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Supporting PhD Students in Conducting a Literature Review

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Abstract

The quality of a literature review is highly responsible for the level in which a study contributes to the knowledge base of a field. Therefore meticulous supporting PhD students in conducting a well underpinned literature review is important. Building on the methodological framework that Randolph's (2009) developed for carrying out a qualitative review study, and making use of the author's own experiences, this paper offers ten points of attention in supporting PhD students in conducting a literature review.

Introduction

For many researchers, the most extensive and systematic literature review they carry out in their professional life is in the context of their PhD thesis. After finishing the thesis successfully, and climbing the ladder of seniority, reviewing literature is often something they have to delegate to assistants, because the work load does not allow the senior researcher to do it him- or herself. The task of the senior researcher becomes to supervise and facilitate the research assistant or PhD student who carries out the literature review. This has the danger of losing contact with the daily challenges and problems of carrying out a literature review.

Thus, getting the opportunity – thanks to funding from the Netherlands Organization for Scientific Research – to conduct an extensive review study on '*The Professional Teacher Educator*' (Lunenberg, Dengerink, & Korthagen, 2014) together with two, also experienced, colleagues, presented a great opportunity to me. It also proved to be an experience that helped me to sharpen my insights into the choices everyone who carries out a review study has to make and the pitfalls one should try to avoid.

Hence, my purpose for this contribution to the Year Book is not to present our review study, but to 'translate' some of the insights I gathered into points of attention that may support PhD students in conducting a literature review. To do so, now and then, I will refer to our review study (and especially to the Methods chapter) as an example.

I want to emphasize, however, that there is a difference between the review study we conducted and the literature review most PhD students have to conduct. The aim of a literature review for a PhD thesis is mostly to position the empirical part of the thesis within the field they will study. In contrast, our study was meant to offer an as complete as possible overview of the available research on 'The Professional Teacher Educator' and to formulate suggestions for a future research programme on this theme. This difference will be taken into account when giving examples.

Hence, the focus of this contribution to the year book is on formulating points of attention to support PhD students in conducting a literature review. Without detracting from this focus, this paper may also be useful for PhD students themselves and other researchers.

Supporting PhD students in conducting a literature review should not be underestimated. Based on a study of twelve dissertations from three universities, Boote and Beile (2005) state that, if dissertation literature reviews are any indication, the new doctors 'know bits and pieces of a disorganized topic' (ibid., p. 3). They immediately add that these new doctors cannot be blamed for it, because the education research community does not often clearly outline what might be expected. This is problematic, because the quality of a literature review is highly responsible for the level in which a study contributes to the knowledge base of a field. As Shulman (1999) argues, the ability to build on the research of those who have come before us is one of the hallmarks of scholarship and grants our work integrity and sophistication. To be useful and meaningful, educational research must build on and learn from prior research. Hence, carrying out a solid literature review should receive the full attention of PhD students and their supervisors.

Methods: Eight steps

In the field of teaching and teacher education the number of qualitative studies outscores the number of quantitative studies by far. Hence, for most themes within this field conducting a statistical meta-study on literature will not be possible. That was also the case for our review study. In looking for a methodological framework for a qualitative review study we found Randolph's approach (2009) very promising, so we decided to use this approach. This approach can also be useful to methodologically underpin literature reviews carried out by PhD students.

Randolph describes eight steps, formulated as tasks that researchers have to carry out. These eight steps are:

1. Create an audit trail;
2. Define the focus of the review;
3. Search for relevant literature;
4. Classify the documents;
5. Create summary data bases;
6. Identify constructs and hypothesized causal linkages;
7. Search for contrary findings and rival interpretations;
8. Use colleagues or informants to corroborate the findings.

These steps are a specific variation of the research stages most PhD students and supervisors are familiar with: getting started (steps 1-2); data collection (steps 3-5); data analysis and interpretation (step 6). Throughout the whole process, and more explicitly in steps 7 and 8, the quality of the literature review is foregrounded. Step 8 also presupposes that a draft version of the literature review is available, so the start of the writing process is also included in Randolph's eight steps. Below I will describe our experiences from working through these stages, and what can be learned from that for supporting PhD students in carrying out a literature review.

