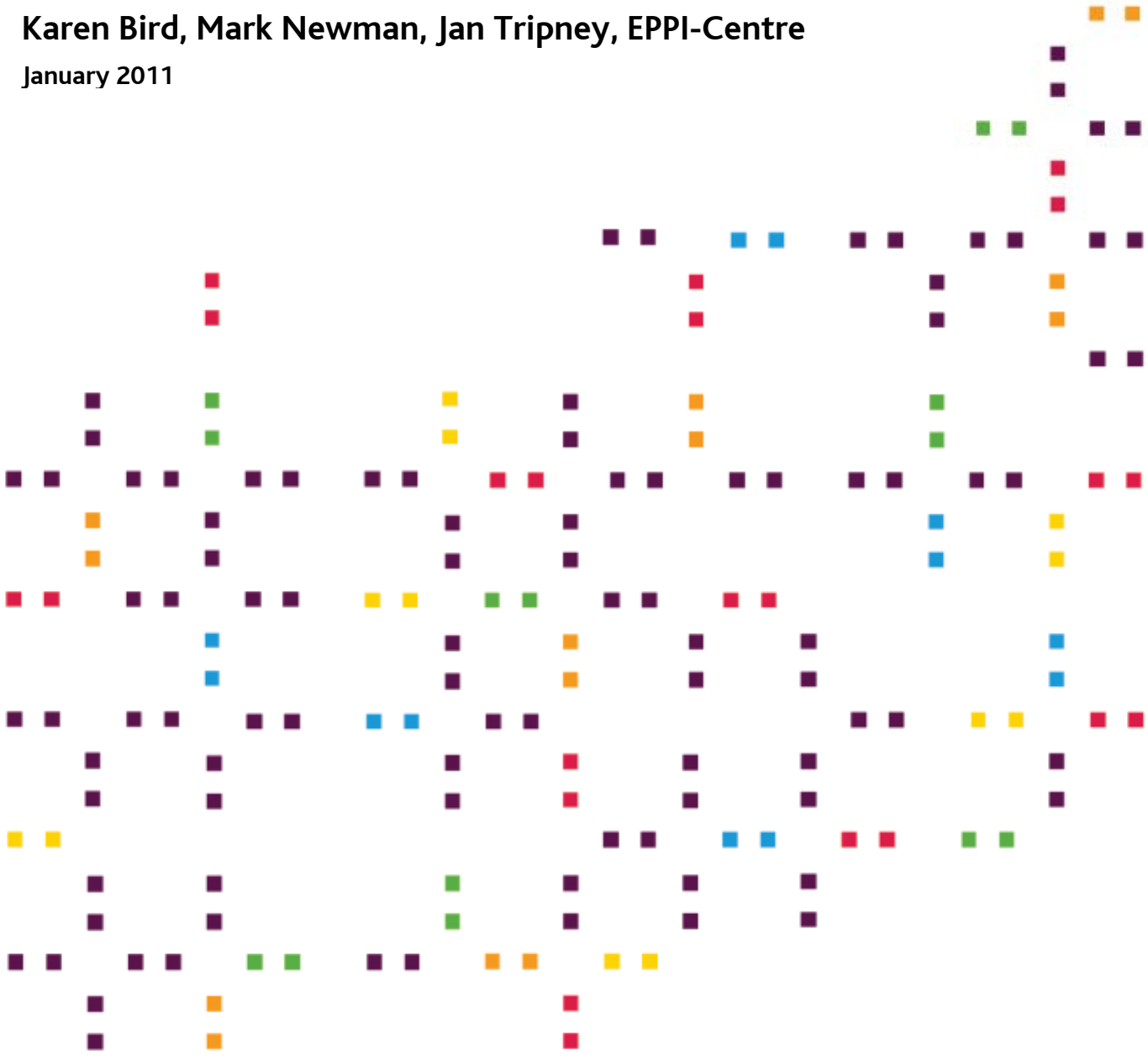
case: the culture and sport evidence programme

Updating the CASE database: analysis of original approach

Karen Bird, Mark Newman, Jan Tripney, EPPI-Centre

January 2011



dcms department for culture, media and sport

ARTS COUNCIL ENGLAND

ENGLISH HERITAGE

MLA MUSEUMS LIBRARIES ARCHIVES COUNCIL

SPORT ENGLAND

The CASE programme The Culture and Sport Evidence (CASE) programme is a three-year joint programme of research led by the Department for Culture, Media and Sport (DCMS) in collaboration with the Arts Council England (ACE), English Heritage (EH), the Museums, Libraries and Archives Council (MLA) and Sport England (SE).

The EPPI-Centre (Institute of Education, University of London) were commissioned to produce this report. The views expressed in this report are the authors and do not necessarily represent those of CASE.

Evidence for Policy and Practice

Information and Co-ordinating Centre

The EPPI-Centre is part of the Social Science Research Unit, Institute of Education, University of London

Contents

Summary

The CASE database of research evidence is a unique and comprehensive resource for those working in the field of culture and sport. The database currently holds the records of over 5,500 studies on the drivers, impact and value of engagement in culture and sport. In order to maintain the value of the CASE database, a strategy will be needed to regularly update the database. The update strategy should be informed by the knowledge and experience gained from the search and selection process initially used to populate the CASE database. This paper analyses the original search strategy carried out by the EPPI-Centre to aid and inform the development of the update strategy.

