Search Procedure Stage 2

The first stage of the search procedure cast a wide net across a comprehensive set of scholarly resources in order to establish a foundation of work. As both data and metadata was inconsistent between sources, so far only duplicates within document sets have been counted. This was to avoid removing duplicates which have more information than their matching record at a stage where the subset of relevant documents was not clear, or when manual review of the full-text is needed to see if two documents with seemingly identical titles are duplicates or two separate works. However, there is likely to be significant overlap between the sources and full-text may be available from one but not other sources. In each case of a duplicate record, the record with the most metadata and data will be retained, and the other databases it was found in will be noted so we can observe whether specific types of studies tend to be found in particular databases.

As the dataset of studies in a higher education context is quite large it seems appropriate to follow the advice of {Alexander, 2020 #10}, and tie the criteria for inclusion at this stage to the research question in a meaningful way. As in {Arksey, 2005 #1}, it was necessary to gain familiarity with the literature before these criteria were clear. {Alexander, 2020 #10} and {Peters, 2015 #6} both emphasise the importance of making these criteria explicit, and {Alexander, 2020 #10} also recommends citing an example of work affected at each stage. {Kastner, 2012 #4} describe this as an audit trail demonstrating the "trustworthiness" of the review [*meta-interpretation* Table 1, p3], using raw data to develop exclusion criteria and focusing on meaning in context. While their research is focused in health care, the discussion of knowledge synthesis methods remains relevant, with this review being most like the *meta-interpretation*; not focused on traditional measures of effect size, reliability and validity, differing from *meta-ethnography* in that it doesn't theorise about the range of findings discovered; from *meta-narrative* in that it doesn't explicitly map across or between research traditions; from *meta-study* as it doesn't combine smaller *meta_s, from _meta-summary* as there are no distinctive features of survey results or effect sizes, and from *meta-synthesis* as it doesn't attempt a phenomenological interpretation. It will become clear that this is because the nature of Repertory Grid Technique studies in education, and the data it produces, does not neatly fit with more conventional approaches.

Criteria for inclusion and exclusion

Out

Familiarity with the literature through conducting Search Stage 1 has made clear that there are multiple study types, with widely varying populations, and inconsistent theoretical bases. There are some sets of studies which have great depth of work, for example, longitudinal studies of pre- and in-service teacher development using critical reflection, which require a compartmentalised approach as they are both domain- and population-specific (These are all the Diamond papers). A similarly large body of work exists in relation to pre- and in-service nurses {Davis, 1983 #8015}, and pre- and in-service social workers (O'Connor papers). As my goal is to identify how the RepGrid technique is used as an intervention in higher education, these are out of my scope but offer great resources for other scholars. Purely theoretical works making suggestions about how the Repertory Grid Technique might be used to good effect will also be excluded here.

Studies will be excluded where RepGrid is used only as a survey method, for example, about course evaluation, or where the student population is incidental to the study, for example, where the participants include a broad cross-section of society and the question is about psychology. I will also exclude studies in school (K-12) settings, vocational guidance and educational leadership settings. It is difficult to know whether to exclude vocational and adult education, as there will be some similarities in context, but in the interests of timely provision of this study that will also be excluded at this stage; only potentially included if time permits and they meet all the inclusion criteria. I will exclude for the moment studies about using Repertory Grid Technique as a strategy for connecting postgraduate students and their supervisors. There is an interesting and productive series of work on using Repertory Grid Technique as a method for calibrating marking across assessment criteria which will also be set aside now. While that may not form part of this review, it is relevant to my larger study and may be the subject of a more in-depth review in future.

In

After considering the exclusions above, studies will be included in this review that meet all the following criteria:

1.

1. Subject participants are undergraduate and/or postgraduate students in a university or college;
2. The only participants in the study are these students;
3. The only site for the study is in a university or college;
4. The Repertory Grid Technique is used as a pedagogical tool – that is, there is a learning outcome associated with its use, even if that outcome is not articulated in the study;
5. The learning outcome is measured in an empirical way.

Search method

All those studies for which full-text is needed were requested using the University of Sydney Library. Full-text was then uploaded to the MAXQDA application along with those studies that were not excluded in the first stage, and a new data-driven lexical search sequence started. In the first stage, I established that studies may not be found using "educ*" as a term, instead using "school" or "college", so the next search iteration will include all those terms for the "ANY" parameter to create a subset of results. I will follow this with a search for "student*" OR "*graduate*" OR and another set. I will then search those two subsets for "participant*" OR "method*" OR "result*" to locate studies closely matching my research question.

