The use of systematic reviews in adult education: perspectives and trends

L'uso delle revisioni sistematiche nell'educazione degli adulti: prospettive e tendenze

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Abstract

This paper briefly describes the main steps to conduct a systematic review and the use of this method in adult education and lifelong learning. Education databases, adult education journals and research reviews with the highest impact factor were screened to determine which types of systematic reviews are most often used (qualitative or mixed-methods vs. meta-analysis) and which topics (e.g. employability, lifelong learning) are investigated in these reviews. The objective is to become familiar with the use of systematic reviews in the case of research in the fields of adult education and lifelong learning over the last five years.

Keywords: systematic review; adult education; lifelong learning.

Abstract

Il contributo descrive le principali fasi per condurre una revisione sistematica e l'utilizzo di questo metodo nell'educazione degli adulti e nel lifelong learning. È stata condotta una ricerca sulle banche dati educative e sulle riviste scientifiche con più alto impact factor sui temi dell'educazione degli adulti e delle sintesi di ricerca per stabilire le tipologie di revisioni sistematiche più utilizzate (qualitative o a metodo misto vs. meta-analisi) e le tematiche (ad es. l'occupabilità, il lifelong learning) oggetto delle revisioni. L'obiettivo è conoscere l'uso delle revisioni sistematiche nelle aree di ricerca dell'educazione degli adulti e del lifelong learning negli ultimi cinque anni.

Parole chiave: revisione sistematica; educazione degli adulti; lifelong learning.

1. Introduction

A systematic review is a method to synthesize the results of primary studies on a specific topic and research problems. As defined by the Campbell Collaboration "a systematic review uses transparent procedures to find, evaluate and synthesize the results of relevant research. Procedures are explicitly defined in advance, to ensure that the exercise is transparent and can be replicated." (https://campbellcollaboration.org/research-resources/writing-a-campbell-systematic-review/systemic-review.html).

Systematic reviews may include studies that are qualitative, both qualitative and quantitative, or only quantitative[1]. Usually, researchers refer to the integration of qualitative and quantitative studies with the expression "mixed-methods research synthesis" (Harden, 2010), while meta-analysis (Glass, 1976) is a method to merge quantitative studies (correlational or experimental studies) and combine their results in an effect size index – defined as "a way of quantifying the size of the difference between two groups" (Coe, 2002, p. 1).

In the 2000s, with the movement toward evidence-based practices – Evidence-Based Education (Davies, 1999; Hargreaves, 1996) – the interest in systematic reviews of research has grown in various educational fields and in many countries included Italy (Calvani, 2012; Di Nuovo, 1995; Vivanet, 2014). Although meta-analyses are mostly used in the field of formal education, such as schools for studying the effectiveness of instructional methods or programmes, researchers conduct systematic reviews – including qualitative and quantitative methods – also in adult education as witnessed by the number of reviews published over the last few years. A quick search of reviews in adult education in the Education Source database[2] shows that 54 reviews were published between 1970 and 1999, 436 reviews between 2000 and 2019; of these more than half (261 reviews) was published in the last ten years.

This paper briefly describes the main steps to conduct a systematic review of research[3] and discusses the use of this method in adult education and lifelong learning. Explaining the process to conduct reviews is important to better understand the use of this method with the final objective of obtaining a portrayal of the review literature in adult education from the last five years. Those education databases, adult education journals and research reviews with the highest impact factor were screened to determine the following elements: (i) which types of systematic reviews are used most often (qualitative review/or mixed-methods research synthesis vs. meta-analysis); (ii) which topics (e.g. employability, learning strategies for adults) are investigated most frequently in the reviews; and (iii) whether the reviews selected followed all the steps that ought to characterize the process of a systematic review.

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[1] For more information on the different types of systematic review, see Pellegrini and Vivanet (2018) – First Part by G. Vivanet.

[2] The search was limited to paper abstracts using the following keywords and Boolean operators: ("adult education" OR "adult learning") AND ("systematic review" OR "meta-analysis" OR "review").