Methods

The amount of time, the number of database items, and the unique item yield were recorded for each search source used in the initial strategy. This data was analysed in order to identify the most effective source, the most efficient source and the source that added most value to the CASE database.

Results

Most effective sources (% of total database items identified)	**Most efficient sources (no of database items identified per hour)**	**Added most value (no of unique database items identified)**
General bibliographic databases (78)	General bibliographic databases (8.6)	General bibliographic databases (4165)
Specialist databases (14)	Specialist databases (7.8)	Specialist databases (531)
Websites (5)	Subject specialist publication lists (4.2)	Websites (227)
Journals (3)	Journals (4.1)	Journals (148)

Implications

- The results suggest that omitting any particular source from the update search strategy will result in relevant research reports not being identified.
- The results suggest that general and specialist bibliographic databases will need to be included in the search strategy
- Other sources will need to be included to ensure that 'grey' or 'unpublished' research is identified. The optimal combination of such resources will depend on a) whether effectiveness, efficiency, or value added are priorities, and b) what assumptions are made about the replication or performance of any particular source in an update (as opposed to the original) strategy.

Introduction

The CASE database is the foremost repository of empirical studies on cultural and sporting engagement in the world. The database currently holds the records of over 5,500 studies on the drivers, impact and value of engagement in culture and sport. This database brings together research evidence from across sectors (sport, arts, heritage, museums, galleries, libraries and archives) and disciplines, undertaken internationally and within the UK.

The CASE database was developed as a part of the flagship project 'understanding the drivers, impact and value of engagement in culture and sport'. This programme aims to generate strategic evidence that will be used to inform the deployment of public funds to maximise engagement in sport and culture. The EPPI-Centre at the Institute of Education, University of London carried out a systematic review of research which involved a comprehensive search of the academic and grey literature. The CASE database was one of the products of the systematic review. The database contains citations of approximately 5,500 research publications in the field.

To ensure that the database remains a valuable resource for researchers and policy makers, it requires regular updating to include the latest evidence (published after June 2009). In addition, other potentially useful search sources that were not included in the original search (such as Sport England's the Value of Sport Monitor[1]) can now be used to identify relevant studies for the CASE database. A search strategy is required to update and expand the database.

The strategy needs to consider the optimal search and selection approach in order to maintain the comprehensive coverage that was achieved by the initial search and selection strategy. In doing so, the effective use of resources will also need to be considered. The citations currently included in the CASE database were identified and selected as a result of many hours of searching for and screening over 68,000 studies (approximately 116 working days). It is not feasible, nor should it be necessary, to devote this much resource to the updating and expansion strategy. The CASE board commissioned the EPPI-Centre to conduct a small piece of work to analyze the original search and selection strategy in order to inform decisions about the future strategy for updating the CASE database. The findings of this analysis are reported here.

Searching & selection principles

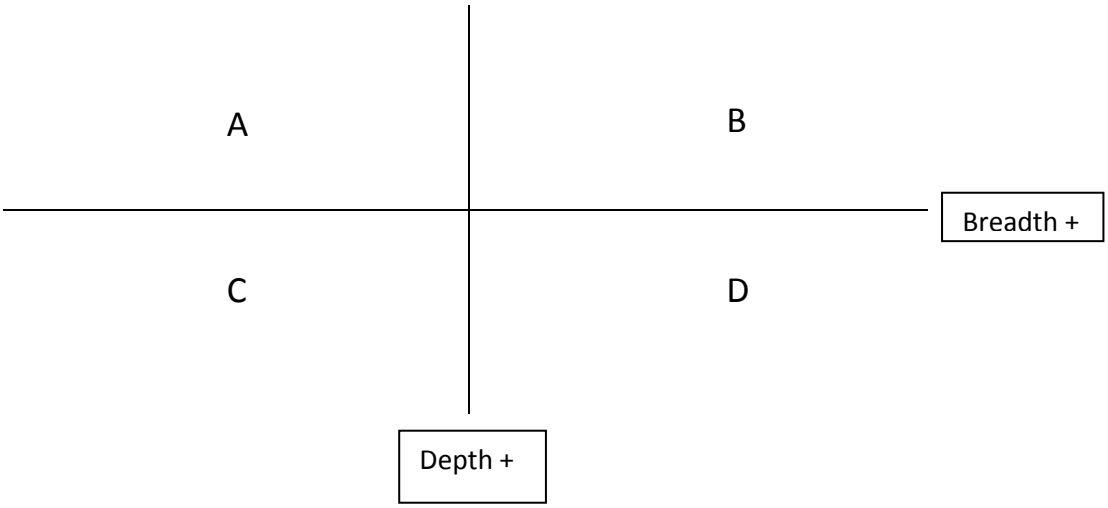
The CASE database aims to provide a comprehensive record of all research publications in the field of culture and sport. This is valuable for two main reasons. First, the database acts as a 'one stop shop' for users looking for research in the culture or sporting fields (i.e. they do not have to search elsewhere). Second, the database provides policy makers with a

[1] Value of Sport Monitor was not accessible during the period of the initial searches. Other potentially important sources that were only brought to our attention after the completion of the initial project include the SIRC Sport Research Institute and the SPORTDiscus database of sports & sports medicine journals

channel to access all available research on a given topic. Making an evidence informed decision can therefore be based on all published research and thus minimise the risk of bias. However, identifying all of the research evidence in any particular field is complex and difficult. Typically, there is a need to balance the comprehensiveness of the search with the resources available.

