)

The Categories most supported Faculty action focused on ensuring students can (1) evaluate reported research, (2) write appropriate proposals, (3) receive focused additional preparation programs, and (4) can communicate effectively in writing. The actions that received the highest ratings emphasised (1) ensuring students had high standards in written English, (2) ensuring students had good command of research methods, with special emphasis on ability to write literature reviews, analysis of research methods, designs, and studies, and ability to write a proposal or application, (3) obtaining student perceptions of current research methods papers, (4) providing additional but optional training labs and workshops in key skills, such as library search, ethics, data analysis, data management, and learning skills, and (5) providing better infrastructure to postgraduate students..

Category	Highest Rated Actions
Faculty Self-Review	Examine the perceptions of current and recently completed students about research methods preparation
Institutional Arrangements	Provide good study and meeting facilities for postgraduate students
Institutional Arrangements	Timely clear access to course information provided to students (not gatekeeping by front line staff)
Literature Review	Provide examples of good literature reviews
Literature Review	Require student to conduct critical review of research study
Literature Review	Require student to practice, compile, be taught, write literature review
Methodological Competence	Require passing of research methods course prior to thesis
Methodological Competence	Require student to analyse methods in research projects
Methodological Competence	Require student to read range of research studies
Methodological Competence	Require student to study range of research designs
Methodological Competence	Require student to suggest appropriate methods for different research questions
Proposals	Require student to develop ethical proposal, application
Preparation	Direct students to support systems and on-going workshops (incl. library)
Preparation	Offer academic writing workshops
Preparation	Offer effective student learning support
Preparation	Offer Library labs to ensure students have search skills
Preparation	Offer mastery based workshops on essential data analysis tools
Preparation	Offer mastery based workshops on essential data management tools (incl endnote)
Preparation	Offer optional research seminars by experienced researchers to do with ethics, literature review, etc.
Preparation	Offer optional seminars & short courses for skills
Preparation	Run postgraduate student seminars regularly
Writing	Require & support quality academic writing in all Masterate courses
Writing	Require competency in English language skills
Writing	Require minimum competency at writing before being allowed to proceed to thesis
Writing	Require student to show competence at accurate academic writing

Low Scoring Categories and Actions (i.e., >1SD below *M*)

Least support was shown for specifying the type of pedagogical techniques used in research methods instruction and for specifying a diverse range of specific research techniques and perspectives. The actions that received the lowest ratings emphasised (1) requiring students to learn certain specific research methods (both quantitative and qualitative), (2) requiring research methods classes to include certain specified pedagogical techniques, (3) students learning about or being supervised by staff trained in

Maori or Pasifika research approaches, and (4) changing the degree structure of the research masterate in the faculty.

Category	Lowest Rated Actions
Institutional Arrangements	Design Masterate degree around structured set of courses rather than pick and mix (portfolio for professional teachers to include: general methods, research question, deep knowledge of pertinent methods, literature review)
Institutional Arrangements	Require & provide undergraduate courses in management
Maori/Pasifika	Appoint senior Pasifika researchers to Masterate and doctoral teams
Maori/Pasifika	Provide examples that show abuse of minority groups by researchers
Maori/Pasifika	Require all ethics applications to include consultation with diverse groups
Maori/Pasifika	Require Maori research methodology to be in all postgraduate papers
Maori/Pasifika	Require Pasifika research methodology to be in all postgraduate papers
Maori/Pasifika	require potential supervisors to undertake training in ethics relating to Maori/Pasifika research topics
Maori/Pasifika	require students to study ethics relating to Maori/Pasifika people/research topics
Maori/Pasifika	Prepare all supervisors in Maori and Pasifika research methods as part of supervision practice
Methodological Competence	Ensure students can understand any of 100 chosen articles
Methodological Competence	Provide Overview on nature of science
Methodological Competence	Reduce focus on methodological issues and make focus on real world completion
Methodological Competence	Require competency at data analysis that is not subjective
Methodological Competence	Require competency at determining whether research questions are answered pre-thesis research course enrolment
Methodological Competence	Require competency at evaluating answers to research questions pre-thesis research course enrolment
Methodological Competence	Require student to conduct exercise in curriculum unpacking
Methodological Competence	Require student to conduct interpret primary historical document
Methodological Competence	Require student to trace development of topic in history or policy
Methodological Competence	Teach to do constant comparative; analytical coding
Pedagogy	Avoid topics with high personal or emotional relevance
Pedagogy	Provide critique of researcher's world view impact on research
Pedagogy	Provide exercises that require identifying 3 issues around a topic
Pedagogy	Provide seminal articles only in readings
Pedagogy	Require student to design research study based on articles in the

Category	Lowest Rated Actions
Pedagogy	news Require students to conduct action research or conduct a change study of own practice

Expectations

The mean adjusted score weighting for the items was .87 ($SD=.47$), the mean raw score was 1.04 ($SD=.53$) with a Pearson correlation of .92 between the two scores. Thus, the adjusted weighted score is used in this report. Items with their various scores are listed in Appendix 2 so this part of the report will report by categories associated with each class of expectation. Items having a score more than 1 SD higher than the mean were considered highly rated, while those more than 1 SD below the mean were considered to be avoided.

Mean Scores by Categories of Expectations

Category	N	M	SD	Hi (M+1SD)	Lo (M-1SD)
Search	7	1.78	.16	1.95	1.62
Speaking	2	1.69	.36	2.05	1.32
Supervisor	7	1.61	.26	1.87	1.35
Writing	23	1.49	.67	2.16	.83
Self-regulation	25	1.49	.41	1.90	1.08
Thought	9	1.40	.16	1.57	1.24
Knowledge	125	.78	.34	1.12	.44
Maori/Pasifika	2	.77	.09	.86	.68
Environment	6	.71	.14	.84	.57
New	1	.12	NA		
Total	207	1.18	.29	1.59	1.01

Note. Details of categories are elucidated below.

Highest scoring categories and expectations (i.e., Weighted Score > 1.59)

The majority of highest scoring expectations focused around literature and library search skills, ability to speak about one's research, and high-quality supervision by active researchers who are given supportive workloads. At an item level the highest scoring expectations focused on pre-existing competency at knowing one's own topic area, capability to search for relevant literature, an attitudinal disposition of regulating one's own effort, motivation, work and being committed to working hard, ability to think critically and express ideas orally, ability to write cogent, effective English, and provision of research-oriented supervisors who are adequately supported in doing that supervision.

Highest Scoring Expectations	Category
Already taken courses in content area in which want to study	Knowledge
In own research area, know field, discipline, theory, concepts, content, literature	Knowledge
Some knowledge of own topic	Knowledge
Able to source literature	Search
Access literature wide range of sources	Search
Carry out systematic, focused literature searches	Search
Know basics of literature review	Search
Know how to find relevant material	Search
Use range of library catalogues & databases, bibliographic tools	Search
Acceptance that writing is hard work	Self-regulation
Actively stay in contact with supervisor	Self-regulation
Commitment to put in effort & time	Self-regulation
Desire to find things out; curiosity	Self-regulation
Excitement about the topic, problem at hand	Self-regulation
Independence at accessing literature	Self-regulation
Require students to be demonstrably self-managing	Self-regulation
Self direction, independence, self-initiating, self-motivation, Self-sustaining	Self-regulation
Take responsibility for maintaining record of supervision meetings and act on agreed points	Self-regulation
Time management	Self-regulation
Ability to express ideas orally	Speaking
Active research units exist into which students are incorporated for their thesis	Supervisor
Appropriate workloads set for supervision	Supervisor
Provision of actively researching and publishing supervisors	Supervisor
Provision of supportive research preparation environment	Supervisor
Structured interactions between supervisors and students	Supervisor
Ability to think critically	Thought
Willingness to receive and provide constructive critical academic feedback	Thought
Ability to use word processor for writing & editing	Writing
Able to write appropriately structured and mechanically appropriate reports	Writing
Accurate spelling and grammar	Writing
Argue position cogently, cogent writing style	Writing
Can write summary of an article, or key findings or arguments	Writing
Construct well-structured paragraph	Writing
Excellent citation & referencing skills	Writing
Good academic writing skills	Writing
Independence at writing	Writing

Highest Scoring Expectations	Category
Use citation & referencing skills accurately (esp. APA)	Writing
Willingness to draft and redraft (before presentation to supervisor)	Writing
Write a well crafted piece of work	Writing
Write coherent sentences	writing
Write coherently, logically, and concisely	writing

Lowest scoring categories and expectations (i.e., Weighted Score <1.01)

The majority focused on Maori and Pasifika approaches to research and changing the requirements the faculty has for student entry to the master's thesis, and increased knowledge of specific research approaches or methods. At an item level the lowest scoring expectations focused on a wide and comprehensive range of reasonably advanced research methods skills relating to both qualitative and quantitative research approaches, support for Maori and Pasifika approaches to research, and writing to obtain funds or to publish.