[3] Although there are several types of review in the literature, this paper only examines systematic reviews of research. For more information on the other types of review, see Grant and Booth (2009).

2. Main steps in conducting a systematic review

The process to carry out systematic reviews consists of a sequence of activities established before starting the review and clearly explained in the research protocol. The objective is to ensure the key qualities of transparency and replicability. The two concepts are linked: transparency means describing the research process in detail in the report so that another researcher can replicate the process and the strategies used to achieve the same results (Card, 2012). To obtain a high level of transparency it is important to record the decisions taken in the review protocol prior to beginning the review, then to enter any changes made during the process and list these in the review report.

This paragraph briefly describes the main steps to conduct a systematic review[4]. The process is the same for qualitative reviews, mixed-methods research syntheses, and quantitative reviews (or meta-analyses). The differences between these reviews lie in the analysis step and in the result synthesis. To analyse results in qualitative or mixed-methods research syntheses, a narrative approach is normally used, whereas statistical methods are used for meta-analyses.

Many authors (Card, 2012; Cooper, 2017; Lipsey & Wilson, 2001) have identified the steps to conduct a systematic review. Below the five stages of a model adapted from Card (2012) are described.

Formulating the research problem

Defining the research problem clearly is vital since this is going to guide the whole of the review process. Cooper (2017) defines three types of research problem or question: *descriptive*, *associational*, or *causal*. In a descriptive problem, the interest lies in obtaining "an accurate portrayal of some event or other phenomenon" (Cooper, 2017, p. 133). In this case, the reviewer will search and select qualitative and quantitative primary studies. In an associational problem, the interest is to find out "whether variables co-occur, or correlate, with one another" (ivi, p. 136). Correlational studies will be included in this kind of review. In a causal problem, the interest is to "draw a direct productive link between one event (the cause) and another (the effect)" (ivi, p. 136). The reviewer will investigate and select experimental studies, with either quasi-experimental or randomized designs.

Defining the review protocol

The review protocol is a written plan that defines all the steps of the review, and in particular it should include the following elements: (i) how to locate studies during a literature search (e.g. which database, which keywords); (ii) eligibility criteria for selecting primary studies; (iii) relevant information to be collected during the coding phase; (iv) methods to analyse and synthesize data (Vivanet, 2015). Review protocols of the Cochrane Collaboration (https://www.cochranelibrary.com/cdsr/reviews/topics) in Medicine, and the protocols of the Campbell Collaboration (https://campbellcollaboration.org/library.html) in Social Sciences are rigorous examples.

Eligibility criteria are "a set of explicit statements about the features of studies that will or will not (respectively) be included in your meta-analysis" (Card, 2012, p. 38). They must be identified prior to the search for primary studies as well as all the elements of the

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[4] The process described in this paragraph is incomplete, for more information, see Card (2012) in English; Pellegrini and Vivanet (2018) in Italian.

review protocol. The criteria used should be clear and explicit to facilitate the reviewer in selecting primary studies and to make the process replicable by another researcher. Although criteria may vary according to the research topic, normally some of them concern the same elements: research topic, study design, sample characteristics, language of the publication, publishing timeframe, publication type (Pellegrini & Vivanet, 2018).

Searching for and selecting primary studies

A search of the literature should be extensive in order to find all the studies that might meet the eligibility criteria. It is important to use diverse strategies to locate literature:

- electronic databases, such as Education Source, ERIC, or JSTOR in education;
- scientific journals, depending on the topic of the review;
- previous reviews on the same topic; in education, many reviews can be found in review journals such as *Review of Educational Research* or *Educational Research Review*;
- tools to investigate *grey literature*[5], such as conference programmes, dissertation databases (ProQuest Dissertations and Abstracts; PsycEXTRA).

After searching for the literature, the selection procedure usually consists of two steps: (i) a screening of the title and abstract of each resource by two independent evaluators; (ii) a selection of the studies based on the eligibility criteria, documenting the reason for exclusion.