There are two factors to take into consideration when seeking to balance comprehensive searching with limited resources: 1) breadth of the search, 2) depth of the search. The breadth of the search refers to the range of sources that are covered by the search strategy e.g. how many bibliographic databases to search, whether to use other sources, and/or which websites to include. The depth of the search refers to how thoroughly each search source is investigated. As illustrated in figure 1 there is a trade off on both dimensions. Search strategies in quadrant D (high levels of breadth and depth) are most likely to identify all relevant studies. Search strategies in quadrant A (low levels of breadth and depth) are likely to find the least proportion of relevant studies. However, search strategies in quadrant D will also require more resources than those in quadrant A. The search strategies in quadrant D will also generate a much larger number of off-topic citations thus increasing the size of the screening/selection task.

Figure 1: The depth /breadth trade off



This is largely a conceptual model as we have very little empirically derived knowledge of the effectiveness and efficiency of different searching strategies in social science and the humanities. Most empirical research has been carried out in the health care field. This has explored the value of using a range of databases (Betran et al., 2005; Egger et al., 2003; Hopewell et al., 2003; Taylor et al., 2007), and the most efficient and effective strategies for generating high yields of 'included' studies (Greenhalgh and Peacock, 2005; Royle and Milne, 2003). Search strategies for inter-disciplinary or social science research also need to address further challenges: a more diverse literature, less precise or agreed terminology, and greater variety and variability of bibliographic tools (Grayson and Gomersall, 2003; Mehdyzadeh, 2004).

Searching generates citations. These citations need to be 'screened' to ensure relevance to the review or database. When using websites or journals as search sources, the searching and selection process is undertaken in one step. However, this approach generates an additional task of manually entering the details of the selected citations onto the database. In comparison, using bibliographic databases means that the searching and selection process needs to take place in two stages. Searching generates a list of potential citations that then have to be screened manually to check that they meet the inclusion criteria for the database[2] . This may be carried out manually or by with the assistance of an automated procedure such as the text mining. This was the approach taken by the EPPI-Centre team in the original selection process. The 'costs' associated with the selection/ 'screening' process therefore also need to be considered as part of the updating strategy.

The original research strategy

A comprehensive search strategy was devised to identify studies for the CASE database. This used multiple sources to ensure thorough coverage of the evidence base, capturing both academic and grey literature, and UK and international studies. Nine different types of search sources were used in the strategy. These included: nine general bibliographic databases covering the social sciences and key policy areas, specialist databases of cultural/ sporting literature, specialist journals that were not indexed in the databases, websites of key organisations and research centres, the publication lists of subject experts, social science research funding bodies, Google, recommendations from the CASE board and reference lists from selected literature reviews (see Appendix 1 for further details). The amount of resources (principally time) allocated to each source varied. As will be reported below, some of the sources were searched more extensively than others. Each and every item on the specialist databases, for example, was manually screened for relevance to the database. In contrast, reference lists were only searched in the piloting stage of the search strategy. Nevertheless, the comprehensive nature of the search identified a large number of potentially relevant citations (over 68,000). This required a novel approach to selecting/ screening the items to be included on the database. Technology was used to assist the grouping and sampling of items to identify relevant studies (n= 5,518).

Aims and Objectives

The aim of this paper is to develop a set of 'evidence informed' options for updating and maintaining the CASE database.

Objectives

1. Evaluate the original search strategy, examining the role and value of each of the component sources
2. Understand the role and value of the Impact database and the implication for the CASE database if Impact failed to operate
3. Identify potential options for updating the CASE database

[2] It has been assumed throughout this paper that the selection criteria will remain the same as the criteria used in the original review process.

4. Document the methods that could be used in a search strategy that updates the CASE database.

Analysis of the original search strategy

Methods

To analyze the original search strategy used to identify studies for the CASE database, each of the nine search sources were evaluated according to three dimensions:

- Effectiveness: This refers to the extent to which each source was successful at identifying studies for the database.
- Efficiency: This refers to the ratio of time invested in searching the source compared to the number of database items identified.
- Added value: This refers to the extent to which each source was successful at finding 'unique' studies for the database.

Data collection was carried out during the searching and screening phase of the systematic review. As studies were included in the database, a note was made of which search source(s) had found each item. In instances where an item was found by multiple sources, a record was kept of all of the sources that identified that study. This data was collated in an excel spreadsheet.

The approximate amount of time spent by reviewers searching and screening each source was also recorded.

The search results from each source were analysed in three ways.

1) To assess the effectiveness of each source, data on the number and proportion of the CASE database items identified was tabulated and ranked. Comparisons were made across search sources.
2) To examine efficiency, the time spent searching and screening each source was compared with the yield from each source (number of database items found). This data was tabulated to enable comparison across sources.
3) To establish the value added by each source, data on the number and proportion of 'unique' database items was tabulated and ranked. Sources were compared.

Further analysis was conducted on one type of search source: specialist bibliographic databases. The effectiveness and efficiency of each component database was analysed to better understand the role and value of the 'Impact' database in the search strategy.

Following the analysis of the findings, a discussion section summarises the findings, presents key strengths and limitations of the analysis and considers the implications for prioritising different types of sources.

The final section of the paper presents recommendations for the CASE board on which and how many search sources should be selected for updating the database. This was based on, firstly, identifying sources that were both effective and efficient and secondly, identifying those sources that added most value, i.e. unique items, to the database.