Table 6: Lexical search parameters for the narrower document set.

ALL:	
ANY:	school college
NOT:	patient
	patients
	medication
	medicine
	medicines
	clinical
	clinician
	depression
	surgery
	therapy
	psychosis
	psychoses
	disease
	pgi
	schizophrenia
	clinic
	chronic
	med
	nr
	recovery

ALL:	
	depression
	trial

But before this it wold be good to exclude any which can now be eliminated now full-text has been acquired, or those which are no longer included because of the narrowing of scope.

Full-text in/out

At the beginning of Stage 2, an audit was done of those full-texts which were accessible, with a view to excluding those not yet acquired, or those which can be assessed as not meeting the search criteria by manual review.

FTR results tab in T&B.

<<<<<<< HEAD
{Phillips, 1980 #1087} (not on FTR list but in references of Cunliffe) used the Repertory Grid Technique together with interviews in a longitudinal study of seven PhD candidates at the Open University in the UK. Over three years, students participated in monthly interviews and completed grids at six-monthly intervals. Similarly to Zuber-Skerritt's work of postgraduate supervision and training, {Phillips, 1980 #1087} wanted to find the attitudes and perceptions of the doctoral degree process. Both elements and constructs were elicited from individual participants, then represented using the FOCUS and CORE applications. The FOCUS grid, as we have seen, is an important visualisation of the relationship between elements, and between constructs. The CORE grid (I think now MINUS?) shows which constructs and elements are most different between an earlier survey and the current survey. At each repertory grid data collection after the first, participants were presented with their original grid and invited to add either elements or constructs. The researchers found the systematic acquisition of this data helped identify when changes occurred in each participant's experience, and the causes students attributed those changes to. Again, the small number of subjects made a highly-individualised approach possible, and their suggestion that this approach be incorporated in postgraduate training has the potential to be considered in further studies.

In {Diamond, 1989 #7580} study of the intentions of teachers completing their training, a role-based instrument was used, but different from the traditional grid form enough to be excluded from this study. There was no repeated measure and the grid was used for survey only. In earlier work, {Diamond, 1986 #3696} with ten Honours students enrolled in a research methods unit, participants completed a grid at the beginning and at the end of their course. On the same occasions, faculty staff also completed grids. This was again a role-based grid, the the elements representing good and poor researchers plus present and future self. Other studies we have seen using repeated-measures for differed slightly as they extended past the end of the course {Burke, 1992 #3505} {Cunliffe, 1992 #3468;Cunliffe, 1994 #276;Cunliffe, 1995 #274;Cunliffe, 1996 #97} [re-search when LR finished]. In {Diamond, 1986 #3696} study, participants were taught how to manually interpret their grids, but preferred the computerised representations generated by the FOCUS and SOCIOGRIDS models. Comparing the datasets, the researchers found that at the end of their course students scored more toward the ends of the continuum, for example, 1 or 5, indicating more certainty around that construct. They also found that the non-student participants changed their self-construals more positively than the others. [While this study does have staff, they are not part of the study, and it's a genuine repeated-measures grid so in SSR by manual choice so must discuss - but still role-based]. Its unclear exactly how the griods and subsequent learning conversations were done but both groups reported finding the grid processs a "powerful heuristic device" (p171) that they were in control of and intended to keep using for both personal and research purposes. They were confident of the research validity and, interestingly, the near-impossibiliuty of plagiarising a grid, as they felt individually recognisable in the grid data. This study concluded that grids are an important feedback mechanism, actively involving learners in their own development. The authors suggest they could also be a useful tool for evaluating various areas such as course success and researcher effectiveness, but emphasise that using the output for *learning conversations* is a necessary complement. {Hopper, 1999 #255} followed the role-based models, but also used the grid output for a *learning conversation* on each data collection. The roles included teacher roles the pre-service teacher participants would have inhabited or interacted with but did not include a self- role until the second data collection. However, this study again seems to extend beyond the higher education scope as another interview is recorded a year later.

{Fernandes, 2007 #591} did have HE students and it was repeated-measures, but the authors' specialty is psychotherapy and the effect of this study was reported by "Psychological symptoms" and problem solving skills as well as the researchers' own

psychometric measures of self-construction and system structure based on the grid output. While students did report feeling more confident at the end of their first year, the authors acknowledge that other factors may have had an impact. {Williams, 1997 #263} is another example of borderline inclusion. In this study, mathematics teachers enrolled in summer school unit completed a repertory grid exercise where the elements were common things done when doing mathematics, and constructs elicited at interview. Participants generated both the original list of elements and the constructs; each was then refined by the researcher. This study really is only a survey, and its population not really HE students, and it adds little to the literature except an overview of implications chains.