Coding primary studies

Two independent reviewers carry out the coding phase. Certain pieces of information related to the review topic are unique to the research problem, however other information needs to be gathered in all educational reviews. This information can be classified in the following types – adapted from Cooper (2017) and Card (2012):

- report – identification of the report (author and date of publication), status of publication (published or unpublished);
- sample characteristics – sample size, ethnic composition, age, socioeconomic status;
- study design – type of design (experimental, correlational, case study, etc.);
- measurement characteristics – type of measure (self-report, standardized, etc.), name of the measures.

In meta-analyses, other characteristics that may be moderator variables of the effect are coded. A moderator is a third variable that affects the strength of the relationship of the variables studied (Borenstein, Hedges, Higgins & Rothstein, 2009). For example, in a review that studies the effect of professional development on the reading achievement of students in K-12, a moderator might be the school level (studies in primary school K-5 vs. studies in secondary school 6-12).

Synthesizing results

After coding the relevant information, the next step is to synthesize the results. Findings from qualitative studies are usually synthesized using a narrative approach to show and

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[5] Grey literature is defined as "any literature produced in electronic or print format that is not controlled by commercial publishers, such as technical reports and similar sources" (Borenstein et al., 2009, p. 239). Other examples are conference abstracts or unpublished dissertations.

discuss the main issues investigated by each study. Sandelowski and Barroso (2006) and CRD (2010) give practical information for synthesizing qualitative research results.

In analysing quantitative results an effect size for each study is calculated. Using different statistical methods, a mean effect size for the meta-analysis is computed (Borenstein et al., 2009; Lipsey & Wilson, 2001). Each study included in the meta-analysis may show a different level of effectiveness, for this reason it is not sufficient to calculate a mean effect size, but it is important to know which variables may cause differences in effects and quantify them. Heterogeneity and moderator analyses (subgroup analysis and meta-regression) are the statistical methods to quantify the level of variance in effect sizes and study which moderator variables explain this variance (Borenstein et al., 2009). Finally, in synthesizing results, the risks of bias should be addressed and analysed (e.g. publication bias)[6].

Writing the review report

The report should be transparent and clear to allow replicability of the review process (at least in theory). The PRISMA Group (Moher et al., 2009) have developed a Statement to help researchers to improve the reporting of systematic reviews. It consists of a 27-item checklist and a four-phase flow diagram (available in open access https://journals.plos.org/plosmedicine/article?id=%2010.1371/journal.pmed.1000097#pmed-1000097-t001). According to the PRISMA Statement, the sections of a review report should be as follow:

- title and abstract;
- introduction (rationale and objectives);
- methods (review protocol, eligibility criteria, information sources, search strategies, study selection, data collection, synthesis of results, additional analyses);
- results (study selection, study characteristics, synthesis of results, risk of bias);
- discussion (summary of evidence, limitations, conclusions).

3. Perspectives and trends of the use of systematic reviews in adult education

This paragraph aims to discover the use of systematic reviews in adult education and lifelong learning by analysing the most recent reviews (last 5 years) published in the field. The interest is limited to adult education, lifelong learning, and employment, excluding higher education (post-secondary, university and college) that involves formal education. Higher education features a larger number of systematic reviews compared to adult education (informal or non-formal education) as witnessed by *The Review of Higher Education*, a scientific journal (Impact Factor, IF 2017: 1.297; n. 132 of 238 educational journals) which focuses on reviews on college- and university-related topics.

The strategies used to search for systematic reviews on adult education were as follows:

1. Education Source using the following query (last five years, published in English): ("adult education" OR "adult learning" OR "employment") AND ("systematic review" OR "meta-analysis" OR "review");

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[6] For more information: Rothstein, Sutton and Borenstein (2006).