Findings

Effectiveness

This section quantifies the effectiveness of the search strategy by reporting the number and proportion of database items that were identified by individual sources.

5,518 items were identified and included in the CASE database. These items were identified by the types of search sources listed on the left hand side of Table 1. The details of the search sources are listed in Appendix 1. Table 1 sets out the total number and proportion of database items that were identified by each search source (column A and B respectively). The sources are ranked in a descending order, according to the number of items in the database that they identified.

Table 1: The effectiveness of the search strategy: Sources ranked by the number and proportion of database items identified

Search source	A	B
	No. of database items identified (not mutually exclusive)	% of database items that were identified (not mutually exclusive)
General bibliographic databases	4284	78
Specialist bibliographic databases	767	14
Websites	298	5
Journals	173	3
Reference lists	135	2
CASE Board	59	1
Subject specialists	15	0.3
Research funding bodies	13	0.2
Serendipity	11	0.2
Google	3	0.05
Total	5518	

Efficiency

This section quantifies the efficiency of the search strategy by comparing the time invested in each source with the total yield produced by that source (in terms of database items identified).

Table 2 reports the time taken to search and identify database items using each type of search source. This data is placed alongside the proportion of items in the database identified by each source (column A reproduced from Table 1 above). Column B reports the number of hours spent by reviewers developing and implementing a search/ screening strategy for each source. In total, 815.5 hours were used in the searching and screening process (equivalent to 116 days). Column C sets out the proportion of total time spent

searching used by each source. Column D provides data on the number of database items yielded by each source, for every hour spent searching. The sources are ranked in descending order according to the number of items that each type identified per hour. On average, 7 items were identified per hour. The most efficient sources (identifying a higher than average number of items) were general and specialist bibliographic databases, identifying 8.6 and 7.8 items respectively. Searches of general bibliographic databases required 497 hours to develop, pilot, execute and then identify relevant items. This is equivalent to 71 working days (based on a 7 hour day). The least efficient searching results came from Google, at a rate ten times slower (0.8 items identified per hour). This search took 3.5 hours.

Table 2: The efficiency of the search strategy: Sources ranked by the number of database items found per hour of searching

Search source	A	B	C	D
	% of database items that were identified (not mutually exclusive)	No. of hours spent identifying items	% of total hours spent	No of items found per hour of searching
General bibliographic databases	78	497	61	8.6
Specialist bibliographic databases	14	98	12	7.8
Subject specialists	0.3	3.5	0.4	4.2
Journals	3	42	5.2	4.1
CASE Board	1	21	3	2.8
Websites	5	133	16	2.2
Research funding bodies	0.2	7	1	1.8
Reference lists	2	10.5	1	0.8
Google	0.05	3.5	0.4	0.8
Total		815.5	100	7

Added value

This section quantifies the value added to the database by each search source. This is based on the number and proportion of 'unique items' identified by the individual sources. 'Unique items' refer to items that have only been found by one search source.

Table 3 illustrates that a high proportion of the database items were only identified by one source (94%). Column A identifies that general bibliographic databases found a substantial number of these items (4165). With the exception of Google, all search sources added value to the database by contributing unique items. Column B reports that a majority of all items identified by each source were unique. 97% of the items identified by the general bibliographic databases, for example, turned out to be unique items. Column C shows the proportion of total number of unique items in the CASE database that were found only on that specific source. Seventy five percent of the unique items in the CASE database were

only found on the general bibliographic databases. Subject specialist publication lists and serendipity contributed the lowest value in terms of unique items, identifying 0.1% of these items in the database. Column D reports the number of unique items found per hour of searching/ screening of each source. General bibliographic databases yielded the highest number of unique items per hour (8.3), followed by reference lists (6.6) and specialist databases (5.4). The lowest yield per hour came from funding bodies (1.4 items per hour).

Table 3: The added value of the search strategy: sources ranked by the number of unique database items identified per hour

Search source	**A**	**B**	**C**	**D**
	No. of unique database items identified	**% of items identified that were unique**	**% of unique database items that were identified**	**No. of unique items identified per hour spent**
General bibliographic databases	4165	97	75	8.3
Reference lists	69	51	1	6.6
Specialist bibliographic databases	531	69	10	5.4
Subject specialists	7	47	0.1	3.5
Journals	148	86	3	2
CASE Board	38	64	1	1.8
Websites	227	76	4	1.7
Research funding bodies	10	77	0.2	1.4
Serendipity	7	64	0.1	n/a
Google	0	0	0	0
TOTAL unique items	5202		94.3	
Items identified via >1 source	316		5.7	
OVERALL TOTAL	5518		100	

Specialist bibliographic databases

Three different databases were searched as part of the specialist bibliographic databases. These included Impact, Arts research digest and MLA research and evaluation database. This section reports data on the effectiveness and added value of the individual specialist databases.

Table 4: The effectiveness of the specialist bibliographic databases: Sources ranked by the number and proportion of unique database items identified

Search source	A	B	C	D
	No. of database items identified (not mutually exclusive)	No. of unique database items identified	% of items identified that were 'unique'	% of all database items (n=5,518) that were identified
Specialist bibliographic databases (all)	767	531	69	10
Individual specialist bibliographic databases				
Impact	437	281	64	5
MLA	213	194	91	4
Arts research digest	117	56	48	1

Table 4 provides data for the specialist bibliographic databases, together and individually. Column's A and B illustrate that, out of all three databases, the Impact database identified the highest number of items and contributed the greatest number of unique items to the CASE database. Column C sets out the proportion of items identified by each source that were actually 'unique'. The Table illustrates that a very high proportion of the items identified by the MLA database (91%) turned out to be unique to the database (although this only constituted 4% of the total items in the database). Impact and Arts research digest also produced a high ratio of unique items from the total number of record identified (64% and 48% respectively).

