

The logo for the Ontario Ministry of Education Research Strategy. It features a yellow square background. At the top, the text "ONTARIO MINISTRY OF EDUCATION" is written in blue, uppercase letters. Below this, a large light blue circle contains the words "RESEARCH STRATEGY" in bold, green, uppercase letters.

ONTARIO MINISTRY OF EDUCATION

RESEARCH STRATEGY

Ten-Step Guide to Conducting a Research Literature Review

The ministry is committed to developing and implementing policies and programs that are supported by good evidence. Drawing on the literature that reports on pertinent research can be useful and supportive to inform policies and programs. This guide provides a process to support a consistent high quality of literature research reviews across the ministry. Ten steps describe the process of conducting a review:

1. Establishing parameters for a review of the research literature
2. Determining the context and background for the request
3. Deciding on a review type
4. Preparing for the review
5. Searching independently
6. Getting help from ministry library staff
7. Reading, summarizing and analyzing
8. Appraising research fitness and synthesis
9. Writing the report
10. Sharing the findings

At any point, the analyst may have to revisit a previous step as illustrated in Figure I.1.

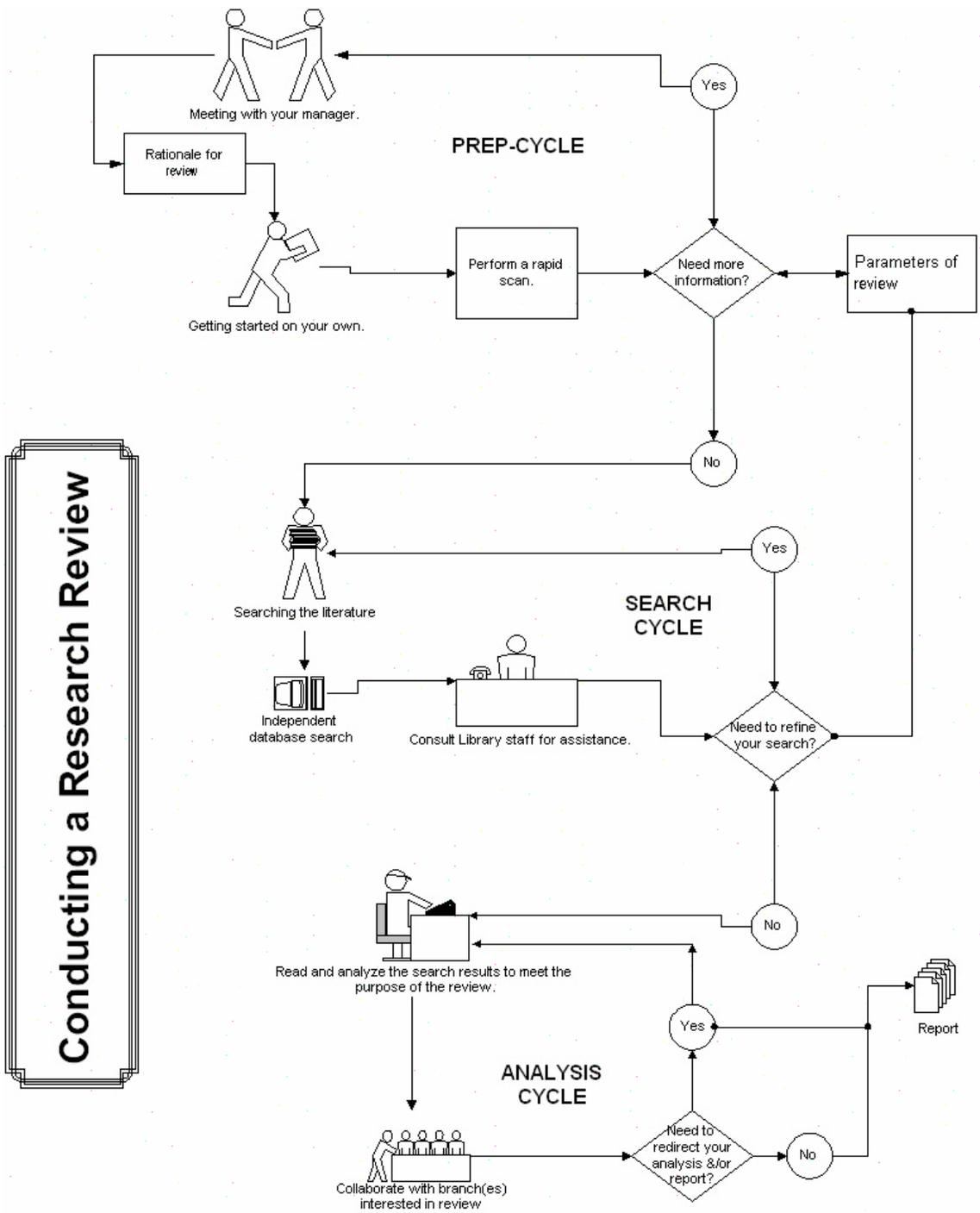


Figure I.1. Overview of the process of conducting a review of the research literature

Getting Started

It is important to place a research literature review in the context of the policy development cycle. "Issue definition" is the important first phase in the policy cycle. Ministry of Education policy analysts use their expertise to clarify a definition of the issue within the context of both the policy priorities of government and ministry environmental scans of stakeholders. This helps them advise senior management.

The next phase in the policy cycle is "work planning" where the scope of work is planned in cooperation with branch management.

The starting point for a review of research literature begins in the third, or "research" phase of the policy development cycle where the analyst begins to lay the foundations for developing evidence strategy and policy. The first two phases help set up the rationale for the review, making its purpose explicit and determining some of the parameters for the work of the analyst; for example, much of the scoping discussion that takes place in work planning will impact on the review's parameters.

Step 1: Establishing Parameters for a Review of the Research Literature

The ministry has developed a template tool to help the analyst and decision makers document considerations and determine the parameters and scope of a literature review. A sample of this completed template is included as Appendix 1.

The policy analyst assists in determining the parameters for the review of literature. There are four major parameters that focus the review:

- What policy/program will this review of literature support?
 - Although the review may inform a number of related policies or programs, it is important to understand the primary policy/program the review is intended to support.
- What is the context/background for the request?