Getting started

The first step Randolph describes (Create an audit trail) means carefully documenting all stages of the review process. In this way the process will become transparent, which is important to secure quality. Hiles (2008, p. 891) states that 'The notion of transparency is an overarching concern for establishing the quality of qualitative research. At its most basic, transparency is the benchmark for writing up research and the presentation and dissemination of findings; that is, the need to be explicit, clear, and open about the methods and procedures used. As such, transparency is recognized as a basic requirement of all qualitative research'.

The second step concerns defining the focus of the literature review. This focus is – like in an empirical study – defined by the aims, or – if possible in this stage – more precisely by the research questions of a study. The PhD student should, however, not only formulate the aims or research questions, but also define the central concepts of one's study.

For example, one of the research questions we formulated for our review study was: What professional roles of teacher educators can be identified?
This question can only be answered when the central concepts (professional roles; teacher educator) are carefully defined.

This defining often requires studying the literature, too. As Nagy Hess-Biber (2010) points out, in that case the first aim of the literature study is to narrow down the possibilities included in the study. That leads us to the next steps.

Collecting data

According to Randolph, the next steps are focused on searching for relevant literature. Although today searching the internet seems to be the regular way of finding literature, at the end of this section, I will also discuss some possible alternatives. To start with, however, I will point to some points of attention for data collection with the help of the internet, though without going into the technical details. Most libraries offer guidelines or classes on the technical aspects of searching for literature on the internet, and there are also *online* tutorials available.

We discovered that it is useful to start this search process with an orientation phase, followed by a selection phase. An orientation is useful, because looking for literature via the internet can be an overwhelming task.

In the orientation phase the PhD student can conduct try-outs in order to arrive at the identification of search terms, quality criteria, a demarcation of the publishing period, and search engines.

With regard to search terms, one has to find out which one provides the literature one is looking for.

For example, in our review study combining the search terms teacher educator and role (central concepts in our study) proved not to be efficient. This combination of search terms provided hardly any literature on the roles of teacher educators, but mainly articles on the role of reflection in teacher education.

With regard to quality criteria, it is hard to find objective quality criteria for books (with the exception of PhD theses, which have been publicly defended). Therefore, for our review study we decided to limit our main search to articles published in journals that are recognized the Institute for Scientific Information (ISI). The academic forum regards the quality of these journals as adequate, among other reasons because these journals use the quality criterion of 'double blind review' in judging articles. Of course, other choices can be made, as long as quality of the literature that will be selected receives attention.

Another point of attention in this orientation phase is to determine the period of time the literature review will focus on. Research in teaching and teacher education has a history of decades, so it is wise to start with the most recent literature. For many themes, systematically looking for what has been published in the last five years might be a good start. Our review study, however, required as complete an overview as possible, which meant that we had to cover more than twenty years. Of course, this had its consequences, as we will see below.

Finally, one has to decide which search engines to use and in what sequence. One should start with the search engine that gives the most relevant hits. If one wants to reach quantitative saturation (Van Veen, Zwart, Meirink, & Verloop, 2010), one can stop as soon as using the next search engine shows a clear decline in the number of hits. The alternative is to look for conceptual (theoretical) saturation. This means searching until no new information can be found.

In our review study, looking for quantitative saturation did not work and we had to make another decision. After starting with the search engine that gave most hits, followed by using two other search engines, we had 1260 hits. However, using a fourth search engine gave more than 100 extra hits, and so did a fifth engine. Therefore, we decided to start with using the 1260 we had found with three search engines and to find out if this would lead to conceptual saturation. If not, we would have to return to this third step and add additional search engines.

For PhD students, I would recommend trying to narrow down the search terms and the period of time in a way that makes it possible to reach quantitative saturation.

In *the selection phase*, the PhD student has to decide which of the hits that have been found will be included in the literature review by studying the contents. The main criterion (besides quality) for including studies is whether or not a study contributes to answering the research question(s).