Discussion

Summary of the findings

The analysis of the original search strategy confirms that the research literature in the field of culture and sport is disorganised, inchoate and spread across a wide range of resources. The analysis indicates that the search strategy was effective at identifying a high number of studies for the CASE database (5,518), used a wide selection of sources to identify unique items (94% of total database records) and did so in a relatively efficient manner (average of 7 per hour).

Table 5 presents a summary of the findings, identifying the four most effective and efficient sources, and those that added most value.

Table 5: Sources that were most effective, efficient and added value to the CASE database

Most effective sources (% of total database items identified)	**Most efficient sources (no of database items identified per hour)**	**Added most value (no of unique database items identified)**
General bibliographic databases (78)	General bibliographic databases (8.6)	General bibliographic databases (4165)
Specialist databases (14)	Specialist databases (7.8)	Specialist databases (531)
Websites (5)	Subject specialist publication lists (4.2)	Websites (227)
Journals (3)	Journals (4.1)	Journals (148)

Table 5 shows that general bibliographic databases and specialist databases were the two most valuable sources in all three dimensions of effectiveness, efficiency and adding value. General bibliographic databases played a central role in identifying items for the database, finding 78% of total records. These databases identified 4165 unique items. Specialist databases identified a lower proportion of records in the database (14%) but this was comparatively more than other sources. However the difference between general and specialist databases is not quite as marked as the 'total' figures suggest as there were nine general databases and only three specialist databases. Websites and journals were the third and fourth most effective sources for identifying database items. These sources also played an important role in identifying unique studies. Websites were not, however, a relatively efficient source of items (identifying 2.2 per hour). Journals were one of the more efficient sources, identifying 4.1 items per hour.

The role and value of the Impact database

Specialist bibliographic databases were an important source for identifying database items. In combination, these databases represented the second most effective and efficient source

(identifying 14% of database items, at 7.8 database items per hour). The specialist databases also represented the second most valuable source in terms of the number of unique items that they contributed (531 items representing 10% of unique items in the database). As one of the three specialist databases, Impact therefore played a significant role in identifying items for the database. Compared to the other two specialist databases (MLA and Arts research digest), Impact identified the highest number of database items (437), constituting 5% of total items in the database. This figure is greater than the number of items identified by eight out of the nine other search sources (see Table 1). Impact identified a greater number of database items (437) than, for example, websites (298) or journals (173). Impact also contributed a high number of unique items (281). This represented a greater number of unique items than all but one of the other search sources (general bibliographic databases). If the Impact database had failed to operate during the original search, 437 studies would have been omitted from the CASE database. This is equivalent to 8.4% of all unique items catalogued in the database. It is not possible at this stage to identify how or why the Impact database contains citations that were not identified in other sources. Further investigation of the search strategies used to populate the impact database may improve the strategy used to update the CASE database.

Strengths and limitations of the study

Whilst this study provides useful findings to inform policy and practice, there is scope to better understand a number of issues.

- The value of individual social science databases remains unknown. The 'general bibliographic databases' source includes nine different databases yet we do not currently have data to evaluate the role and importance of each database individually.

- We are unable to draw conclusions about the relative efficiency of different parts of the searching/ screening process or identify potential areas in which to increase efficiency in future searching. This is because we only have data on the time spent on the entire searching and screening process rather than the amount/ proportion of time spent on each component stage. The development of search strings when using general bibliographic databases, for example, is a time intensive activity but the execution of a prepared search string is comparatively time efficient. This stage of the search may therefore provide scope to increase efficiency. Alternatively, databases regularly update their thesaurus and controlled terms and so the search string may require regular revision. As we do not have data on the time taken to develop or implement the search string separately from the execution of the search string, it is not possible to understand this issue.

- We only have indicative data on the value of searching reference lists. Whilst reference lists contributed to the identification of database items, this source was only used as part of the pilot search and so not searched systematically. The findings reported for this search source can therefore only be understood as indicative of the value of this approach.

- Some of the search sources may not yield many more studies. The analysis is based on the assumption that each search source will continue to provide further items of relevance to the CASE database at the same level as identified in the original search. However, sources such as subject specialist publication lists may provide relatively few further items in subsequent updates (given the length of time required for the publication process).

- We do not know the quality of the items added from each source. The quality of the item can refer to, for example, the new and unique perspectives or methods included in the study, or the findings that are presented for an unrepresented area of the world. Thus, one unique item may be more valuable or critical to the database than another. To reach these conclusions, further qualitative analysis would be required.

- Measures of time are approximate. At a macro level this may not be important but at a more detailed level of analysis, such as the unique items per hour, there may be greater error in the time estimate and resulting analysis.

- The sector includes four distinct sub areas: arts, sport, heritage and MLA. The analysis was not able to analyse the contribution of the different search sources in each of these individual sectors. Different strategies may have different implications for different areas.

Recommendations and options

The analysis suggests that omitting any of the sources used in the original strategy may mean that relevant items will not be identified. If it is not possible to include all the sources in the update strategy then the analysis suggests that different sources could be selected depending on which aspect of efficiency, effectiveness or value-added is prioritised. These options are discussed in more detail below.