Lowest Scoring Expectations	Category
Able to conduct & interpret descriptive and univariate inferential statistics	Knowledge
Analyze and evaluate data in diverse settings	Knowledge
be aware of and/or apply modern psychometric models and methods (IRT & SEM)	Knowledge
Completed ethics application	Knowledge
deeper understanding of either quant or qual methodologies	Knowledge
Develop and validate a wide variety of instruments	Knowledge
Engaged in qualitative analysis (e.g. discourse) in seminar or project	Knowledge
Epistemologically ecumenical	Knowledge
Have taught inquiry skills to students within one curriculum area	Knowledge
Identify whether research questions are answered and why	Knowledge
Know common sampling frames & types	Knowledge
Know features & suitability of policy analysis	Knowledge
Know features & suitability of using emancipatory research	Knowledge
Know how to derive coding categories	Knowledge
Know how to establish reliability of coding	Knowledge
Know strengths & weaknesses of statistical techniques	Knowledge
Passing understanding of non-parametric analyses	Knowledge
Read & evaluate the statistical procedures current in the literature (SEM, HLM)	Knowledge
Training in teaching of inquiry skills to school students within one curriculum area	Knowledge
Understand Document Analysis	Knowledge
Understand features of research: questions examined, withstand scrutiny	Knowledge
Understand Historiographic analysis	Knowledge
Understand rationale behind sophisticated multivariate inferential analyses	Knowledge
Understand statistical growth & increases	Knowledge
Understanding of appropriate analytic software	Knowledge
understand cultural judgement is required as to what is required within the setting	New
understand that in some Maori settings protocols are expected and consultatin may be required	Maori/Pasifika
understand that not all maori research requires consultation	Maori/Pasifika

Lowest Scoring Expectations	Category
understand that research can lead to improved teaching and learning	New
understand that the implication of maori research may have ongoing commitments from researcher	Maori/Pasifika
Worked in collaborative group project	self-regulation
Be familiar with grant writing and sources of funding	Writing
Be inculcated into writing articles for publications aimed at a variety of audiences	Writing
understanding of evolutionary nature of writing research	Writing

Average scoring

On the whole, student self-regulation dispositions, writing ability, and critical thinking received average ratings.

Summary

It would appear that in terms of student preparation prior to entry to a research thesis at the Masterate degree level, the responding academics expect students to be independent (and possibly intelligent) learners knowledgeable in relevant content who can conduct their own literature searches, write accurately and whose supervision is provided by active researchers. At the same time these respondents do not expect students to develop expertise in any research methods beyond the basic, traditional more descriptive skills in qualitative or quantitative paradigms, nor do they expect such students to have advanced knowledge about Maori or Pasifika research or the ability to write for publication or grants.

Teachability

The determination of how suitable each action or expectation was for teaching in the context of a research methods course was conducted with the Advisory Committee. Furthermore, confirmation of the categories into which each action or expectation had been assigned was carried out. Independently, each of the three analysts indicated whether the category was correct, whether the skill was teachable, and whether it could legitimately be put in a research methods course. The frequency of votes for each statement was taken as an indication of whether the expectations or actions could be taught. Agreement was taken when a simple majority of voters was found.

EXPECTATIONS

160 expectations were indicated as being teachable by at least one rater, with 43 (20%) being selected by all three and 62 (29%) selected by two out of three. Thus, of the 207 expectations, 105 were considered teachable by at least two raters. Though the second question of whether the expectations could be taught in a research methods course lead to 126 expectations being selected as appropriate for a postgraduate RM course, with 27 (13%) selected by all three. The emphasis in these expectations is clearly on knowledge of methods, search skills, and literature reviewing.

Teachable in Postgraduate RM Courses 100% Consensus

- Able to present own views of literature
- Can determine relevance of article to chosen topic; discriminate selection
- Carry out systematic, focused literature searches
- Have skills at questionnaire construction
- Know about & skills to construct data collection tools

Teachable in Postgraduate RM Courses 100% Consensus

Know about, understand & able to read quantitative, qualitative, & mixed method research

Know basics of literature review

Know common sampling frames & types

Know features & suitability of experiments

Know features & suitability of policy analysis

Know features & suitability of single-subject study

Know features & suitability of using action research

Know features & suitability of using case study

Know features & suitability of using emancipatory research

Know features & suitability of using field study

Know features & suitability of using participatory research

Know how to derive & frame research questions

Know sampling techniques

Knows what counts as evidence

Overview knowledge about basic methodologies, methods, & strategies

Prepare appropriate ethics application

Select method/tools for problem appropriate to field or question or purpose or hypotheses

Understand different evidence/information provided by different methods

Understand that Pasifika and Maori research requires prior consultation and empowerment

Understand threats to reliability

Understand threats to validity

Understanding of different philosophic bases for research

A small group of items ($k=13$) scored 3 for teachable and 2 for appropriate to postgraduate RM courses.

Teachable in Postgraduate RM Courses 67% Agreement

Can write summary of an article, or key findings or arguments

Engaged in qualitative analysis (e.g. discourse) in seminar or project

Know how to derive coding categories

know principles & processes of qualitative data analysis

Know strengths & weaknesses of statistical techniques

Understand & able to use common methods of analysis

Understand Document Analysis

Understand Historiographic analysis

Understand research is not value free

Understand statistical growth & increases

Understand statistical probability

Use range of library catalogues & databases, bibliographic tools

Write critical, scholarly review of literature; synthesis of ideas and answers research questions; with embedded argument

The correlation between the teachability of each statement and its suitability for research methods courses was $r=.69$, indicating only moderate levels of agreement between the two dimensions. Perhaps, the take home message is that for a substantial proportion, these items can be taught elsewhere rather than in postgraduate research methods papers.

The correlation of each statement's teachability score with the statement's adjusted expected score (derived from all those voting for the statement's importance) was very weak ($r=.14$)—simply, what was expected by supervisors was only marginally considered teachable. The correlation of appropriate to RM courses score with the same adjusted expected score was fundamentally zero ($r=-.02$)—in other words, there was no systematic agreement or disagreement between what was considered expected and what was considered teachable in a postgraduate research methods course. It may be very tempting to consider that what is expected of postgraduate students before they enter independent research cannot be taught and is not appropriate to postgraduate research methods courses. However, this result, based on combined ratings of just three judges, deserves further investigation.

Nevertheless, what this sample of masters supervisors currently expect students to be able to do, know, or understand seems to be a very different thing to what might be legitimately expected to be taught in a postgraduate research methods course.

ACTIONS

Just over 100 ($n=111$) actions were selected as being teachable and of those just 62 were selected as teachable in research methods courses. However, a much smaller number of actions were agreed upon as teachable within a research methods course, the issue of most interest. Only four items were selected by all three raters as teachable in research methods courses; that is requiring students to work with data; requiring students to develop an ethical proposal with an ethics committee application; requiring students to suggest appropriate methods for different research questions; and providing a generic introduction to research traditions.

A further 19 actions were selected by two out of three raters as teachable in research methods courses. Five of these related to literature reviews, three to the evaluation of research reports, three to teaching methods, two to readings or texts provided to students, two to the assessment of student learning, and the balance to different categories.

Teachable in Postgraduate RM Courses 67% Agreement

Assess writing a literature review in masters papers
 Ensure assessments require performance of expectations
 Make attention to philosophic issues part of all course work not just methods
 Make students find their own readings rather than spoon feed them with books of readings
 Permit students to develop research questions by debating content area
 Provide examples of good literature reviews
 Provide lecture for each methodology
 Provide options on different research methods such not everyone does all the same things
 Require & support quality academic writing in all masters courses
 Require student to analyse quantitative & qualitative research reports
 Require student to carry out key word search
 Require student to conduct critical review of research study
 Require student to develop cognitive skills (critique, compare, contrast, seek gaps & needs)
 Require student to prepare annotated bibliography of 10 key articles
 Require student to read range of research studies
 Require student to show competence at accurate academic writing
 Require student to study basis of research ethics
 Require student to summarise research reports
 Requires students to identify in groups common themes from 3 articles

Discussion

Education is a practice-oriented profession as well as being a scholarly discipline within the academy. The majority of students entering postgraduate studies in the Faculty of Education come from a strong practice-oriented experience and preparation. This means, perhaps unlike 'hard' sciences, that many students have little experience or knowledge of research and many of the lecturing faculty may themselves be new to postgraduate research. Furthermore, the essential skill set and epistemology brought to postgraduate study by practice-oriented educators is not predominantly analytic, conceptual, or inquiry-based—it is experiential, relational, holistic, and intuitive. At the same time, provision has to be made for students who come through undergraduate disciplines other than teaching (e.g., psychology, philosophy, sociology, psychology, mathematics, English, etc.) who are seeking early preparation for scholarly research in the academic disciplines within education.