 - See step 2 below.
- What is the purpose of the review?
 - Some common reasons for a review are:
 - To reveal existing knowledge
 - To identify areas of consensus and debate
 - To identify gaps in knowledge
 - To clarify future directions

- What type of review is required?
 - See step 3 below.

Step 2: Determining the Context and Background for the Request

The context for the review of research is important in setting the stage for how the analyst will approach the review. In the ministry, a review of research is used by analysts to provide advice to senior management, for their use in advising political staff who support the Minister. The review is placed within the policy priorities of the government of the day. The context for a review request could include a legislated policy review, an election platform commitment, budget announcement, or external events and stakeholder views that have influenced a government to develop a particular policy.

The literature review should address the desired outcomes within the context of the request.

Direction

The direction of a review of research literature consists of two components. The priorities and platform of the government's education agenda, from which policies emerge, determine the need for reviews. Second, there is direction from the Minister, which can shift depending on the results of consultations. Given this contextual component, it is important for the analyst to understand and appreciate how the review should inform the policy, within the context of the ministry's educational direction. To do this, the analyst needs to align with the ministry's strategic priorities, review the relevant ministry documents, Minister's and Premier's speeches, the Throne Speech, the ministry's public business plan, media interactions, the government's election platform, and media releases. It is also important to keep abreast of these public indicators of direction so that the review can respect any modifications. Analysts are experts in their field and are expected to be aware of academic authorities and current trends in their area of policy expertise.

Funding and Scope

The scope of a review is determined by the funding allocated to the development and implementation of the policy or program. The budget sets parameters on the resources available. The analyst needs to assess the budget committed for the development and implementation of the policy or program the review is intended to support. Analysts should establish if a review by an external service provider is desired and whether sufficient budget exists to fulfil this requirement.

Timeline

There are two kinds of timelines to consider when setting the parameters of a review of research literature: the long-term timeline of that policy or program, and the immediate timeline for producing a review of the research literature to support a policy or program.

Timelines for a policy or program are governed by the political process. Election platform commitments and other events that generate attention (positive and negative) to certain policies or programs may prompt the need for a review. This makes it possible to plan the type and scope of some reviews at the beginning of a government's mandate.