When resources are limited, a strategy for updating the CASE database needs to 1) prioritise search sources, 2) select the most optimal frequency for updates. Informed by the analysis above, these two issues are considered below. Guidance on using the individual sources to update the database is provided in Appendix 5.

Selecting sources for the update

Based on the empirical analysis of the existing search strategy, two search sources are recommended as central to the updating strategy. **General bibliographic databases** and **specialist databases** were the most valuable sources in the original search strategy. They constitute the most effective and efficient sources, and added most value to the database. It is therefore recommended that these constitute the first sources used in the update. These search sources would update the database with many relevant studies (many being unique)

in an efficient way. However it is suggested that the update commission should also include the requirement to analyse the specific contribution of individual bibliographic databases.

Searching bibliographic databases alone may mean that a limited amount of unpublished or 'grey' research literature would be identified in any update exercise. It is therefore recommended that the selection of subsequent sources should be guided by the extent to which they add further value to the database. Sources that found a high number of unique items include **websites** and **journals.** Yet, these were not the most efficient sources for finding unique items. The analysis would suggest that **reference lists** and **subject specialists** would add most value in the most efficient way. However, subject specialist publication lists may yield few additional items if the subject specialist is not publishing research and/ or the websites are not updated regularly. In using reference lists in the updating strategy, further thought would need to be given to which lists would be most appropriate.

Frequency of updating the CASE database

Two main factors need to be taken into account when considering how frequently to update the database: 1) Available time and resources, 2) Currency and usefulness of the database. These are considered in turn below, with a summary of options set out towards the end of the section. Indicative figures for the number of visits to the CASE database since March 2010 are around 500. The CASE database has the potential to have a high number of national and international users. For comparison, all of the databases hosted by the EPPI-Centre received 10883 visits since March 2010. This figure refers to multiple databases, including the Database of Promoting Health Effectiveness Reviews (DoPHER) and the Trials register of Promoting Health Interventions (TRoPHI).

1. Available time and resources

As illustrated by Table 6, the estimated resource required to update the database varies by 1) search source and 2) the length of the period covered by the update. Of the individual sources, general bibliographic databases would require the most resource (time and money) and Google the least. As the period covered by the update increases, so too would the resource required. A 3 month update is estimated to cost approximately £8000 whilst an annual update would approximately £11,000[3]. However, short and frequent updates (such as every 3 months) would be more costly than one, longer update (annual). To illustrate the

[3] The figures given for resources do not include the time and money required for searching, screening and uploading items identified in new sources. The costs will vary depending on the way in which the database works. For example, it would appear that all of the content of Value of Sport Monitor (VSM) would need to be screened manually. We do not have the data on the number of citations contained within VSM but anticipate that 300 items per day could be manually screened and this would need to be added to cost estimates. The SportDiscus database appears to function like a standard bibliographic database and thus we anticipate the initial costs of developing the required search strings plus searching, screening and uploading would take approximately four days (approx £2000) for the initial search but subsequently would only add a minimal amount of time/resource to the update searching. There is also a fee for using this source.

costs of searching individual sources, costs are provided for an update that would cover July 2009-December 2010. The total costs are based on the assumption that all search sources were used and calculated on the basis of a day rate of £476.27.

Table 6: Time spent on each search source, ranked according to resources (time and cost) required for an update from July 2009-Dec 2010

Search source	**Original time spent**	**Estimated time to update (3 months)**	**Estimated time to update (6 months)**	**Estimate time to update (1 year)**	**Estimated time and <u>cost</u> to update from July 2009- Dec 2010 (1 year 5 months)**
General bibliographic databases[4][5]	497 hours/ 71 days	4.25 days (manual screening) or 1.5 days (text mining)	8.5 days (manual screening) or 3 days (text mining)	17 days (manual screening) or 6 days (text mining)	25.5 days (manual screening)= £12,145 9.1 days (text mining)= £4,334
Websites[6]	133 hours/ 19 days	14 days	14 days	14 days	14 days=£6,668
Specialist databases	98 hours/ 14 days	1.9 hours	3.75 hours	7.5 hours	11.25 hours/ 1. 6 days =£762
Journals	42 hours/ 6 days	0.9 hours	1.7 hours	3.45 hours	5.25 hours = £357
Funding bodies[7]	7 hours/ 1 day	4.6 hours	4.6 hours	4.6 hours	4.6 hours=£314
Google	3.5 hours	3.5 hours	3.5 hours	3.5 hours	3.5 hours=£238
Subject specialist[8] **publication lists**	3.5 hours	2.3 hours	2.3 hours	2.3 hours	2.3 hours= £157
Reference lists	10.5 hours/ 1.5 days	-	-	-	-
Total time	**815.5 hours/ 116.5 days**	**17.3 days or 20.1 days**	**19.3 days or 24.8 days**	**23 days or 34 days**	**27 days or 43.4 days**

[4] Different estimates are provided for the general bibliographic databases on the basis that the screening stage can be carried out manually (to increase accuracy) or with text mining (to increase speed).

[5] Based on searching the 9 databases used in the original search strategy

[6] Estimates are based on reducing the original time spent by a third on the basis that there should be less items to upload.

[7] Estimates are based on reducing the original time spent by a third on the basis that there should be less items to upload.