{Hattan, 2001 #780} is HE, with Masters level students in midwestern USA university. Their 78 participants responded using the Causal Attribution Scale, Em scale of the California Psychological Inventory and 4x6 Spengler RepGrid

Along with the mix of other methods, too much role-based; either personal relationships or self & ieal self; always im[ply an imbalnce. acknowledge the other factors that may impact on their findings that students reported increased confidence.

Tobin 1990 p36 lesson events;
philips 1981 p96 essentials to compleete phd;
corporaal 1991 statemetn oabout good teching;
parsons et al 1983 random class membershipDiamond 1983 Z-S 1988 individuals known to them

Scoping studies: A&O: evidence-based practice is important; guidelines for several domains are available; overall need to collect, evaluate and present available research evidence. Diff between systematic review and scoping is that in the latter the question is not well-formed, also systematic has a narrow range of quality assessed studies while latter is less likely toa ddress very specific questions or assess quality. When do you do a scoping study? Depends on the depth of the research activity,

1. to visualise the field,
2. to see whether a full review is warranted,
3. to summarise and disseminate findings
4. to identify research gaps in lit;

A&O divide these into two sets: the commencement of a full review, and a method in own right. This is a bit of both.

Process needs to documented in sufficient detail to be replaicated by others.

Guided by a reuiement to discoer all relevant literature regardless of design

Iterative and reflecive, sometimes rleapting steps.

A&O suggest five stages:

1. identifying the research question

2. identifying relevant studies

3. study selection

4. charting the data

5. collating, summarising and rpoering the results. P22 (social work)

B

JBI Also says evidence-based practice more important now, again based in health but I argue health and education are both rightly evidence-based. Scoping review a specific type of review still a relatively new methodology, most useful when body of literature is large, complex and heterogeneous nature not suited to more precise systematic reviews. Also mention used to determine value and scope of full SR, map existing literatures in terms of "nature, features and volume" p141. Ro clarifiy conceptual boundaries , summarise and disseminate info on gaps in research and make research recommendations (also it he nature of evidence-based eb).

Scoping reviews particularly useful for lit in disciipplines with emerging evidence, as they ar e suited to addressing questions beyond those related to the effective or experience of an intervention.

{Gough, 2012 #3}

Booth Briscoe Wright mine not really realist review, elements of realist review as the question continued to develop throughout the process.

Gough et al proposed a range of review types closely aligned to the knowledge synthesis definitions in Kastner. Kastner did a scopign review of knowleddge synthesis methods, Gough, argues three principal dimensions: 1 aim and approach of review particularly methodologies on and epis and METHODS of sysntesis

   2. structure and components

   3. breadth, depth and extent toward issue

These before design chosen. Key theoretical question is what guies the selection need for as alrage a set of representative samples as possible to avoid bias by study selection, Blend of aggregative and congiturative approaches, aggregative identifies studies that build on each other to give more certaintly about the magnitude and variance of the phenomenon under investigation.

So more agretaive.

Review often includes compnents of both L-) , doesn't really fit any of them. More ike a meta narrative but synthesied across other nodes. Framework synthesis. Identifyingthemes, aggregative.

Whose questions are ebing asked and how do the implieidelogical and theoretical sssumptions drie the strategy.

Reviews mostly provide a map or account of the field., analysis of the map led to a decision to sunthesize only a subset of studies.

Explicit accountable metods required for primary and review research .

Set out aims in Grough steps

1-3

Bassett discusses limitations of SR, recommend their participatory method for ruther research.

Alexander discusses challenges – ensuring question has value, , sufficiently mature to allow in-depth but limited enough that there are still unanswered questions (gap here I am addressing), what is already known and what needs to be known, , RQ should address questions for ther resaerchers whose answers can be found in the literature.

Then QA of each part of the review with arguemnts & limitation

Consolidating an dsimmarising challenges

Catprue essentials of documents that address critical questions.