2. reviews published in the three journals on adult education with the highest impact factor (last 5 years): *Adult Education Quarterly* (IF 2017: 1.257; n. 138 of 238 educational journals); *Studies in Continuing Education* (IF 2017: 1.30); *International Journal of Lifelong Learning* (IF 2017: 0.88);

3. reviews published in the two journals on research reviews with the highest impact factor (last 5 year): *Review of Educational Research* (IF 2017: 8.241; n. 1 of 238 educational journals); and *Educational Research Review Research* (IF 2017: 4.973; n. 12 of 238 educational journals).

A total of eight systematic reviews were located: five reviews searching with the first strategy, no reviews searching with the second strategy, and three reviews searching with the third strategy. The total number of studies found using the first strategy was 128. Seventy-five reviews were excluded because they explored other topics (e.g. higher education, or disabilities), 53 reviews were excluded because they had used review approaches (narrative, critical or scoping reviews) other than the systematic kind. It is interesting to note that out of a total of 61 reviews of adult education of different types, most of them (49) were narrative or critical reviews, four were scoping reviews and eight were systematic reviews.

Each review was read and analysed by gathering information on topics, methods, and processed (review steps) as shown in Figure 1.

Topic	Reviews were categorized based on the topic studied (e.g. employment, professional development, etc.).
Method	Reviews were divided between (i) qualitative or mixed-methods research synthesis and (ii) meta-analysis to see which method had been used more in the field.
Review steps	Reviews were read to see whether all the review steps were conducted: 1. formulating the research problem – consistency between research problem and study method; 2. defining the review protocol: – explicit eligibility criteria; 3. searching and selecting primary studies – broad literature search using different sources (e.g. electronic databases, scientific journals, previous reviews, grey literature); 4. coding primary studies – explicit coding procedure (e.g. information coded and double-coding process); 5. synthesizing results – narrative synthesis for qualitative o mixed-methods research syntheses; statistical analysis for meta-analysis; analysis of the moderators and assessment of risk of bias or study quality in meta-analysis.

Figure 1. Elements and criteria for the analysis of systematic reviews on adult education.

In general, the topic investigated most was employment or related issues, such as careers and the job market (5 studies). Transition to adult life, teaching a second language (L2) and financial incentives to improve lifelong learning were the other three topics of the reviews (Figure 2).

Out of a total of eight reviews, three of them were meta-analyses, another three were systematic reviews including only quantitative studies but without performing a meta-

analysis[7], one was a qualitative systematic review and one a mixed-methods research synthesis. Although the small number of systematic reviews found might suggest that studying adult education using quantitative methods is challenging – because of its non-formal nature – some topics, such as employment, are investigated using these methods.

Study	Topic	Review method
Hale, Bevilacqua & Viner (2015)	Employment in adulthood of adolescents with mental or physical disorders	Meta-analysis
Cassarino-Perez et al. (2018)	Employment of young people leaving care	Meta-analysis
Yousefi & Biria (2018)	Strategies to teach L2 vocabulary (children and adults)	Meta-analysis
Inceoglua, Selenkob McDowallc & Schlachterd (2019)	Employment and factors favouring it	Systematic review including only quantitative studies
Vanderkooy, Regier & Lilly (2019)	Financial incentives for increasing participation in lifelong learning	Systematic review including only quantitative studies
Waibel, Rüger, Ette & Sauer (2016)	Career consequences of transnational educational mobility	Systematic review including only quantitative studies
Grosemans, Coertjens & Kyndt (2017)	Exploring learning and the transition from higher education to the job market	Mixed-methods research synthesis
Häggman-Laitila, Salokekkilä & Karki (2018)	Transition to adult life from the perspective of young people leaving foster care	Systematic review including only qualitative studies

Figure 2. Topics and methods of selected systematic reviews on adult education.

All the systematic reviews located through the search strategies followed the process steps described in the previous paragraph. Specifically, in the selected meta-analyses (Cassarino-Perez et al., 2018; Hale et al., 2015; Yousefi & Biria, 2018) a broad literature search was conducted including strategies to locate published works and unpublished works (*grey literature*). Reports usually displayed the eligibility criteria in an explicit manner, using tables or bulleted lists. Furthermore, each paper was double-screened to be selected for review and then double-coded by independent reviewers. Moderator analyses and assessment of risk of bias or study quality were performed in each meta-analysis.