Two major destinations exist for research preparation in education; the majority of practice-oriented candidates may well return to the profession, hopefully as active consumers, conductors of at least small scale research, and collaborators with external researchers, while a minority (which perhaps we might wish and strive to make larger) will go on to advanced doctoral research. Nevertheless, we must not let 'practice-oriented' suggest that teachers do not need to understand or know how to conduct research. Even postgraduate students who return to the classroom have to (1) teach their own students basic research, (2) conduct evaluations of their own classroom and school practices and data, and (3) conduct critical appraisals of professional development opportunities so that evidence-based decisions are made about PD choices.

These destinations and purposes have a significant impact on the design of research methods curriculum and pedagogy. Just as dual career pathways (i.e., teaching and research) can be proposed for academic staff in Faculties of Education, so too can dual research pathways be proposed for teachers. A minority may wish to become fully-fledged researchers—these should be encouraged and required to go beyond the masters to a doctorate. The majority may wish to terminate their postgraduate research preparation with the masters.

It remains to be agreed what the research methods curriculum ought to be for these practice-oriented students and how to reconcile the differing purposes and applications. Some examples of practitioner-oriented masters research preparation programs were found in the literature and three major principles for the design of research methods preparation were elucidated from the literature. Research preparation programs should ensure diversity of knowledge and skills are delivered, much opportunity is given for practice, and should aim for the development of a range of personal, social, and managerial skills. The critical role of the supervisor cannot be understated and there is significant need to provide effective professional development to those education staff who may be ex-classroom practitioners themselves eager to pursue the role of supervisor.

However, the supervisor is but one element in a multi-faceted research environment. The presence of opportunities for students to practice research with groups of active researchers enriches and extends the impact of research preparation. Thus, beyond coursework and supervision, high-quality research preparation requires the development of an environment in which students can learn by participating in real research programs and projects. The development of active research teams or centres which can give masters students opportunities to be involved in research, in conjunction with appropriate research methods courses, may go a long way towards developing masters students capable of independent research.

High-quality programs also seek to evaluate their effectiveness. Three major mechanisms exist in the literature (examination of faculty judgments, examination of student research outputs, examination of student perceptions) to determine the quality and effectiveness of research preparation, though most of these have not been implemented or used with masters students in education.

The research with our own faculty's masters supervisors has shown that a wide range of expectations concerning skills, knowledge, understanding, and attributes of students exist. Further, the data suggests that beyond the literature review and appropriate search strategies, there is very little agreement as to what should be taught in our postgraduate research methods courses. Indeed, many of the important expectations may not even be teachable within a postgraduate research methods course. It may be that the dominance of the British model of supervisor-taught research methods in during the conduct of the student's thesis research explains this pattern of results. If so, then the nature of research methods preparation may need to be redesigned to fit better with a 'learned-on-the-job' model supervisors seem to be practicing. Since there is such a wide gamut of research methods options for use within education research, it seems most unlikely that all the important methodological content can be taught within 30 points of teaching. Furthermore, since students have such a wide range of interests it seems highly unlikely that one course could meet all interests, needs, or requirements. However, the actions selected as most likely to fit the research methods courses all seem to revolve around the actual practice of doing research. What remains to be seen is whether the wider group of supervisors can also find consensus as to what can actually be taught in research methods courses and whether that consensus can lead to the design of an appropriate and agreed curriculum and assessment scheme for the research methods courses.

Thus, any institution seeking to improve the quality of research methods preparation and seeking to improve student independence would do well to investigate and determine for itself what its expectations are and what its clients' requirements are. Clearly, this research would seem to indicate that no single generic course would be sufficient to produce practitioners who can consume research powerfully, let alone produce practitioners capable of investigating and evaluating practices within their own institutions, or engaging upon the much lengthier process of becoming a full academic researcher. Neither would such a generic course necessarily suit the needs of the education post-graduate student seeking to pursue advanced research methods knowledge, skill, or ability.

In considering the findings reported in this document, the reader should consider a range of options that the Faculty of Education may have at its disposal.

- *Option 1.* Eliminate the provision of and the requirement to do research methods courses. Place all responsibility for RM instruction on the supervisor and the candidate.
- *Option 2.* Continue with the current requirement that the candidate take any 30 points in research methods and maintain the current range of courses offered.
- *Option 3.* Extend the suite of optional RM papers to extend the coverage of a wider range of methods.
- *Option 4.* Replace all current RM courses with a modular system that has a core compulsory section and a series of optional modules from which the student must take 30 points.
- *Option 5.* Require completion of a core compulsory course of generic RM material (15 points) and offer a range of optional RM papers to extend the coverage of a wider range of methods.

- *Option 6.* Something new that you might care to specify.

Whatever systemic option is taken by the faculty concerning the regulation of research methods preparation, a number of important research studies remain to be conducted. It should be noted that HPEC permission was obtained to conduct a survey of 2005 research methods students to evaluate their RM course experience and to evaluate the 2006 RM course assignments and assessed work in light of faculty expectations. Both of these projects were initiated but have not been completed due to insufficient participation.

The reader should also consider what response he or she might have to each of these studies, listed in no special order.

- A review of graduating standards to determine the degree and nature of research skills, knowledge, and understanding implied or required by those standards.
- An evaluation of theses from the last 5 years to determine the degree to which the work meets the graduation standards.
- An evaluation of current research methods assignments and examinations to determine the degree to which they require the skills, knowledge, and understanding required by the graduating standards and/or faculty expectations.
- Investigations into determining the feasibility and validity of measuring candidates' research skills, knowledge, and understandings prior to their commencing independent research.
- A survey of student satisfaction with current research methods courses to inform possible revisions to current curriculum and/or regulations.
- A stock-take of current undergraduate programs and course to establish which research skills are being taught and assessed
- A survey of examiner's reports for completed MEd & MA theses for the past 5 years to ascertain the nature and quality of the methodologies used.
- A survey of the occupational destinations of MEd & MA candidates for the past 5 years to ascertain the effect and value of research methods preparation.
- A survey of the number and quality of presentations or publications arising from completed MEd & MA theses for the past 5 years to ascertain the effect and value of research methods preparation.
- Inspection of the research methods preparation regulations and requirements of universities which we wish to emulate or compare ourselves to.
- Visitation and/or exchanges with Universitas 21 Colleges/Faculties/Schools of Education to determine how they are meeting education students' research preparation needs.
- A survey of students currently doing Masterate theses or dissertations concerning the appropriateness or quality of the research preparation they have been provided

The intention of the RPIS advisory committee is that an open meeting be called among research supervisors at the masters level to discuss options and directions.

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Appendix 1. Delphi Round 2 Actions Voting Analysis

Variables:

ID	Actions	Very Unimportant	Unimportant	Slightly Important	Moderately Important	Important	Very Important	Count Votes	Vote Score	% of voters	Raw Mean	Weighted Mean
Row identifier	Proposed Action	Number of voters for this rating; value of Score = 1	Number of voters for this rating; value of Score = 2	Number of voters for this rating; value of Score = 3	Number of voters for this rating; value of Score = 4	Number of voters for this rating; value of Score = 5	Number of voters for this rating; value of Score = 6	Sum of all votes; maximum = 16	Number of Votes per Rating multiplied by Rating Score	Percentage of 16	Vote Score divided by Number of Voters. The average score given by those who voted.	Raw Mean multiplied by % of voters. The average score given by those who voted, adjusted for their proportion of maximum number of voters.

Weighted Mean gives best understanding of which actions are considered important.