Need tables, charts & source details for all stuies

For each study

Theoriecal framework

Main constructs of interest

Age.greade, centder, ethnicity and other participant cahcarcteristics

Methods and measures, key findings

Example of dinsmore exlicitimpict eg

Potentially informative groupings

Recognise meaningful outcomes

Capture significant patterns

, delimiters and limitations,, then address critical question. Specualtive, reasoned and reasonable, formative, constructive and implications suggested by and consistent with the deta but not incontrovertiable. Sugestions that coud inform the design of subsequent studies, foundation for future critical qeustions

Discussion

Teacher Education has been separated into Professional Development (in-service) and Higher Education for the purposes of this review. While beyond the scope of this review, the body of Teacher Education is substantial, and I am considering whether to create a simple table of all Teacher Education, particularly where there's a research component. -\> A+

nursing, social work and teaching are seen as a continuum, with no clear break between training and work. also studies frequently mix in- and pre-service participants.

In ERIC, Lots of work of using RepGrid for inter-rater assessment or criteria elaboration

Impracticality of there being a state of knowledge at any given time

Significant crossover with other databases.

Lack of digitised material, particularly theses

Large body of work could now be broken down into smaller review sets.

Limitations

Ephemerality of literature

Bpdy of work very widely distributed, some like these less accessible

Volume means not a lot of hand-searching

Difficult to compare studies as they often mix qual, quant, participants etc. so no true comparisons.

Full-text not always vailable, searches operated over RIS and full-ext where available.

Variablility of information available in databases – good if multiple more chance of picking up but still a digital divide.

Problems as part of the digitisation process where may not be a true duplicate, just a record error.

Upside is that now the system is set up to monitor I can keep reviewing new work.

A consistent practical issue in this review is the difficulty of obtaining full-texts of older materials, and it additional digitisation of studies would assist the evidence base.

Very difficult to find specific focus as many studies are individual in their participants and methods, meaning it's very difficult to compare or consolidate studies. For example, Kolodnicki (2017) involved teacher-experts who teach high school students

construing parenting behaviours including but not limited to their involvement in adolescent education.
For me, that included Teacher Ed, Parenting & School Ed. But not HE.

Another difficult area is 'research', where it's not clear whether it's done by someone at a uni, or where it's not related to education, just done to a student sample. Think I will exclude. Have decided that the only targets are teaching & learning at uni, with teacher educational uncomfortably sitting on the edge and requiring a meta-analysis. Also remove those which offer direction without evidence to HE. Limitation is anglo bias. So exclude those where the tertiary cohort or setting is incidental to the research. Really should have a tag for gender studies. Some studies only reference other studies in HE. Most frequently included where they're not relevant are clinical, offender, market research and management studies. Offender studies don't use a common term: children in care, people recently released from prison. Adjusted search slightly for RIS component of Scopus.

Inconsistency in titling and in citation conventions made duplicate identification a complex and manual process.

difficult to check for population in long theses, not always clear from abstract if original research or meta-review so both included.

in those not HE, load of teacher ed, social work ed, assessment criteria agreement, nursing PD, While not HE, the assessment criteria would make good HE PD. School Ed should really be divided between school-age kids and teachers in schools. Haven't assigned Health Care to nursing because some nursing specific disciplines.

also several reviews to date which are old enough to be the basis for new review, eg An Evaluation of Repertory Grid Technique in Social Work Education

Also a lot of conference papers which of necessity give a skeletal view of the research.

another not identified in search: Grayson, A., Clarke, D. D., & Miller, H. (1998). Help-seeking among students: Are lecturers seen as a potential source of help? Studies in Higher Education, 23(2), 143-155. doi:10.1080/03075079812331380354

another not identified in search: Easterby-Smith, Mark. "How to Use Repertory Grids in HRD." Journal of European Industrial Training 4.2 (1980): 2–32. Web.
not HE, but "learning" and "research".

in refs: Woehr, D. J., Miller, M. J., and Lane, J. A. S. (1998). The development and evaluation
of computer-administered measure of cognitive complexity. Personality
and Individual Diff erences, 25, 1037–1049)

Also in refs: Winer Vasquez 1997

Where participants are drawn from multiple backgrounds (eg pre- and in-service teachers, pre- and in-service social workers, "enterprise training programs
for graduates, two groups from a management improvement
course targeted at potential and existing small business owners, a group from the Open Business School's distance learning program for start ups, one group of small business owners who have not attended training courses, a group of unemployed persons who do not seek self-employment, and a group of personnel management
students who prefer to work for large firms" {Gray, 1992 #3472) p 315) the study will not be included, as the focus is on the discipline rather than the higher education process.
-\> single population studies, repeated measures or comparison between groups
-\> no limit on time because part of the point is to use the valuable insights of pre-computerisation studies.

Also because methodology varies too widely to be comparable; cf nurses.

So the framing is whether RepGrid is used as a pedagogical tool, in a higher education setting, with participants limited to either staff or students at Bachelor level or above.