The three systematic reviews including only quantitative studies could not synthesize results using statistical methods since "the magnitude of the impacts found in the studies […] was not expressed in such a way as to permit meta-analysis of overall impact" (Vanderkooy et al., 2019, p. 186) or the review included different designs (correlational, quantitative survey, experimental designs). This was expressed by the authors as a limitation of their works.

Finally, the mixed-methods research synthesis (Grosemans et al., 2017) and the qualitative type (Häggman-Laitila et al., 2018) explored their specific topics with the aim of building a snapshot of the available literature. As a result, after all the stages of

[7] Although the reviews included only quantitative studies, it is not possible to define them meta-analyses because did not analyze data using statistical methods.

searching for and selecting primary studies, the authors reported findings through a narrative description highlighting the different factors involved.

4. Conclusions

The purpose of this paper was to verify the use of systematic reviews on adult education and lifelong learning over the last five years to determine: (i) which types of systematic reviews are used most (qualitative review/or mixed-methods research synthesis vs. meta-analysis); (ii) which topics (e.g. employment, learning strategies for adults) are investigated most in reviews; and (iii) whether the reviews selected had followed all the steps that characterize a systematic review.

It is important to underline the limitations of this work. It has no ambition to be an exhaustive systematic review of research in adult education but has limited itself to verify which topics are explored most and which types of review are used most in the last five years. Since adult education is an extensive field that includes different research themes, there is a need to explore more deeply how each theme has already been researched.

Based on this work, most of the reviews (49) found through the search strategies were critical or narrative research reviews, a few (8) were systematic reviews, either mixed-methods research syntheses or meta-analyses. This information suggests that in the field of adult education, narrative review methods are used more frequently than the systematic review kind. One explanation might be that the non-formal nature of adult education is better investigated using qualitative studies and narrative reviews that can describe the contexts and other issues more deeply.

The eight systematic reviews selected showed that the topic studied most in the literature through systematic methods is employment. Most of the reviews of employment were meta-analyses, which might suggest the extensive presence of correlational and experimental studies on this topic in the literature compared to other non-formal education topics, such as curriculum transformation or learning organization. All the stages that characterize a systematic review had been followed in these syntheses using elements to monitor the methodological quality: diverse strategies to locate published and unpublished works, explicit eligibility criteria, double-selection and double-coding processes, and bias risk assessment.

The use of systematic reviews in adult education and lifelong learning as described in this paper might suggest future research directions in the field. One direction could be to conduct more quantitative and qualitative primary studies of a high methodological quality to obtain more literature to carry out systematic reviews instead of narrative reviews. In fact, with their transparent and replicable process, systematic reviews provide reliable evidence to inform practice.

Reference list

Borenstein, M., Hedges, L.V., Higgins, J., & Rothstein, H.R. (2009). *Introduction to meta-analysis*. Hoboken, NJ: John Wiley & Sons.

Calvani, A. (2012). *Per un'istruzione evidence based. Analisi teorico-metodologica internazionale sulle didattiche efficaci e inclusive*. Trento: Erickson.

Campbell Collaboration. https://campbellcollaboration.org/library.html (ver. 22.03.2019).

Campbell Collaboration. What is a systematic review? https://campbellcollaboration.org/research-resources/writing-a-campbell-systematic-review/systemic-review.html (ver. 22.03.2019).

Card, N.A. (2012). *Applied meta-analysis for social science research*. New York, NY: The Guilford Press.

Cassarino-Perez, L., Crous, G., Goemans, A., Montserrat, C., & Sarriera, J.C. (2018). From care to education and employment: A meta-analysis. *Children and Youth Services Review, 95*, 407–416.

Cochrane Collaboration. https://www.cochranelibrary.com/cdsr/reviews/topics (ver. 22.03.2019).

CRD. Centre for Reviews and Dissemination (2010). *Systematic reviews: CRD's guidance for undertaking reviews in health care*. York: Centre for Reviews and Dissemination.