[8] Estimates are based on reducing the original time spent by a third on the basis that there should be less items to upload.

Total cost[9]		**£8,239 or £9,573**	**£9,192 or £11,811**	**£10,954 or £16,193**	**£12,859 or £20,670**

2. Currency and usefulness of the database

The lower cost of infrequently updating the database needs to be balanced against the currency and usefulness of the database. Compared to frequent ,short updates, a longer period covered by the update means that there is 1) a larger number of items that are absent from the database between updates (see Table 7), 2) a longer time lag between the publication of new items/ updates undertaken by other databases and search sources (Table 8).

Table 7 sets out the number of items that can be expected to be identified and included in the CASE database over different durations of searching. Please note that these numbers do not represent unique items so some studies found by one search source may be found in another. The total number of items listed is therefore a general estimate (and likely to be higher than the number of relevant unique items).

Table 7: Estimates of the number of database items identified by each source

	A	B	C	D
Search source	**No of relevant items identified in 1 year**	**Estimated no of relevant items in 3 months**	**Estimated no of relevant items in 6 months**	**Estimated no of relevant items (July 2009-Dec 2010)**[10]
General bibliographic databases	343	86	172	515
Specialist databases	64	16	32	96
Journals	14	3.5	7	21
Websites	24	6	12	36
Funding bodies	1	Less than 1	Less than 1	1.5
Subject specialist publication lists	1	Less than 1	Less than 1	1.5
Google	3	Less than 1	Less than 1	Less than 1
Reference lists	135	2.5	5	16.5
Case board	59	1.5	3	7.5
Total	463	117	234	695

As well as listing the latest published studies, the database would also need to keep up to date in comparison to other search sources/ databases. Table 8 lists the frequency of updating of each search source that was used in the original strategy. The Table shows that many sources are regularly updated. An annual update, for example, would mean that the

[9] These costs are provided for illustrative purposes only. They are estimates based on current EPPI-Centre research officer day rates. They should not be considered as a tender estimate and are not binding.

[10] Based on total number of items identified by source/12.5 Years (=no. years covered by the search)

CASE database would quickly become out of date as the literature grows. Competing sources might therefore be viewed as a more up to date and useful collection of studies.

Table 8: Frequency at which each search source is updated

Search source	Frequency of updating?
General bibliographic databases	
ASSIA	Updated monthly
BHI	Updated monthly
SSCI	Unknown
AHCI	Unknown
ERIC	Updated monthly
Medline	Weekly
IBSS	Weekly
PsycInfo	Weekly
Econlit	Unknown
Specialist databases	
MLA	Monthly
Impact	Weekly
Arts research digest	Every 2 months
Journals	
International Review of Sociology of Sport	Every 3 months
Sport in Society	Every 1 month
Engage journal	Every 6 months
Cultural Trends	Every 3 months
Visual Culture in Britain	Every 4 months
Websites	Variable
Funding bodies	Unknown
Subject specialist publication lists	Variable
Google	Unknown

Summary of frequency options

Three options are presented in Table 9. A three month update would ensure that the database remained most up to date and would have the shortest lag between the search source updates and database updates. This option would allow users to draw up to date evidence from this database without investing resources in developing search strings for other databases. This option, however, would be most costly. In contrast, the annual update would require least resource but would have least currency and a long lag between the updates published by other sources and the database update. As these costs are based on updates using all search sources, a strategy prioritising fewer sources would therefore be cheaper.

Table 9: Frequency options for updating the database

	Every 3 months	**Every 6 months**	**Every 12 months**
No of new relevant items	117	234	463

No of hours	Min 17.3	Min 19.3 days	Min 23 days
Cost per update	Min £ 8,239	Min £9,192	Min £10,954
Annual cost of updates	Min £32,956	Min £18,384	Min £10,954

References

Aust, R. and Vine, L. (eds.) (2007) Taking Part: The National Survey of Culture, Leisure and Sport: Annual Report 2005/2006

Betran, A et al (2005) Effectiveness of different databases in identifying studies for systematic reviews: experience from the WHO systematic review of maternal morbidity and mortality, BMC Medical Research Methodology, Vol. 5, No. 6

Egger et al. (2003) How important are comprehensive literature searches and the assessment of trial quality in systematic reviews? Empirical study, Health Technology Assessment, Vol. 7, No. 1: 1-76

Grayson, L., and Gomersall, A. (2003) A difficult business: finding the evidence for social science reviews, ESRC UK Centre for Evidence Based Policy and Practice: Working Paper 19

Greenhalgh, T. and Peacock, R (2005) Effectiveness and efficiency of search methods in systematic reviews of complex evidence: audit of primary sources, BMJ, Vol. 331, No. 7524

Hopewell S et al (2003). Grey literature in meta-analyses of randomized trials of health care interventions (Cochrane Methodology Review). In The Cochrane Library (Issue 1). Oxford: Update Software; 2003

Mehdyzadeh, H. (2004) Searching for the evidence: An introduction to Social Science Information Retrieval, Technical Paper No. 5, DCMS

Royle, P. and Milne, R. (2003) Literature searching for randomized controlled trials used in Cochrane reviews: rapid versus exhaustive searches, International Journal of Technology Assessment in Health Care, Vol. 19, No. 4: 594-603

Taylor, B et al (2007) Systematically retrieving research: A case study evaluating seven databases, Research on Social Work Practice, Vol. 17, no 6: 697-706

Appendices

Appendix 1: Search sources

The following sources formed the basis of the search strategy used to identify relevant literature for inclusion in the database.