The immediate timeline for any review is an operational parameter for the analyst assigned the review task. The analyst needs to know the amount of time allotted to produce the deliverable (the review) from the date the request was initiated. The type of review requested is a factor in the time necessary to complete a review; thorough reviews of literature require more time for the analysis cycle. For example, a rapid review takes much less time to conduct than a best-evidence, outcome-linked synthesis. It is important to establish the immediate timeline for the review in initial work planning discussions between the analyst and branch management.

Urgency

The urgency will affect the time available for a review, which in turn influences the type of review that can be completed within the given timeline.

Political Sensitivity

Sometimes policies and/or programs become highly sensitive overnight. The level of sensitivity will be related to the direction and degree of urgency for the review. The analyst and branch management should discuss the political sensitivity of the review, which may influence the analytical approach of the review.

Confidentiality

In working with external service providers and partners ministry staff must not disclose information specifically prohibited from disclosure by law. They are not to disclose information which may jeopardize Cabinet confidentiality, enforcement proceedings, security, individual privacy, or undisclosed commercial information supplied to the

government on a confidential basis (see *Public Service Act, Freedom of Information and Protection of Privacy Act*).

The *Freedom of Information and Protection of Privacy Act* provides individuals with both privacy protection for their personal information, and access to their own personal information. While the Ministry of Education employs strict safeguards to protect student and teacher information, analysts should be particularly careful not to accidentally disclose any personally identifying information indirectly collected in the policy development process.

Step 3: Deciding on a Review Type

The term “literature review” is commonly used to describe a synthesis of research and theories published to date on a given topic. The extent of the published work included in the review and the approach used to synthesize the literature are two key factors that differentiate reviews.

Five types of reviews have been identified as evaluation and research tools that could contribute to the policy and program cycle.

Three are common reviews used internally by ministry staff:

- Rapid Review and Inter-jurisdictional Scan
- Annotated Bibliography
- Literature Review

Two are more rarely used reviews that, if time and budget exist, could be contracted to external academic service providers:

- Meta-analysis
- Best Evidence Synthesis

Table I.1 gives a brief description of each type of review. Note that an annotated bibliography does not include a synthesis of the information that directly serves the policy and program cycle. However, it can be an elemental step in conducting a quality literature review.

Table I.1. Review Types and Descriptions

Research or Evaluation Tool	Description
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Rapid Review and Interjurisdictional Scan	A quick scan of published material to identify the major issues for any policy and determine what is being done in other jurisdictions.
Annotated Bibliography	A bibliographic list of relevant materials located through a search, with a short paragraph detailing major ideas.
Literature Review	A “critical analysis” of a segment of a published body of knowledge through summary, classification, and comparison of prior research studies, reviews of literature, and theoretical articles.
Meta-analysis	A way of statistically combining the results of a set of research studies on the same general topic to get an overall "bottom line" conclusion about what the literature shows.
Best Evidence Synthesis	Combines the qualities of a meta-analysis with a literature review. It begins with studies that have evidence of impact (meta-analysis) and explores the themes that cut across these studies, in relation to explanatory theoretical literature to identify the most promising contributors to success.

Step 4: Preparing for the Review

Any review involves a preliminary search of library resources, the Internet, and other branches to establish the appropriate terminology and scope of the review.

In this preliminary search, the analyst should become familiar with the particular ways the literature addresses issues associated with the policy or program the review is intended to support. For example, there are terms that are specifically defined by scholars that may not be obvious to the general public. In addition, the analyst should get a sense of the scope of research on issues relating to the policy or program of interest. Some educational issues have had more scholarly attention than others. This information should help the analyst determine the scope of the review, and how much time it will take to conduct the review.

Analysts may wish to find out if similar studies have been carried out by ministry colleagues. The Chief Research Officer’s intranet site *Research@EDU* contains a list of current research projects by branch, as well as a list of key policy contacts. The Brian Fleming Research & Learning Library Catalogue, available from your desktop through the intranet, is also a useful tool. A list of ministry generated education policy research organizations, institutions, journals and websites is included as Appendix 2.

The preliminary search should help the analyst establish the parameters of the review, which include details such as the time period, geography, languages, and keywords for the review.