ID	Actions	Very Unimportant	Unimportant	Slightly Important	Moderately Important	Important	Very Important	Count Votes	Vote Score	% of voters	Raw Mean	Weighted Mean
0	Curriculum											
1	Proposals											
2	1 Require student to develop ethical proposal, application	1			1	9	4	15	74	.94	4.93	4.63
3	2 Require student to develop proposal for research on important aspect of practice	1	1	1	4	6	2	15	64	.94	4.27	4.00
4	3 Require presentation of research proposal in a supervisor/student seminar	2	1	6	4	3		16	53	1.00	3.31	3.31
5	4 Require student to study basis of research ethics	1		4	2	5	4	16	70	1.00	4.38	4.38
6	5 Require student to suggest appropriate methods for different research questions		2	1	2	9	2	16	72	1.00	4.50	4.50
7	Literature Review											
8	1 Require student to practice, compile, be taught, write literature review	1		1	1	7	5	15	73	.94	4.87	4.56
9	2 Require student to present literature review in a supervisor/student seminar	2	2	4	6	2		16	52	1.00	3.25	3.25
10	3 Require Class discussion of lit reviews done by class members	1	2	4	7	1	1	16	56	1.00	3.50	3.50
11	4 Require student to read range of research studies				8	6	2	16	74	1.00	4.63	4.63
12	5 Integrate library sessions in courses specific to assignments	2		6	1	5	2	16	61	1.00	3.81	3.81
13	6 Require student to prepare annotated bibliography of 10 key articles	1	2	2	6	4	1	16	61	1.00	3.81	3.81
14	7 Require student to carry out key word search		2	4	3	3	4	16	67	1.00	4.19	4.19
15	8 Ensure students can understand any of 100 chosen articles	2	5	3	2	1	1	14	40	.88	2.86	2.50
16	9 Requires students to identify in groups common themes from 3 articles		2	3	3	7	1	16	66	1.00	4.13	4.13
17	10 Require & support quality academic writing in all Masterate courses			2	1	4	8	15	78	.94	5.20	4.88
18	Evaluation of Research Reports											

ID	Actions	Very Unimportant	Unimportant	Slightly Important	Moderately Important	Important	Very Important	Count Votes	Vote Score	% of voters	Raw Mean	Weighted Mean
19	1 Require student to analyse quantitative & qualitative research reports	1		3	1	10	1	16	70	1.00	4.38	4.38
20	2 Require student to analyse methods in research projects			1	4	10	1	16	75	1.00	4.69	4.69
21	3 Require student to conduct critical review of research study	1		1	3	9	2	16	73	1.00	4.56	4.56
22	4 Require student to summarise research reports	1	1	3	2	8	1	16	66	1.00	4.13	4.13
23	5 Provide introduction to research traditions (generic course)	1	1	2	5	3	1	13	50	.81.00	3.85	3.13
24	Customisation											
25	1 Require students to access & use own material	2		1	4	6	1	14	57	.88	4.07	3.56
26	2 Focus methods on students' topics	1	2	1	6	4	1	15	58	.94	3.87	3.63
27	3 Provide options on different research methods such not everyone does all the same things	1	1	2	2	5	2	13	54	.81.00	4.15	3.38
28	Methodological Diversity/Plurality											
29	1 Require student to conduct exercise in curriculum unpacking	7	4	1	1	1		14	27	.88	1.93	1.69
30	2 Require student to conduct exercise in rigorous document analysis	4	3	2	3	3		15	43	.94	2.87	2.69
31	3 Require student to conduct interpret primary historical document	5	3	2	3	1	1	15	40	.94	2.67	2.50
32	4 Require student to trace development of topic in history or policy	6	2	2	3	2		15	38	.94	2.53	2.38
33	5 Require student to demonstrate familiarity with philosophic basis of research		3	3	5	3		14	50	.88	3.57	3.13
34	6 Require student to conduct exercise in basic statistics	2	1	2	4	2	4	15	60	.94	4.00	3.75
35	7 Require student to conduct critique different academic genre	2	2		5	1	2	12	43	.75	3.58	2.69
36	8 Require student to be taught/study range of data generation & analysis processes	1	1	2	5	1	4	14	58	.88	4.14	3.63
37	9 Require student to study range of research designs			3	4	6	3	16	73	1.00	4.56	4.56
38	10 Provide Overview on nature of science	4	3	2	4	2		15	42	.94	2.80	2.63

ID	Actions	Very Unimportant	Unimportant	Slightly Important	Moderately Important	Important	Very Important	Count Votes	Vote Score	% of voters	Raw Mean	Weighted Mean
39	11 Teach to do constant comparative; analytical coding	3	2	3	4	2		14	42	.88	3.00	2.63
40	12 Reduce focus on methodological issues and make focus on real world completion	3	3	4	2	1		13	34	.8100	2.62	2.13
41	13 Provide experiences that focus on both theory and construction of knowledge	2	2	1	3	6	1	15	57	.94	3.80	3.56
42	14 Require Maori research methodology to be in all postgraduate papers	4	5	3		2		14	33	.88	2.36	2.06
43	15 Require Pasifika research methodology to be in all postgraduate papers	4	6	2	1	1		14	31	.88	2.21	1.94
44	Readings/Text											
45	1 Provide examples that show abuse of minority groups by researchers	2	2	4	2	3		13	41	.8100	3.15	2.56
46	2 Provide readings by researchers who advocate power sharing between participants and researchers	3	2	3	3	1	2	14	45	.88	3.21	2.81
47	3 Provide seminal articles only in readings	3	1	5	2	2		13	38	.8100	2.92	2.38
48	4 Provide readings that exemplify range of methods	1		1	3	9		14	61	.88	4.36	3.81
49	5 Ensure readings focus on expected standards	1			1	6	2	10	47	.63	4.70	2.94
50	6 Provide readings on how to reference and conduct research	1	1		1	9	2	14	64	.88	4.57	4.00
51	7 Provide examples of good literature reviews	1			4	6	5	16	77	1.00	4.81	4.81
52	8 Make students find their own readings rather than spoon feed them with books of readings			1	6	4	3	14	65	.88	4.64	4.06
53	Submission											
54	1 Require student to show competence at accurate academic writing				3	7	5	15	77	.94	5.13	4.81
55	2 Require use of proof readers & editors before submission	3	2		5	2	2	14	49	.88	3.50	3.06
56	Pedagogy											
57	1 Require student to design research study based on articles in the news	5	7	1	1			14	26	.88	1.86	1.63
58	2 Provide exercises that require identifying 3	1	2	8	3			14	41	.88	2.93	2.56

ID	Actions	Very Unimportant	Unimportant	Slightly Important	Moderately Important	Important	Very Important	Count Votes	Vote Score	% of voters	Raw Mean	Weighted Mean
	issues around a topic											
59	3 Avoid topics with high personal or emotional relevance	4	6	3				13	25	.81.00	1.92	1.56
60	4 Provide lecture for each methodology	3	3	3	2	1	2	14	43	.88	3.07	2.69
61	5 Require students to collect data in variety of methods as part of course	2	1	1	7	2	1	14	51	.88	3.64	3.19
62	6 Require students to conduct action research or conduct a change study of own practice	5	3	2	3	1		14	34	.88	2.43	2.13
63	7 Provide exercises in data analysis			1	6	4	3	14	65	.88	4.64	4.06
64	8 Provide critique of researcher's world view impact on research	2	1	2	1	4	1	11	40	.69	3.64	2.50
65	9 Require students to work with data	1		1	3	3	6	14	67	.88	4.79	4.19
66	10 Permit students to develop research questions by debating content area	2		1	3	7		13	52	.81.00	4.00	3.25
67	11 Make attention to philosophic issues part of all course work not just methods	1	2	5	1	4	1	14	50	.88	3.57	3.13
68	12 Include thesis preparation as part of RM paper		1	3	4	2	1	11	43	.69	3.91	2.69
69	Miscellaneous											
70	1 Require student to develop cognitive skills (critique, compare, contrast, seek gaps & needs)				2	6	4	12	62	.75	5.17	3.88
71	Assessment											
72	1 Students to be assessed on multiple skills (e.g., essay, position paper, analysis of practice)	1		3	3	4	3	14	60	.88	4.29	3.75
73	2 Students to be required to pass mastery based units before proceeding to thesis	2	3	4	1	3	1	14	45	.88	3.21	2.81
74	3 Ensure consistency in lecturer feedback on pre-thesis assignments	1		3	1	5	3	13	57	.81.00	4.38	3.56
75	4 Assess writing a literature review in Masterate papers			3	3	6	2	14	63	.88	4.50	3.94
76	5 Assess methods write up of small group project in Masterate papers	1	2	4	3	3	2	15	56	.94	3.73	3.50
77	6 Assess ability to carry out small research project in Masterate papers		2	4	3	4	2	15	60	.94	4.00	3.75