> *For example, many of the 1260 articles we had collected proved to be studies on teacher education in which only in the conclusion and discussion section were recommendations for teacher educators formulated. Hence, because these studies were not focused on teacher educators, they could be removed from our selection. In this way, by reading the abstract of the studies, we narrowed down the number of usable studies from 1260 to 405.*
> *These 405 studies were read entirely with the aim of selecting those articles that offered information about the central concepts of our study (for example 'professional roles', the concept used in one of our research questions). In the end (see also step 8) we found that approximately 137 articles were useful in answering our leading questions.*

The final step of collecting data is to classify the articles one has found and to create a systematic data-base. Boote and Beile (2005) state among other things that a literature review should not only report the claims made in the existing literature, but should also critically exam the methods used to better understand the underpinning of these claims.

In our example we created a table (see Table 1), in which we described for each of the selected studies:

1. The country or countries in which the study had been carried out;
2. The central research question(s) or the focus of the study;
3. The method(s) used;
4. The data sources;
5. The number of teacher educators that had been objects of study;
6. The number of others, for example students, that had been objects of study;
7. The roles and/or accompanying behaviour on which the study provided information;
8. The professional development of roles and/or accompanying behaviour on which the study provided information.

Columns 7 and 8 are related to our research questions.

Table 1. Format of the database of our review study.

Article	Country	Research question/ Focus	Methods	Data Sources	N Teacher educators	N Others	Roles and Behaviour	Development Roles and Behaviour

Alternative ways of data collection

As mentioned above, looking for literature on the internet can be rather an overwhelming task, so it is worth exploring alternatives. One of the interesting findings of our review study was that more than 60% of the studies that we found suitable for use proved to be published in only five journals. This could be an indication that starting the search with looking into a limited number of journals might work in some situations. Of course, this requires that it is possible to select the most important journals related to the theme of the PhD study.

I also want to draw attention to using literature reviews that have been carried out by others. It is possible that a PhD student can build on literature reviews that have already been published. These reviews might cover part of the theme the PhD is interested in and often an update is needed to include recent literature, but it is certainly worth looking for already published reviews.

A good example for our review was the study of Hennissen, Crasborn, Brouwer, Korthagen and Bergen (2008), who conducted a thoroughgoing literature review on mentoring which we could use as a solid data base for the description of one of the roles of teacher educators.

There is, however, a risk in using this alternative method, because the PhD student not only adopts the already collected data, but also the data analysis and data interpretation of the authors of the already published review study. Locke, Spirduso, and Silverman (2007) use an opposite metaphor to clarify this: they approach a literature review as a conversation. In their metaphor data collection is ‘the process of locating the voices of individual conversants’. Data analysis and interpretation is ‘the process of listening carefully to the ongoing discourse (…) until both the history and the current state of the conversation are understood' (ibid., pp. 63-64). Hence, the quality of an already conducted review study, and especially the way data used in this study are analysed and interpreted, should be a subject of discussion between the PhD student and the supervisor. Below I further elaborate on the process of data analysis and data interpretation.

Data analysis and data interpretation

Randolph remarks that the goal of the sixth step 'unlike meta-analysis, is to increase the understanding of the phenomena being investigated' (Randolph, 2009, p. 10). In other words, at this stage the PhD student has to find ways of making sense of the data. Often, no ready-made frame of reference will be available for analysing data. In that case, following a grounded theory approach (Strauss & Corbin, 1998) will be the most appropriate way to proceed. Using a grounded theory approach requires check and re-check to secure transparency and trustworthiness. Besides careful journal writing, involving a second researcher or critical friend is almost an obligation at this stage.

> *Our procedure was as follows. First, using the database we identified what professional roles of teacher educators were being distinguished within the selected literature. This was sometimes quite complicated. In some studies, roles were named and described explicitly, but other studies only presented more abstract descriptions. Moreover, similar names for a role appeared not always to lead to similar descriptions, and similar descriptions not always led to the same name for a role. After discussing these issues among the three researchers, one of them carried out the overall analysis, which was then checked by the other two. Based on this procedure, we distinguished six roles.*

If in the previous stage no quantitative saturation could be reached (see section above), at this stage the PhD student has to look for conceptual saturation (Morse, 2004). This means that he or she has to ensure that analysing extra studies will not add new information.

> *In our study, during the process of analysing the data, it became clear that after about 50 studies no more roles were to be found, so conceptual saturation had been reached.*

Another point of attention at this stage is the kind and number of studies the PhD student needs to collect to underpin a finding. Studies in our field are often small and qualitative. That means that to strengthen and underpin a finding, more and interrelated studies are needed. Moreover, it should be emphasized that alternative voices should also be included in a literature review.