Also need to note in this review which studies used pure grid, modified grid, or grid plus other instruments + whether the study did pre-post or just survey.

Maybe even just those that used WebGrid? Too limiting. Contrast interview, with form? Also analysis method.

An unexpected result of full-text disambiguation was the revelation that in China, the Repertory Grid Technique may be known as "Kelly's squares, squares, Kelly's squares,
Checkered technology, Kelly square talk technology, etc." {Yu-Ren, 2016 #598} (p. 44) [original translated by Google Translate: 凱利方格分析技術在中文學界被使用的譯名包含：凱利方格法、方格法、凱利方格技術、方格技術、凱利方格晤談技術等，本研究則採用凱利方格法一詞作為代表。]

repgrid overcomes interviewer bias/power imbalance

opportunity for problem structuring works well with PF because it starts with low structure.

In Literature, keep and eye out for RepGrid for treatment = code intervention TAM CSCL perceptions of teachers students and technology- outcome studies – peer tutoring – RepGrid could we use this to gain empathy – specific tutoring idea. Tutor can intervene at any time. How to overcome non-telling bias. How to gain empathy – human in the loop captures deeper misconception . would have to be quick, all the things have been taught so you should be able to solve the problem, what follows from that? Deductive closure of declarative knowledge. What is the mental model that could follow the tutor's advice? Expert model. Needs to be quick online. How would I find out, intervention function might help them.

Perkins Epistemic Games are restrictive from epistemic POV decision-making isn't learning, not constructing knowledge.

How can decision-making provide epistemic values?

Professional Epistemic Games in epistemicfluency.com

EN & diff article p 409

Explain to reader, if I already know everything then decision-making is not a learning activity for me, how does the learning have clear value think of applied value, eg grad atrs, be explicit

How will this experiment generate value and not just be another lab experiment, at least know how you will write practical implications sections.

Decision is a series like gathering information or evaluating, it is an act, until you do that, you do a lot of learning, epistemic acts, movements,

How do you define decision making? Is it the inevitable outcome of that learning?

We know that knowledge is constructed socially so the elicitation of tacit knowledge helps knowledge advancement

also a cognitive process, so hlep with cognitive problesm

What are the advantages of a ssr?

What do examples of SSR look like?

One limitation of scoping reviews is that they do not provide an exhaustive and formal appraisal of evidence across the body of research {Arksey, 2005 #7}. This is a significant issue for health and medical research with randomised and controlled trials, but less problematic for this study, as any evaluative methods are likely to be highly variable and context-dependent. The systematic process of scoping is likely to be beneficial to our understanding of those evaluative methods and the situations in which they are found.

Persistent problems occurred with searching caused by cookie and adblocker issues. It was difficult to have effective privacy settings as well as save searches and set alerts. That meant I had to repeat several searches from the beginning, as what ever the problem was would only become clear when I tried to either save or set a search alert or export search results. The university Library system is also incompletely operational, with search results inconsistent and/or unavailable for 1475 of the 2395 found results.

Why?

RepGrid is not effectively operationalised {McKellar, 2014 #1} in educational contexts where it could be of value.

Appendices

Example of a study excluded because the cohort is not described:

"An important prerequisite for the success of any online service is ensuring that customers' experience - via the interface - satisfies both sensory and functional needs. Developing interfaces that are responsive to customers' needs requires a perspective on interface design as well as a deep understanding of the customers themselves. Drawing upon research in consumer behavior concerning consumer beliefs about technology, we deploy an alternative way to describe customers based on psychographic characteristics. Technology readiness (TR), a multidimensional psychographic construct, offers a way to segment online customers based upon underlying positive and negative technology beliefs. The core premise of this study is that the beliefs form the foundation for expectations of how things should work and how specific online service interfaces are evaluated by customers. At the same time, usability evaluations of specific online services might be contingent on contextual factors, specifically the type of site (hedonic vs. utilitarian) and access method (Web vs. wireless Web). The aspects of usability examined here are those incorporated into the usability metric and instrument based on the Microsoft Usability Guidelines (MUG). The results of an empirical study with 160 participants indicate that (i) TR customer segments vary in usability requirements and (ii) usability

evaluations of specific online service interfaces are influenced by complex interactions among site type, access method, and TR segment membership. As organizations continue to expand their online service offerings, managers must recognize that the interface exists to serve the customers, so their design must be matched to market needs and TR. © 2007, Decision Sciences Institute. {Massey, 2007 #2854}