Table I.II. Parameters of the Review Worksheet

Parameters of the Review Worksheet	
Question: What are you looking for?	
Limitation: What is outside the parameters of the review?	
Temporal Coverage: What time period should be included in the search? (e.g., nothing before 1995)	
Jurisdictional Coverage: What geographic areas do you want to include? (e.g., English- or French-speaking jurisdictions which have already implemented a similar policy)	
Level of Education Sector: International <ul style="list-style-type: none"> • National • Provincial • District School Board • School • Other 	
Language: What language restrictions do you have on the literature? (Do you want only English or French documents?)	
Publications Type: <ul style="list-style-type: none"> • Books • Legislation and Regulations • Government Publications • Periodicals • Statistical Reports • Stakeholder documents • Personal communications • Unpublished works (dissertations, conference papers) • Other 	
Search Terms: What are the key words, phrases and concepts that can be used as search terms?	

(make sure that you keep track of the synonyms and the terms you come across in your preliminary search)	
Other notes	

The Parameters of the Review Worksheet can help the analyst explicitly focus the review. The worksheet can also be used to focus conversations with management as well as communications with other branches, so that the analyst can establish the unique characteristics of a particular review and how it aligns horizontally with other work in the ministry, and often with other ministries.

Narrowing the scope of the questions

Defining research questions is usually a two stage process. In the “divergent” stage, the team considers the purpose of the project and develops a comprehensive list of potentially important questions and concerns, in order to ensure that all ideas are considered, without being concerned about the form of the questions. In the “convergent” phase, the team selects the high priority questions for this project, based on the intended purpose and timelines.

Evaluation/research questions should be:

- specific and clear;
- based on the priorities of the project;
- answerable with data; and
- relevant for future action.

At the end of this step, analysts should have developed several narrowly focused questions with a good sense of appropriate key word search terms and a list of leading academic authorities, in order that they may conduct a search relevant to the policy or program direction.

Searching the Research Literature

The rationale and the parameters for the review should serve as guidelines for the search. The analyst has the option of conducting the search independently or with support from the ministry’s library.

Step 5: Searching Independently

The literature search consists of systematically collecting relevant literature and documents from various databases and internet search tools.

Commercial Databases

Ministry staff has access to four databases from their office desktop... These sites are listed with brief descriptions and hyperlinks on the library's intranet website. The four databases are:

- CBCA Education Full Text [Canadian Education Index]
- ERIC (Education Resources Information Center) (one of the most popular with ministry staff)
- Professional Development Collection (EBSCO Host)
- Source OECD (Organisation for Economic Co-operation and Development)

Staff can access the library's intranet page for instructions on how to use these databases.

In addition, University of Toronto library cards can be signed out from the ministry library. These cards offer ministry staff access to the library resources at the University of Toronto. The key terms and parameters identified in the preliminary search can be used to find literature related to the relevant policy or program.

Internet Search Tools

There are three basic kinds of tools for searching the web: search engines, directories, and meta-search engines.

A search engine is a large database of information about pages on the web. The database is created by little programs called "spiders," "robots" or "crawlers." There are two different kinds of spiders. One looks at "meta tags" which are descriptors created by the page designer. Other spiders are more thorough and catalogue every word of every page in a site, making them a "full index". Google, developed at Stanford, uses a unique "PageRank" strategy that calculates the importance of a page.

Directories are a different kind of search engine, and the most popular of these is Yahoo. Directories are structured listings of submitted, selected, or reviewed sites. The difference here is that every link in a directory has been handled by a person.

Meta-search engines are search engines that search other search engines, such as Dogpile (<http://www.dogpile.com>).

Search Strategies

From the parameters of the review worksheet, refine the question and map out synonyms for key words and phrases you can use in your search. Using synonyms in searches increases the likelihood of finding authoritative terms used within a discipline.

The Boolean operators AND, OR, or NOT are ways of combining sets of terms to narrow search results. Entering quotation marks around a phrase in a search field is a useful strategy for finding words together in a specific order.

The analyst needs to keep track of the search parameters and terms and to attach the search record to the review as an appendix so that readers can understand how the literature was obtained. Maintaining an accurate bibliographic record is important in citing references.

American Psychological Association (APA) Style

In APA style, citations to sources are placed in the text of the paper in order to briefly identify sources for readers, and help them locate the source of the cited information in the Reference List. These references include the author's last name and the year of publication, enclosed in parentheses. Citations are placed within sentences and paragraphs, so that it is clear what information is being quoted or paraphrased, and whose information is being cited. For more information on APA style consult www.apastyle.org.