The number of studies we found for each of the six roles in our review study varied in quantity and quality. As a result, some aspects were mentioned only a few times in small, qualitative studies. Therefore, we put together related aspects. In this way, we achieved a strengthened empirical basis. Isolated aspects from small qualitative studies not found in other studies were thus not included in our review study.

Quality and writing

As in every study, the literature in a qualitative review needs to meet academic quality criteria. Hence, PhD students have to become familiar with using instruments to secure quality. Lincoln and Guba (1986) introduced the criterion of trustworthiness for qualitative research (as the equivalent to reliability and validity in quantitative research). Since then, in qualitative research trustworthiness, and as an important condition, transparency, receive more and more attention (see, for example, Feldman, 2007). By describing every step taken and every decision made, the academic community has the opportunity to judge if the procedures that have been followed, the decisions that have been made, and the conclusions that have been drawn, are acceptable. Therefore, as emphasized at the beginning of this paper, keeping a journal is an important instrument.

Some statistical measures, however, can also be used, and should be when useful. A good example is Cohen's Kappa, a statistical measure of inter-rater agreement for qualitative items.

In our review study, we used Cohen's Kappa in the selection phase. To decide which of the 1260 articles we initially found should be included in our selection, two of us read the abstracts of 300 articles. To measure if our selection was reliable, we compared the findings by using Cohen's Kappa. The result was 0.8, which is quite high. Therefore, we decided to divide the other 960 articles between the two of us.

In the stage of data interpretation, trustworthiness can also be enhanced by working in pairs to independently analyse and interpret the data (a triangulation of researchers). Next, differences should be discussed – taking into account possible alternative interpretations – until agreement is reached.

We did this as follows. For each role two researchers independently analysed at least part of the studies on that role. Especially with regard to studies focusing on several roles, this proved to be important in order to arrive at a consistent description across roles, behaviour and development. In a few cases the researchers arrived at different outcomes, in which case the differences were discussed, and the relevant studies were analysed again. Moreover, during the year when we, the three researchers, worked on this review study, we met every three weeks. In the meetings, we critically discussed each decision taken.

In every research project, but especially in large research projects, like a PhD thesis, there is always a risk of becoming locked in a specific line of reasoning. Therefore, involving critical friends into the whole process is important. In some universities, this is the task of a support committee that meets once or twice a year with the PhD student and the supervisor. An important advantage of this arrangement is that is forces the PhD student to start writing in an early stage of his or her research project. Other arrangements to involve critical friends are also possible, for example inviting a specialized critical friend when important decisions have to be made, or to comment on drafts.

A draft version of the Methods and Results chapters of our review study, together with an overview of the selected articles, was reviewed by seven critical friends, experts in the field of teacher education, from different countries. We asked them to comment on the trustworthiness and transparency of the methods, on the completeness of our literature selection, and on other aspects of their own choosing. They all wrote underpinned reactions that helped us to sharpen our line of argumentation.

Finally, I want to mention that the supervisor should support the student in structuring the paper in an appropriate way, the more so if the PhD student wants to submit a literature review paper for publication. As an editor and as a member of the editorial boards of several journals, I have often received literature reviews that might have been interesting, but lacked a solid theoretical and methodological underpinning (see also Boote & Beile, 2005).

Generally speaking, a customary structure, such as Introduction, Theoretical Framework, Methods, Findings, Conclusions and Discussion should be used to increase the chance that the PhD student's work will be accepted for publication. It is also important to carefully select the journal the paper will be submitted to, taking into account among other things, the focus of the journal and the target group. Exploring practical issues like the period of time it takes to review a paper and the rejection rate of a journal can also be useful to take into account. Also the status of a journal (measured by the ranking) might be an aspect of consideration. Moreover, the PhD student should be prepared that acceptance is not obvious, and that writing several revisions has to be expected. Nevertheless when, finally, a literature review has been published, it is time for celebration.