Coe, R. (2002). *It's the Effect Size, stupid: What effect size is and why it is important*. Paper presented at the Annual Conference of the British Educational Research Association, University of Exeter, England. http://www.leeds.ac.uk/educol/documents/00002182.htm (ver. 22.03.2019).

Cooper, H. (2017). *Research synthesis and meta-analysis: A step-by-step approach* (Vol. 2). Thousand Oaks, CA: Sage.

Davies, P. (1999). What is evidence-based education? *British Journal of Educational Studies, 47*(2), 108–121.

Di Nuovo, S. (1995). *La meta-analisi: fondamenti teorici e applicazioni nella ricerca psicologica*. Roma: Borla.

Glass, G.V. (1976). Primary, secondary, meta-analysis of research. *American Educational Research Association, 5*(10), 3–8.

Grant, M.J., & Booth, A. (2009). A typology of reviews: an analysis of 14 review types and associated methodologies. *Health Information & Libraries Journal, 26*(2), 91–108.

Grosemans, I., Coertjens, L., & Kyndt, E. (2017). Exploring learning and fit in the transition from higher education to the job market: A systematic review. *Educational Research Review, 21*, 67–84.

Häggman-Laitila, A., Salokekkilä, P., & Karki, S. (2018). Transition to adult life of young people leaving foster care: A qualitative systematic review. *Children and Youth Services Review, 95*, 134–143.

Hale, D.R., Bevilacqua, L., & Viner, R.M. (2015). Adolescent health and adult education and employment: a systematic review. *Pediatrics, 136*(1), 128–140.

Harden, A. (2010). *Mixed-methods systematic reviews: Integrating quantitative and qualitative findings*. Technical Brief NO. 25. A Publication of the National Center for the Dissemination of Disability Research (NCDDR).

Hargreaves, D. (1996). *Teaching as a research-based profession: possibilities and prospects*. London: Teacher Training Agency.

Inceoglu, I., Selenko, E., McDowall, A., & Schlachter, S. (2018). (How) Do work placements work? Scrutinizing the quantitative evidence for a theory-driven future research agenda. *Journal of Vocational Behavior*, *110*(2019), 317–337.

Lipsey, M.W., & Wilson, D.B. (2001). *Practical meta-analysis* (Vol. 49). Thousand Oaks, CA: Sage.

Moher, D., Liberati, A., Tetzlaff, J., Altman, D.G., & Prisma Group. (2009). Preferred reporting items for systematic reviews and meta-analyses: The PRISMA statement. *PLoS medicine, 6*(7), e1000097.

Pellegrini, M., & Vivanet, G. (2018). *Sintesi di ricerca in educazione. Basi teoriche e metodologiche*. Roma: Carocci.

Rothstein, H.R., Sutton, A.J., & Borenstein, M. (eds.). (2006). *Publication bias in meta-analysis: Prevention, assessment and adjustments*. Hoboken, NJ: John Wiley & Sons.

Sandelowski, M., & Barroso, J. (2006). *Handbook for synthesizing qualitative research*. New York, NY: Springer Publishing Company.

Vanderkooy, A., Regier, E., & Lilly, M.B. (2019). Investing in inclusive growth: A systematic review of the role of financial incentives to promote lifelong learning. *Educational Research Review, 27,* 176–190.

Vivanet, G. (2014). *Che cos'è l'Evidence Based Education*. Roma: Carocci.

Vivanet, G. (2015). *Evidence Based Education. Per una cultura dell'efficacia didattica*. Lecce: Pensa Multimedia.

Waibel, S., Rüger, H., Ette, A., & Sauer, L. (2017). Career consequences of transnational educational mobility: A systematic literature review. *Educational Research Review, 20*, 81–98.

Yousefi, M.H., & Biria, R. (2018). The effectiveness of L2 vocabulary instruction: a meta-analysis. *Asian-Pacific Journal of Second and Foreign Language Education, 3*(1), 21.