Step 6: Getting Help from the Ministry Library Staff

The library staff is trained in conducting searches of literature. However, there is a limited number of staff and the use of library human resources needs to be balanced with the timeline for the review. If the analyst is going to request support from the library staff, the analyst should have completed the Parameters for Review Worksheet and, if applicable, have the independent search record ready for the first meeting. These tools help the library staff understand the purpose, parameters, and progress of the search so that they can use their expertise effectively. Every effort should be made to reduce the amount of time library staff spends assisting analysts with searches.

Analysis

The collection of literature assembled from the search forms the input for the analysis. The analyst is responsible for reading the literature, pulling out the key ideas, summarizing them, and analysing the literature to support the policy or program. The parameters for the review should help the analyst build an analytic framework where evidence on a broad range of questions can be considered.

Step 7: Reading, Summarizing and Analyzing

There are a number of ways in which a collection of literature can be approached for a review. The parameters of the review and key terms should help group the literature into significant components and provide an analytical framework to help guide the analyst's reading. The analyst needs to read the literature with a focus on recognizing relevant and important information that will support the associated policy or program, identify the relevant information from a broad range of literature, and then synthesize the information into key ideas.

An analyst will want to approach readings looking for patterns and themes. Of particular relevance will be:

- a jurisdiction's rationale for a particular policy choice;
- what performance indicators were chosen; and
- the applicability of the research to the purpose of the review.

Using an Assessment Framework

A review of research will need to document which policies work and why they work. Below is a sample worksheet that an analyst might choose to assess research studies. An analyst can decide which elements are most important to assess in a review; however, it is important that the analyst use a similar approach to assessing all the readings since the primary objective in the next stage of a literature review is to compare and contrast research findings to determine if the results are conclusive or inconclusive.

Table I.III. (again check numbering for 'ripple effect') Sample Summary and Analysis Worksheet

Sample Summary and Analysis Worksheet	
Research Description	
Author/Source? Sponsor?	

(APA format)	
Jurisdiction? (Structures, size and dynamics of school system?)	
Publication type and intended audience?	
Rationale and scope for research?	
Key words, phrases and concepts?	
Timeframe?	
Policy\Program Description	
Researcher description of the policy issue?	
Researcher description of public attitudes toward the policy issue?	
Researcher description of the policy goals?	
Policy\Program Research Findings	
How does the policy achieve goals?	
Does this policy achieve goals more effectively than others?	
Implementation barriers, diverse impacts or cross-cutting issues?	
Comparative cost and benefit of policies? (What works, at what costs, and with what outcomes?)	
How does Ontario's performance compare to this jurisdiction?	

Step 8: Appraising Research Fitness and Synthesis

A research review is not simply a summary of ideas. Once the key ideas are synthesized, the analyst needs to re-examine the purpose of the review and determine how best to evaluate the key ideas to support the decision-making process for senior management. A good question for analysts to ask themselves is: how strongly am I going to be able to state the implications for Ontario policy and program development?

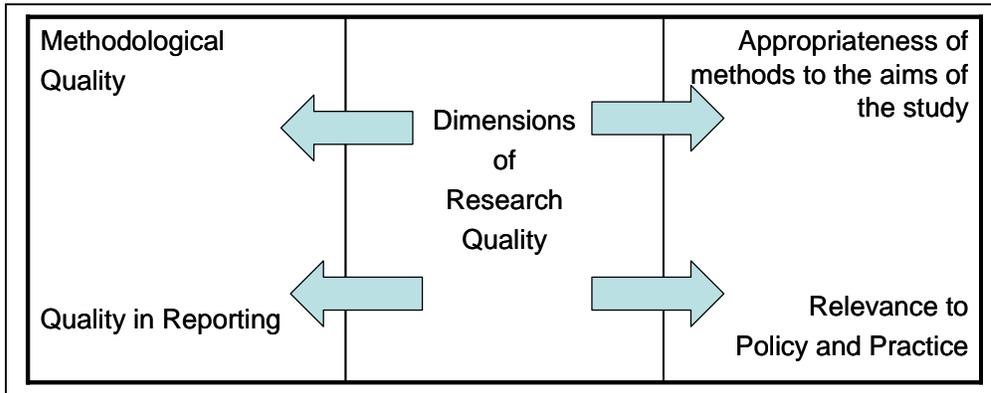
The synthesis document will help analysts create an executive summary document that will provide high level analysis and detail for decision makers. A sample synthesis document is attached in Appendix 3.