Ten Suggestions

The focus of this paper was to formulate points of attention in supporting PhD students in conducting a literature review. But, as mentioned in the Introduction, also PhD students themselves and other researchers may find this paper useful. It might be interesting to mention that the points of attention discussed above concur with the rubrics Boote and Beile (2005) developed for rating dissertation literature reviews.

To conclude this paper, I summarize the main points discussed in this paper in the format of suggestions.

Suggestion 1: Request that the PhD student keeps a journal and discuss this journal with him or her on a regular basis.

Suggestion 2: Discuss carefully the formulated research questions and the definition of the central concepts of the literature review with the PhD student.

Suggestion 3: Require that, in the orientation phase, the PhD student conducts try-outs in order to arrive at the identification of search terms, quality criteria, a demarcation of the publishing period, and search engines.

Suggestion 4: Encourage PhD students to try to narrow down the search terms and the period of time in a way that makes it possible to reach quantitative saturation.

Suggestions 5: Alternatives for searching the internet to collect data can be considered, provided that possible risks are critically discussed between supervisor and PhD students.

Suggestion 6: Secure the involvement of a second researcher or critical friend in the data analysis and data interpretation process of the PhD student's literature review.

Suggestion 7: Effect the underpinning of the findings of the PhD student's literature review, especially when these are built on small scale, qualitative studies.

Suggestion 8: Require that the PhD student includes alternative voices in the literature review.

Suggestion 9: Secure the quality of the literature review in all stages, encouraging the PhD student to use various instruments, such as journal writing, statistical measures, triangulation, and the involvement of critical friends.

Suggestion 10: Support the PhD student in writing the literature review in a structured way.

References

Boote, D., & Beile, P. (2005). Scholars before researchers: On the centrality of the dissertation literature review in research preparation. *Educational Researcher, 34*(6), 3-15.

Feldman, A. (2007). Validity and quality in action research. *Educational Action Research, 15*(1), 21-32.

Hennissen, P., Crasborn, F., Brouwer, N., Korthagen, F., & Bergen, T. (2008). Mapping mentor teachers' roles in mentoring dialogues. *Educational Research Review, 3*(2), 168-186.

Hiles, D. (2008). Transparency. In L. M. Given, *The SAGE Encyclopedia of Qualitative Research Methods.* DOI: http://dx.doi.org/10.4135/9781412963909

Lincoln, Y. S., & Guba, E. G. (1986). But is it rigorous? Trustworthiness and authenticity in naturalistic evaluation. *New Directions for Program Evaluation, 30,* 73-84.

Locke, L. F., Spirduso, W. W., & Silverman, S. J. (2007). *Proposals that work: A guide for planning dissertations and grant proposals.* Thousands Oaks, Canada: Sage.

Lunenberg, M., Dengerink, J., & Korthagen, F. (2014). *The Professional Teacher Educator. Roles, Behaviour, and Professional Development of Teacher Educators.* Rotterdam/Boston/Taipei: Sense Publishers.

Morse, J. M. (2004). Theoretical Saturation. In M. S. Lewis-Beck, & A. Bryman, & T. Futing Liao, *Encyclopedia of Social Science Research Methods* (pp. 1123-1124). Thousand Oaks, CA: Sage. DOI:http://dx.doi.org/10.4135/9781412950589

Nagy Hesse-Biber, S. (2010). *Mixed Methods Research.* New York: Guildford Press.

Randolph, J. J. (2009). A guide to writing the dissertation literature review. *Practical Assessment, Research & Evaluation, 14*(13).

Shulman, L. S. (*1999*). *Professing educational* scholarship. In E. C. Lagemann & L. S. Shulman (Eds.), *Issues in Educational Research: Problems and Possibilities* (pp. 159-165). San Francisco: Jossey-Bass.

Strauss, A. L. & Corbin, J. (1998). *Basics of qualitative research: Techniques and procedures for developing grounded theory*. Thousand Oaks, CA: Sage.

Van Veen, K., Zwart, R., Meirink, J., & Verloop, N. (2010). *Professionele ontwikkeling van leraren: Een reviewstudie naar effectieve kenmerken van professionaliserings-interventies van leraren.* [Professional development of teachers: A review study into effective interventions in the professional development of teachers.] Leiden: ICLON / Expertisecentrum Leren van Docenten.