ID	Actions	Very Unimportant	Unimportant	Slightly Important	Moderately Important	Important	Very Important	Count Votes	Vote Score	% of voters	Raw Mean	Weighted Mean
78	7 Ensure assessments require performance of expectations		2	1	2	5	4	14	64	.88	4.57	4.00
79	8 Ensure assessments across degree cover all expectations, not within each course	2		2		1	7	12	55	.75	4.58	3.44
80	Institutional Arrangements											
81	1 Design Masterate degree around structured set of courses rather than pick and mix (portfolio for professional teachers to include: general methods, research question, deep knowledge of pertinent methods, literature review)	2	3	1	1	4		11	35	.69	3.18	2.19
82	2 Provide generic course followed by in-depth focussed methodological papers	2	1	1	5	2	3	14	55	.88	3.93	3.44
83	3 Establish Recognition of Prior Learning system to identify if students can do RM	1	4	2	2	5		14	48	.88	3.43	3.00
84	4 Ensure research methods instructors are experienced researchers who are epistemologically ecumenical		1		2	4	6	13	66	.81	5.08	4.13
85	5 Include range of lecturers to avoid over-narrowing of curriculum	1	1	1	2	5	5	15	69	.94	4.60	4.31
86	6 Avoid location of RM courses in a single school to avoid over-narrowing of curriculum	1	1	1	3	4	5	15	68	.94	4.53	4.25
87	7 Provide good study and meeting facilities for postgraduate students			1	3	3	8	15	78	.94	5.20	4.88
88	8 Encourage postgraduate students to publish their research in ACE Papers	1	2	2	2	6	2	15	61	.94	4.07	3.81
89	9 Increase workload points for Masterate supervision	1	1	1	2	4	6	15	70	.94	4.67	4.38
90	10 Compare and adjust our programs with those of institutions we admire and wish to emulate	1	1	3	4	4	2	15	60	.94	4.00	3.75
91	11 Compare and adjust our programs with job requirements in education	1	2	1	5	3	1	13	49	.81.00	3.77	3.06
92	12 Compare and adjust our programs with contents of admirable RM text books	2	2	1	2	5	1	13	48	.81.00	3.69	3.00
93	Communication											

ID	Actions	Very Unimportant	Unimportant	Slightly Important	Moderately Important	Important	Very Important	Count Votes	Vote Score	% of voters	Raw Mean	Weighted Mean
94	1 Provide student information evenings to prepare students for content	1	1	5	3	1	3	14	53	.88	3.79	3.31
95	2 Ensure students are briefed as to expectations before starting (incl. nature of supervision)	1		1	1	6	5	14	68	.88	4.86	4.25
96	3 Provide pre-enrolment information to students esp. re: student learning support		1		2	6	5	14	70	.88	5.00	4.38
97	4 Set out expectations in PR and enrolment materials				5	4	5	14	70	.88	5.00	4.38
98	5 Timely clear access to course information provided to students (not gatekeeping by front line staff)		1		4	5	5	15	73	.94	4.87	4.56
99	6 Require discussion with Head PGS prior to enrolment	1	3	1	1	7	1	14	55	.88	3.93	3.44
100	Preparation											
101	1 Offer effective student learning support				2	5	7	14	75	.88	5.36	4.69
102	2 Offer optional seminars & short courses for skills				2	7	5	14	73	.88	5.21	4.56
103	3 Offer academic writing workshops			1	2	7	5	15	76	.94	5.07	4.75
104	4 Offer workshop activities within class time	2	2	1	6	2	2	15	55	.94	3.67	3.44
105	5 Offer mastery based workshops on essential location/search tools	1		1	4	6	3	15	68	.94	4.53	4.25
106	6 Offer mastery based workshops on essential data management tools (incl endnote)	1			4	6	4	15	71	.94	4.73	4.44
107	7 Offer mastery based workshops on essential data analysis tools	1			3	6	5	15	73	.94	4.87	4.56
108	8 Offer Student Learning Centre workshops on report evaluation	1		2	3	5	3	14	62	.88	4.43	3.88
109	9 Direct students to support systems and on-going workshops (incl. library)				1	4	8	13	72	.81.00	5.54	4.50
110	10 Require contracts with supervisors	2	2	2	4	4	1	15	54	.94	3.60	3.38
111	11 Establish student network/advisory group		1	2	3	7	2	15	67	.94	4.47	4.19
112	12 Offer optional research seminars by experienced researchers to share experience prior to enrolment for thesis			1	4	6	3	14	67	.88	4.79	4.19

ID	Actions	Very Unimportant	Unimportant	Slightly Important	Moderately Important	Important	Very Important	Count Votes	Vote Score	% of voters	Raw Mean	Weighted Mean
113	13 Offer optional research seminars by experienced researchers to do with ethics, literature review, etc.			1	4	6	4	15	73	.94	4.87	4.56
114	14 Run postgraduate student seminars regularly			1	1	10	3	15	75	.94	5.00	4.69
115	15 Offer Library labs to ensure students have search skills			2	1	6	6	15	76	.94	5.07	4.75
116	16 Provide personal tutoring for those having difficulty with library searching	1	3	2	5	1	2	14	50	.88	3.57	3.13
117	17 Provide Mastery based units on research design, threats to validity, etc.	1		3	4	4	2	14	58	.88	4.14	3.63
118	18 Provide learning support for self-management skills	1	1	5	6	1	1	15	53	.94	3.53	3.31
119	Miscellaneous											
120	1 Establish consistent faculty standards for 'writing'			1	3	4	5	13	65	.81.00	5.00	4.06
121	2 Move Education Library collection from city to Epsom campus	2		1	3	3	5	14	62	.88	4.43	3.88
122	3 Engage Maori researchers in decision making about Masterate degrees	3	3		2	4	2	14	49	.88	3.50	3.06
123	4 Engage Pasifika researchers in decision making about Masterate degrees	3	3		2	4	2	14	49	.88	3.50	3.06
124	5 Prepare all supervisors in Maori and Pasifika research methods as part of supervision practice	3	3	3	3	1	1	14	41	.88	2.93	2.56
125	6 Require all ethics applications to include consultation with diverse groups	3	4	3	1	1		12	29	.75	2.42	1.81
126	7 Appoint senior Pasifika researchers to Masterate and doctoral teams	2	2	3	1	1	3	12	42	.75	3.50	2.63
127	8 Appoint senior Maori researchers to Masterate and doctoral teams	2	2	3	1	2	3	13	47	.81.00	3.62	2.94
128	Minimum Competency Prerequisites Established											
129	Before Enrolling in Thesis proper											
130	1 Require minimum competency at writing before being allowed to proceed to thesis				4	5	5	14	71	.88	5.07	4.44

ID	Actions	Very Unimportant	Unimportant	Slightly Important	Moderately Important	Important	Very Important	Count Votes	Vote Score	% of voters	Raw Mean	Weighted Mean
131	2 Require minimum competency at self-management before being allowed to proceed to thesis		1	5	1	4	3	14	59	.88	4.21	3.69
132	3 Require competency at citation and referencing skills pre-thesis research course enrolment			2	5	3	4	14	65	.88	4.64	4.06
133	4 Require competency at basic descriptive and inferential statistics pre-thesis research course enrolment		4	3	3	3	1	14	50	.88	3.57	3.13
134	5 Require competency at determining whether research questions are answered pre-thesis research course enrolment		4	2	5		1	12	40	.75	3.33	2.50
135	6 Require competency at evaluating answers to research questions pre-thesis research course enrolment	1	4	2	4		1	12	37	.75	3.08	2.31
136	7 Require students to demonstrate knowledge of field in a proposal before being allowed to enrol			3	5	5	1	14	60	.88	4.29	3.75
137	8 Require completion of very small empirical study in research methods paper		5	2	2	5		14	49	.88	3.50	3.06
138	9 Require competence at library searching			1	3	9	1	14	66	.88	4.71	4.13
139	10 Require passing of research methods course prior to thesis				3	5	6	14	73	.88	5.21	4.56
140	11 Require competency in English language skills				3	5	6	14	73	.88	5.21	4.56
141	12 Require competency at reviewing & critiquing literature prior to thesis enrolment				6	6	2	14	66	.88	4.71	4.13
142	13 Require completion of independent research project or literature review prior to start thesis		5	3	2	3	1	14	48	.88	3.43	3.00
143	14 Require competency at data analysis that is not subjective	1	4	4	2	1	1	13	40	.8100	3.08	2.50
144	Undergraduate											
145	1 Require & provide 200/300 level courses to gain basic research skills	2		2	5	3	3	15	61	.94	4.07	3.81
146	2 Require & provide 200/300 level courses to	2		3	5	2	3	15	59	.94	3.93	3.69