At this stage, the analyst should share the draft synthesis with the policy development team and other ministry staff interested in the

findings of the review. The team needs to identify how information synthesized from the literature can best be organized conceptually, to provide practical inferences to support decision making about a policy or program.

Appraising Evidence for Policy and Practice

A central question is whether or not the research is fit for the purpose and utility of the review. This appraisal divides into determining the appropriateness and relevance of the research to the analyst's review, and assessing the quality of the research.



Source: *Fit for purpose? Assessing research quality for evidence based policy and practice*; Annette Boaz, Deborah Ashby; January 2003; ESRC UK Centre for Evidence Based Policy and Practice.

Appropriateness

Important dimensions of quality should include "appropriateness" -- the extent to which the research:

- Addresses the needs of key stakeholders
- Is relevant
- Is fit for the purpose for which it was designed
- Fits the ways in which the findings are likely to be used

Quality:

Sometimes research is inadequately applied. Analysts need to be aware that research can be prone to bias, open to abuse, incompetently interpreted or fraudulent.

There are a number of queries to use to assess research quality. Upon a preliminary assessment, analysts should ask themselves questions concerning:

- Reliability: are the results repeatable?
- Validity: does it measure what its claims to measure?
- Internal validity: do the research results mean what they appear to?
- External validity: can the results be generalized to other settings and other populations?

To apply a more advanced appraisal of methodology, analysts may refer to a checklist prepared by the Canadian Centre for Knowledge Mobilisation entitled: *Twenty Questions to Ask about Research Studies* (Appendix 4).

In the synthesis, the analyst should state the value of the evidence for developing policy and programs in the Ministry of Education.

Value statements can indicate that the evidence:

- is contradictory and included for that reason;
- is one of several studies that have similar findings which adds to the weight of the findings;
- is an opinion of an acknowledged expert in the field of study;
- is a report of a task force/expert panel whose mandate included examining current research in the field of study; and/or
- is relevant to the stage of the policy cycle underway in the ministry, e.g., review and/or implementation of similar policies and programs in other jurisdictions.

These value statements become the basis of the themes in the synthesis, the report and the executive summary.

Learning From the Review of Research Literature

Reviews of research literature can make significant contributions to policy and program development. However, if the information from the review is not accessible, it is not useful.

Step 9: Writing the Report

The analyst is responsible for writing a report as the key deliverable. The report should contain the following details:

- The rationale for the review – the purpose
- The parameters of the review

- Brief description of the search process
- Brief description of analytical approach
- Results and findings
- Established ideas
- Important considerations
- Identification of gaps in the knowledge
- Implications for the policy/program

The level of detail in the report will depend on the purpose of the review. For example, there will be less detail in a rapid review than in a full literature review or a meta-analysis needed to support the development of a policy/program promised in the education platform.

Step 10: Sharing the Findings

Initially, the report forms the basis for summary documentation for senior management.

An executive summary should consist of a brief statement on the purpose and scope of the review, the key findings from the analysis, and the inferences drawn from the literature that are relevant to the policy or program the review is intended to support. The full report can be used as supporting documentation. The synthesis document forms the basis of an executive summary and ultimately, can be used to inform the development of policy options. The executive summary should document:

- Specific policy issues
- Broad themes reflecting a balanced and representative view of the evidence
- Examples of what works and the evidence supporting impacts
- Changes and trends
- Cultural relevance to Canadian norms

The executive summary should demonstrate cultural competency with respect to Ontario, i.e., how findings relate to:

- Aboriginal learners
- English as Second Language learners
- French as a First Language learners
- Disadvantaged learners
- Learners with special educational needs

The manager and analyst should capitalize on the work conducted as a way of sharing knowledge within the ministry. Senior Management Team is a good place to make a presentation of the findings in order that managers become aware of each other's projects. The analyst

could profile certain key findings in summaries for different branches with varied interests in the review. In addition, the manager can seek opportunities where the review can be discussed in light of policy and program developments across the ministry.

Once findings have been evaluated, analysts go to the next phase in the policy cycle where they first go back and refine their issue identification, and then go forward to conceptualize a range of options.

The discipline and documentation from a literature review will provide much of the information required for policy and program option identification, and recommendations for policy and program products.