ID	Actions	Very Unimportant	Unimportant	Slightly Important	Moderately Important	Important	Very Important	Count Votes	Vote Score	% of voters	Raw Mean	Weighted Mean
147	3 learn how to do literature review Require & provide 200/300 level courses to learn research designs	2		2	5	3	3	15	61	.94	4.07	3.81
148	4 Require high quality research paper in an Honours degree as prerequisite	1	1	1	4	5	3	15	65	.94	4.33	4.06
149	5 Require high quality academic writing paper in an Honours degree as prerequisite	1	1	2	3	4	2	13	53	.81.00	4.08	3.31
150	6 Require & provide undergraduate courses in research design	1	1	2	3	4	3	14	59	.88	4.21	3.69
151	7 Require & provide undergraduate courses in assessment	2	4		2	4	2	14	50	.88	3.57	3.13
152	8 Require & provide undergraduate courses in management	5	4	1	2		1	13	30	.81.00	2.31	1.88
153	9 Require & provide undergraduate courses in statistics	2	3	3	2	1	3	14	48	.88	3.43	3.00
154	10 Require & provide undergraduate courses in quantitative and qualitative methodologies	2		1	4	4	3	14	59	.88	4.21	3.69
155	11 Require & provide senior undergraduate experiences in item writing, survey design, interviewing	2	3	2	2	3	2	14	49	.88	3.50	3.06
156	12 Require & provide senior undergraduate research training by experienced, motivated instructor who has done a broad range of research	2		1	3	4	2	12	49	.75	4.08	3.06
157	13 Require completion of relevant L300 content paper within last 5 years	1	3	1	1	4	2	12	46	.75	3.83	2.88
158	14 Require completion of relevant research methods paper within last 5 years	1	3	2	2	4	1	13	47	.81.00	3.62	2.94
159	15 Require competency in academic writing by end of undergraduate degree		1		3	7	3	14	67	.88	4.79	4.19
160	Faculty Self-Review											
161	1 Examine career/further education destinations of research Masterate graduates for last 5 years	2	1	2	2	3	4	14	57	.88	4.07	3.56

ID	Actions	Very Unimportant	Unimportant	Slightly Important	Moderately Important	Important	Very Important	Count Votes	Vote Score	% of voters	Raw Mean	Weighted Mean
162	2 Conduct stocktake of professional career presentations and publications for research masterate graduates of last 5 years	1		4	2	3	4	14	60	.88	4.29	3.75
163	3 Examine time students take to complete research Masterate degrees	1		2	2	6	3	14	63	.88	4.50	3.94
164	4 Examine research Masterate degree pass-fail rates,	1			4	7	2	14	64	.88	4.57	4.00
165	5 Examine research masterate thesis comments from external examiners				6	5	3	14	67	.88	4.79	4.19
166	6 Examine the perceptions of current and recently completed students about research methods preparation				3	6	5	14	72	.88	5.14	4.50
167	1 Require potential supervisors to undertake training in ethics relating to maori/pasifika research topics					1		1	5	.06	5.00	.31
168	2 Require students to study ethics relating to maori/pasifika people/research topics					1		1	5	.06	5.00	.31
	COUNT of Voters all items	89	80	108	129	127	109				642	
	Score (Voters * Weight) all items	89	160	324	516	635	654				3.70	
	<i>M</i> all items							14.19	57.06	.89	3.58	3.57
	<i>SD</i> all items							1.18	13.17	.07	1.47	.82

Appendix 2. *Delphi Round 2 Expectations Voting Analysis*

number	code	EXPECTATION	category	Basic	Before Proficient	Advanced	LATER	NOT at all	Do not understand	Weighted Before Score	Voters N
Unique row identifier		Statement of items from Delphi Round 1	Concept that expectation relates to	Required to a basic level before enrolment in thesis. Value = 1	Required to a proficient level before enrolment in thesis. Value = 2	Required to an advanced level before enrolment in thesis. Value = 3	Required later after enrolment in thesis. Value added to divisor of Score	Not Required at all during enrolment in thesis. Value added to divisor of Score	Meaning of statement not clear. Value added to divisor of Score	Sum of before ratings (count *value) divided by total number of votes	Total number of voters for this statement

number	code	EXPECTATION	category	BEFORE			LATER	NOT at all	Do not understand	Weighted Before Score	Voters N
				Basic	Proficient	Advanced					
0		Diversity & Plurality									
1	1	Know about, understand & Able to read quant, qual, & mixed method research	knowledge	14	4		2			1.10	20
2	2	overview knowledge about basic methodologies, methods, & strategies	knowledge	15	5					1.25	20
3	3	Understanding of different Philosophic bases for research	knowledge	10	3		4			.94	17
4	4	Understand strengths & weaknesses of quant & qual research methods	knowledge	12	5		3			1.10	20
5	5	Research includes Evaluation purposes	knowledge	6	3		7	1	2	.63	19
6	6	Epistemologically ecumenical	knowledge	5	1		6	2	6	.35	20
7	7	Understand different evidence/information provided by different methods	knowledge	14	2		3			.95	19
8		Nature of Knowledge									
9	1	Understand the nature of research	knowledge	9	8	1	2			1.40	20
10	2	Role of theory and empirical work	knowledge	12	3	1	3	1		1.05	20
11	3	Knows what counts as evidence	knowledge	9	8	1	2			1.40	20
12	4	Understand socio-political frameworks of research	knowledge	4	6		5	4		.84	19
13	5	Analyse data independent of personal convictions	knowledge	10	6		4			1.10	20
14		Search Skills									
15	1	Use range of library catalogues & databases, bibliographic tools	search	6	9	5				1.95	20
16	2	Carry out systematic, focused literature searches	search	9	9	2				1.65	20
17	3	Access literature wide range of sources	search	6	11	3				1.85	20
18	4	Able to source literature	search	5	11	4				1.95	20
19	5	Know how to find relevant material	search	7	10	3				1.80	20
20	6	Identify main journals in own field	knowledge	1	9	3	4	3		1.40	20

number	code	EXPECTATION	category	BEFORE			LATER	NOT at all	Do not understand	Weighted Before Score	Voters N
				Basic	Proficient	Advanced					
21	7	Independence at accessing literature	self-regulation	3	8	4	3	1		1.63	19
22		Evaluation of Literature									
23	1	Critique range of documents & research reports	knowledge	12	4		1			1.18	17
24	2	Write critical, scholarly review of literature; synthesis of ideas and answers research questions; with embedded argument	writing	6	2		11	1		.50	20
25	3	Can determine relevance of article to chosen topic; discriminate selection	thought	8	7	2	3			1.40	20
26	4	Can write summary of an article, or key findings or arguments	writing	4	11	4	1			1.90	20
27	5	Identify key features of quality thesis work	knowledge	10	4	0	5	1		.90	20
28	6	Spot flaws in common methods of analysis	knowledge	8	3	0	7	1		.74	19
29	7	Know basics of literature review	search	7	9	3				1.79	19
30	8	Read literature with an evaluative eye	thought	8	7	2	2			1.47	19
31	9	Recognise impact of different philosop./theoretic. positions on data presentation	knowledge	5	3		9	3		.55	20
32	10	Able to present own views of literature	thought	10	5	2	2	1		1.30	20
33	11	Ability to critique empirical, quantitative research paper	knowledge	9	3		7	1		.75	20
34	12	Read & evaluate the statistical procedures current in the literature (SEM, HLM)	knowledge	6			10	4		.30	20
35	13	Familiarity with literature review process	search	12	3	3				1.50	18
36		Question/Problem Specification									
37	1	Know how to derive & frame research questions	knowledge	8	4		6			.89	18
38	2	Identify research questions	thought	12	5		2			1.16	19
39	3	Question informed by literature	thought	8	7		3			1.22	18
40	4	Know importance, worthwhileness of research question	knowledge	9	4		5			.94	18

number	code	EXPECTATION	category	BEFORE			LATER	NOT at all	Do not understand	Weighted Before Score	Voters N
				Basic	Proficient	Advanced					
41	5	Able to write specific, logically related research questions/hypotheses	knowledge	8	3		7			.78	18
42	6	Skill in answering where to now and how questions after reading research	knowledge	7	3		8			.72	18
43	7	Ability to create precise researchable question that leads to data collection	knowledge	6	4		8			.78	18
44	Research Design										
45	1	Select method/tools for problem appropriate to field or question or purpose or hypotheses	knowledge	9	4		4			1.00	17
46	2	Basic knowledge of quant & qual designs	knowledge	12	3		2			1.06	17
47	3	Understand threats to validity	knowledge	7	4	1	6			1.00	18
48	4	Understand threats to reliability	knowledge	7	4	1	6			1.00	18
49	5	Know how to design coherent research	knowledge	6	3		9			.67	18
50	6	deeper understanding of either quant or qual methodologies	knowledge		1		13	2	2	.11	18
51	7	Classify studies according to design	knowledge	8	3		4	3		.78	18
52	8	Know strengths & weaknesses of quant & qual designs	knowledge	9	4		3	1	1	.94	18
53	9	Understand basic research concepts	knowledge	9	6		2			1.24	17
54	10	Have appropriate cultural knowledge (esp. Kaupapa Maori)	Maori/Pasifika	8	2	1	4	3		.83	18
55	11	Distinguish description and analysis	knowledge	8	4		6			.89	18
56	12	Know how to set up an investigation	knowledge	12			3		2	.71	17
57	13	Understand features of research: questions examined, withstand scrutiny	knowledge	6	1		7		4	.44	18
58	14	carry out the design of research and evaluation studies	knowledge	8	1		7	1	1	.56	18
59	15	in-depth understanding of methods for own research	knowledge	3	3		11		1	.50	18
60	Data collection										
61	1	Knowledge of most common qualitative &	knowledge	10	3		5			.89	18

number	code	EXPECTATION	category	BEFORE			LATER	NOT at all	Do not understand	Weighted Before Score	Voters N
				Basic	Proficient	Advanced					
62	2	quantitative data collection techniques qualitative data collection skills (esp. interviewing techniques)	knowledge	7	1		9	1		.50	18
63	3	know features & suitability of using survey methods	knowledge	10			7	1		.56	18
64	4	Good understanding of appropriate methodology	knowledge	5	2		11			.50	18
65	5	Know wide range of data generation strategies	knowledge	8	1		7	1		.59	17
66	6	Know reasons for data collection methods	knowledge	7	4		4	2	1	.83	18
67	7	Fieldwork conducted ethically	knowledge	7	4		5		1	.88	17
68	8	Know sampling techniques	knowledge	11	2		5			.83	18
69	9	Know common sampling frames & types	knowledge	6	1		11			.44	18
70	10	Know about & skills to construct data collection tools	knowledge	6	2		9			.59	17
71	11	Have skills at questionnaire construction	knowledge	9			7	2		.50	18
72	12	Have understanding of measurement & assessment	knowledge	12	1		5			.78	18
73	13	Know features & suitability of using Action Research	knowledge	10			6	2		.56	18
74	14	Know features & suitability of using Participatory research	knowledge	8	1		7	2		.56	18
75	15	Know features & suitability of using emancipatory research	knowledge	8			5	5		.44	18
76	16	Know features & suitability of using case study	knowledge	8	1		7	1		.59	17
77	17	Know features & suitability of using field study	knowledge	10			6	1		.59	17
78	18	Know features & suitability of experiments	knowledge	9	1		7	1		.61	18
79	19	Know features & suitability of single-subject study	knowledge	9		1	6	1	1	.67	18
80	20	Know features & suitability of policy analysis	knowledge	8			7	2		.47	17

number	code	EXPECTATION	category	BEFORE			LATER	NOT at all	Do not understand	Weighted Before Score	Voters N
				Basic	Proficient	Advanced					
81	21	Able to collect small sample data (own practice, interview, simple data)	knowledge	8	1	1	5	2		.76	17
82	22	Develop and validate a wide variety of instruments	knowledge	3			7	8		.17	18
83		Data Analysis									
84	1	Able to conduct & interpret descriptive and univariate inferential statistics	knowledge	3	2		8	3	1	.41	17
85	2	Knowledge of methods & modes of analysis	knowledge	12	1		4			.82	17
86	3	Understand & able to use common methods of analysis	knowledge	7	1		9		1	.50	18
87	4	Understand statistical growth & increases	knowledge	7			8	3		.39	18
88	5	Understand statistical probability	knowledge	11	1		3	3		.72	18
89	6	Understand Document Analysis	knowledge	6			9	2		.35	17
90	7	Understand Historiographic analysis	knowledge	7			8	3		.39	18
91	8	Know strengths & weaknesses of statistical techniques	knowledge	6	1		8	2	1	.44	18
92	9	Engaged in qualitative analysis (e.g. discourse) in seminar or project	knowledge	6			5	4	3	.33	18
93	10	Competence at analysis	knowledge	8	1		6	1	1	.59	17
94	11	Understand rationale behind sophisticated multivariate inferential analyses	knowledge	1			12	4		.06	17
95	12	Passing understanding of non-parametric analyses	knowledge	3			10	3		.19	16
96	13	Know principles & processes of qualitative data analysis	knowledge	11			4	2		.65	17
97	14	Know how to derive coding categories	knowledge	6			9	2		.35	17
98	15	Know how to establish reliability of coding	knowledge	6			10	1		.35	17
99	16	Identify whether research questions are answered and why	knowledge	4	2		11		1	.44	18
100	17	Able to evaluate answers to research questions	knowledge	8	2		8			.67	18
101	18	Skills to analyse interview/questionnaires	knowledge	10	1		6	1		.67	18

number	code	EXPECTATION	category	BEFORE			LATER	NOT at all	Do not understand	Weighted Before Score	Voters N
				Basic	Proficient	Advanced					
102	19	Able to analyse small sample data (own practice, interview, simple data)	knowledge	8	1		6	1		.63	16
103	20	be aware of and/or apply modern psychometric models and methods (IRT & SEM)	knowledge	3			6	6	2	.18	17
104	21	Analyze and evaluate data in diverse settings	knowledge	5			8	2	2	.29	17
105	22	understanding of evolutionary nature of writing research	writing	4			9	4		.24	17
106	23	Understanding of appropriate analytic software	knowledge	3			12	1		.19	16
107		Communication Skills									
108	1	Write coherently, logically, and concisely	writing	5	9	3				1.88	17
109	2	Use citation & referencing skills accurately (esp. APA)	writing	3	8	4	2			1.82	17
110	3	Able to structure argument and thesis	writing	5	4	3	6			1.22	18
111	4	Construct well-structured paragraph	writing	3	10	5				2.11	18
112	5	Good academic writing skills	writing	1	12	4				2.18	17
113	6	Accurate spelling and grammar	writing	1	10	5	2			2.00	18
114	7	Argue position cogently, cogent writing style	writing	3	12	2				1.94	17
115	8	Write a well crafted piece of work	writing	3	12	3				2.00	18
116	9	Write coherent sentences	writing	2	7	9				2.39	18
117	10	Able to write appropriately structured and mechanically appropriate reports	writing	6	9	2	1			1.67	18
118	11	Excellent citation & referencing skills	writing	6	7	3	2			1.61	18
119	12	Write accurate, clear, appropriate research reports	writing	6	7	2	3			1.44	18
120	13	Ability to express ideas orally	speaking	4	11	3				1.94	18
121	14	Independence at writing	writing	3	12	1	1		1	1.67	18
122	15	Write lit review and receive feedback	writing	8	6	1	2			1.35	17
123	16	Write research report	writing	9	2	1	6			.89	18
124	17	Know how to discuss findings	knowledge	8	5		4			1.06	17
125	18	Able to synthesise or Link own findings to	knowledge	3	4	1	10			.78	18

number	code	EXPECTATION	category	BEFORE			LATER	NOT at all	Do not understand	Weighted Before Score	Voters N
				Basic	Proficient	Advanced					
		theory and previous research									
126	19	Integrate quotes with appropriate verbs	writing	3	6	3	4		2	1.33	18
127	20	Acknowledge & address counter arguments	thought	7	5	2	3			1.35	17
128	21	Be familiar with grant writing and sources of funding	writing	3			9	6		.17	18
129	22	Ability to use word processor for writing & editing	writing	2	7	8	1			2.22	18
130	23	Understand nature of research reporting	knowledge	7	3	1	5	1		.94	17
131		Management/Organisation Skills									
132	1	Self direction, independence, self-initiating, self-motivation, Self-sustaining	self-regulation	1	9	6	1			2.18	17
133	2	Time management	self-regulation	0	13	3	1	1		1.94	18
134	3	Manageable research question	self-regulation	7	4	1	6			1.00	18
135	4	Ability to use Computer analysis, research, recording tools	knowledge	8	6		3	1		1.11	18
136	5	Realistic expectations about undertaking a small study; not save the world	knowledge	5	7	2	4			1.39	18
137	6	Sense of controlling research process	knowledge	7	5		4	1	1	.94	18
138	7	Some knowledge of own topic	knowledge	6	9	2	1			1.67	18
139	8	Worked in collaborative group project	self-regulation	3	2		6	6		.41	17
140	9	Use computer tools accurately	knowledge	5	4	1	5	1		1.00	16
141	10	Correct estimation of time effort required to finish	self-regulation	5	4	1	7			.94	17
142	11	Plan & schedule all relevant steps to completion	knowledge	5	3	1	9			.78	18
143	12	Realistic expectations of own capabilities	self-regulation	6	8		2	1		1.29	17
144	13	Realistic expectations of supervisor	supervisor	7	4	1	3		1	1.13	16
145	14	Know boundaries that limit investigation	knowledge	10	2		4		1	.82	17
146	15	Ability to summarize key points of meetings	thought	3	9	1	3			1.50	16
147	16	Plan future action from meetings	self-regulation	6	7	2	2			1.53	17
148	17	Able to work collaboratively with supervisor	self-regulation	5	8	1	2		1	1.41	17

number	code	EXPECTATION	category	BEFORE			LATER	NOT at all	Do not understand	Weighted Before Score	Voters N
				Basic	Proficient	Advanced					
149	18	Actively stay in contact with supervisor	self-regulation	2	10	2	3			1.65	17
150		Research Ethics									
151	1	Importance of principles	knowledge	9	7		1			1.35	17
152	2	Prepare appropriate ethics application	knowledge	7	2		8			.65	17
153	3	Understand ethical issues and implications for participants & researchers	knowledge	7	3		6			.81	16
154	4	Understand that pasifika and maori research requires prior consultation and empowerment	Maori/Pasifika	8	2		3	4		.71	17
155	5	Ethical selection of participants	knowledge	10	3		4			.94	17
156	6	Completed ethics application	knowledge	5	1		11			.41	17
157	7	Commitment to start early and complete on time ethics proposal	self-regulation	5		4	4	1		1.21	14
158	8	Understand ethics of research processes	knowledge	9	4		4			1.00	17
159	9	Ethically aware & consistent	knowledge	9	2	2	3			1.19	16
160	10	Understand research is not value free	knowledge	7	4	1	2	2		1.13	16
161	11	Understand all research has impact on practice	knowledge	6	4		3	3		.88	16
162	12	Understand that research is meant to build capacity & empowerment of diverse communities	knowledge	6	2		3	5		.63	16
163	13	Understand that research with minority populations requires their agreement	knowledge	8	2	1	2	2	1	.94	16
164		Personal Dispositions									
165	1	Flexibility in reviewing method & question with supervisor	self-regulation	6	4	3	3			1.44	16
166	2	Willingness to draft and redraft (before presentation to supervisor)	writing	5	4	3	2			1.57	14
167	3	Acceptance that writing is hard work	self-regulation	5	6	3	2			1.63	16
168	4	A degree of thinking about method and question already done	knowledge	13	2		1			1.06	16
169	5	Willingness to receive and provide constructive critical academic feedback	thought	4	6	3	3			1.56	16

number	code	EXPECTATION	category	BEFORE			LATER	NOT at all	Do not understand	Weighted Before Score	Voters N
				Basic	Proficient	Advanced					
170	6	Adoption of a disconfirming mindset	knowledge	3	3	1	8		1	.75	16
171	7	Understanding that claims are always conjectural	knowledge	5	3	2	6			1.06	16
172	8	Understanding that evidence is mastering strongest possible warrant for claims	knowledge	6	3		7	1		.71	17
173	9	Understanding & acceptance that all research is fallible	knowledge	7	3		5	1		.81	16
174	10	Understanding & acceptance that most research is not grand, nobel prize	knowledge	6	4		5	1		.88	16
175	11	Belief in importance of evidence	knowledge	6	6	2	2			1.50	16
176	12	Recognition that some kinds of evidence are better than others	knowledge	3	7		6			1.06	16
177	13	Desire to find things out; curiosity	self-regulation	4	4	7	1			2.06	16
178	14	Understand how research expertise can lead to career in education	knowledge	5	2		3	4	1	.60	15
179	15	Be inculcated into writing articles for publications aimed at a variety of audiences	writing	2	1		12	1		.25	16
180	16	Ability to think critically	thought	3	5	4	3			1.67	15
181	17	Commitment to put in effort & time	self-regulation	4	4	7	1			2.06	16
182	18	Willingness to suspend all other interests until research finished	knowledge	6	1	1	1	7		.69	16
183	19	Excitement about the topic, problem at hand	self-regulation	4	5	6	1			2.00	16
184	20	Flexibility and adaptability in handling research processes, products, people	self-regulation	3	5	3	4			1.47	15
185	21	Ability to evaluate own research performance	knowledge	5	1	2	8			.81	16
186	22	Attain personal attributes of audacity, reasoning, rigor, and wonder	self-regulation	1	8		6		1	1.06	16
187	23	Ability to seek out supervisor for advice & guidance	self-regulation	8	6	1	1			1.44	16
188	24	Ability to plan, schedule, research activities	self-regulation	7	6	1	2			1.38	16
189	25	Ability to give & receive constructive feedback	self-regulation	5	6	1	4			1.25	16

number	code	EXPECTATION	category	BEFORE			LATER	NOT at all	Do not understand	Weighted Before Score	Voters N
				Basic	Proficient	Advanced					
190	26	Ability to understand & respect boundaries of supervision relation	self-regulation	5	7	1	2			1.47	15
191	27	Take responsibility for maintaining record of supervision meetings and act on agreed points	self-regulation	1	8	3	3			1.73	15
192	28	Require students to be demonstrably self-managing	self-regulation	2	9	2	1			1.86	14
193	Prerequisites Before Starting Thesis										
194	1	In own research area, know field, discipline, theory, concepts, content, literature	knowledge	6	8	1	1			1.56	16
195	2	Completed a research methods course	knowledge	9	2	3		1		1.47	15
196	3	Introductory knowledge of research methodology	knowledge	9	5	1		1		1.38	16
197	4	Proven record/background of independent work	self-regulation	3	8		3	1	1	1.19	16
198	5	Institutional provision of generic guidance/advice service	environment	2	3	1	2	3	3	.79	14
199	6	Understand nature of teaching profession	knowledge	2	4	1		8	1	.81	16
200	7	Understand curriculum planning	knowledge	1	2	1		10	1	.53	15
201	8	Understand importance and impact of research on teachers' work	knowledge	4	2	1		8		.73	15
202	9	Ability to articulate understandings of theory & practice related to discipline	knowledge	8	3	2		3		1.25	16
203	10	Already taken courses in content area in which want to study	knowledge	6	4	3		1		1.64	14
204	11	Have taught inquiry skills to students within one curriculum area	knowledge	2			1	11	2	.13	16
205	12	Training in teaching of inquiry skills to school students within one curriculum area	knowledge	3				11	2	.19	16
206	13	Have participated in research project in undergraduate degree	environment	4	3			8		.67	15
207	14	Multiple opportunities to hands-on participate in research projects	knowledge	3	1	1	3	5	1	.57	14

number	code	EXPECTATION	category	BEFORE			LATER	NOT at all	Do not understand	Weighted Before Score	Voters N
				Basic	Proficient	Advanced					
208		Research Environment									
209	1	Provision of supportive research preparation environment	supervisor	4	6	2	1		1	1.57	14
210	2	Provision of actively researching and publishing supervisors	supervisor	3	4	5		1	1	1.86	14
211	3	Structured interactions between supervisors and students	supervisor	2	7	2	2			1.69	13
212	4	Support, encouragement for students to present at conferences, seminars, etc.	speaking	1	5	3	4	1		1.43	14
213	5	Active research units exist into which students are incorporated for their thesis	supervisor	1	6	3	1	2	1	1.57	14
214	6	Appropriate workloads set for supervision	supervisor	1	4	6	1	1	1	1.93	14
215	7	Provision of non-research skills training facilities	environment	2	4	1	1	2	4	.93	14
216	8	Specification of standards for supervisors and students	supervisor	2	6	2	1		2	1.54	13
217	9	Require students to participate in research projects	environment	4	2		4	2	2	.57	14
218	10	Provision of multi- or trans-disciplinary research units which can be joined by student	environment	4	3		2	3	2	.71	14
219	11	Regular evaluation of preparation effectiveness	knowledge	1	5	1	2	1	3	1.08	13
220	12	Design appropriate assessment tasks and standards for entry to thesis	environment	1	2	1	1	5	4	.57	14
221		NEW (write in as many as you think are necessary)									
222	1	understand that in some Maori settings protocols are expected and consultation may be required	Maori/Pasifika	1						.06	1
223	2	understand cultural judgement is required as to what is required within the setting	New	1						.06	1
224	3	understand that not all Maori research requires consultation	Maori/Pasifika	1						.06	1
225	4	understand that the implication of Maori	Maori/Pasifika	1						.06	1

number	code	EXPECTATION	category	BEFORE					Do not understand	Weighted Before Score	Voters N
				Basic	Proficient	Advanced	LATER	NOT at all			
226	5	research may have ongoing commitments from researcher understand that research can lead to improved teaching and learning	new		1				.12	1	
		Average							1.01		
		SD							.54		