General bibliographic databases

ASSIA (Applied Social Sciences Index and Abstracts)

SSCI (Social Science Citation Index) and AHCI (Arts and Humanities Citation Index)

ERIC (Education Resources Information Centre)

Medline

BHI (British Humanities Index)

IBSS (International Bibliography of the Social Sciences)

PsycInfo

Econlit

Specialist bibliographic databases

Impact database

Museums Libraries Archives Research and Evaluation Database

Arts Research Digest

Specialist Journals

A selection of journals not covered by the general bibliographic databases listed in (1) was searched.

International Review for the Sociology of Sport

Sport in Society

Engage Journal

Cultural Trends

Visual Culture in Britain

Websites

(a) National and Regional Stakeholder Organisations

Department for Culture, Media and Sport

Sport England

Arts Council England

English Heritage

UK Sport

Youth Sports Trust

Department of Health

Central Council for Physical Education

Big Lottery Fund

Fitness Industry Association

Women's Sport and Fitness Foundation

Sporting Equals

English Federation of Disability Sport (EFDS)

Commission for Architecture and the Built Environment (CABE)

Heritage Lottery Fund (HLF)

Creative and Cultural Skills

SkillsActive

Sports Coach UK

Craft Council

Communities and Local Government (CLG)

Her Majesty's Treasury (HMT)

Cabinet Office

Ofsted

DEMOS

National Audit Office

Audit Commission

Local Government Association (LGA)

Leisure Studies Association

National Foundation for Educational Research

(b) UK Research Centres/Departments/Organisations

CultureMap London

ESRC Centre for Research on Socio-Cultural Change (CRESC)

Loughborough University: Institute of Sport and Leisure Policy

Scottish Government: Culture, External Affairs and Tourism Research Network

Sheffield Hallam University: Sport Industry Research Centre

University of Chester: Chester Centre for Research into Sport and Society

University of Glasgow: Centre for Cultural Policy Research

University of Leicester: Research Centre for Museums and Galleries

University of Newcastle upon Tyne: International Centre for Cultural and Heritage Studies

University of Warwick: Centre for Cultural Policy Studies

(c) International Research Centres/Departments/Organisations

National Endowment for the Arts (US)

North American Society for the Sociology of Sport (US)

The Social Impact of the Arts Project (research centre at the University of Pennsylvania School of Social Policy and Practice) (US)

Canadian Council for the Arts (Canada)

Canadian Heritage (Canada)

Australian Council for the Arts (Australia)

Australian Sports Commission (Australia)

Council of Europe: Cultural Policy Research (Europe)

European Commission: Sport (Europe)

European Cultural Foundation

Social science research funding bodies

ESRC Society Today

Arts and Humanities Research Council

Subject specialist publication lists

Publication lists for specific individuals were searched (using university profile web pages or a Google Scholar search) to see if they contained relevant literature that had not previously been identified.

Janet Ruiz

Susan Galloway

Christine Hamilton (Christine Hamilton Consulting)

Adrienne Scullion (Scottish Executive Social Research)

Eleonora Belfiore (Warwick University)

Fred Coulter (Stirling University)

Sara Selwood (City University),

Javier Stanziola (Leeds University)

Mike Savage (Manchester University)

Andy Miles

Google/Google Scholar

To identify relevant primary studies, a search string was entered into Google /Google Scholar and the top 50 hits were screened.

CASE Board

The CASE Board made requests to relevant stakeholders for information about studies that fell within the scope of the project and forwarded details to the review team. These items were then screened for inclusion in the review.

Literature review reference lists

As part of the piloting exercise to identify search terms, the reference lists of a limited number of literature reviews (systematic and non-systematic) reviews were checked. A limited, but focused, search for relevant reviews was carried out using Google/Google. Relevant items were entered into the database.

Serendipity

A number of relevant studies were found serendipitously and these too were added to the database.

Appendix 2: Search strings (general electronic databases)

Applied Social Sciences Index and Abstracts (ASSIA)

(((KW=(engage* or participat* or visit* or access* or aware* or join* or volunteer* or attend* or watch* or listen* or perform* or rehears* or creat* or member* or campaign* or archive* or collect* or produc*)) or(KW=((go to) or (going to) or (take part) or (taking part) or (decision making))) or(KW=(effect* OR impact* OR value* OR benefit* OR implication* OR advantage* OR disadvantage OR disadvantages or factor* or reason* or barrier* or facilitator*)))

and

((DE=("sports" or "archery" or "athletics" or "baseball" or "basketball" or "wheelchair basketball" or "bat and ball games" or "bowls" or "boxing" or "climbing" or "rock climbing" or "abseiling" or "competitive sports" or "cricket" or "endurance sports" or "extreme sports" or "figure skating" or "football" or "american football" or "rugby" or "quad rugby" or "golf" or "miniature golf" or "gymnastics" or "acrobatics" or "handball" or "hang gliding" or "hockey" or "ice hockey" or "ice skating" or "international sports" or "martial arts" or "ju jutsu" or "karate" or "tai chi" or "mountaineering" or "netball" or "olympic games" or "orienteering" or "racing" or "cycle racing" or "horse racing" or "rollerblading" or "running" or "skiing" or "snowboarding" or "squash" or "team sports" or "tennis" or "volleyball" or "watersports" or "kayaking" or "sea kayaking" or "rowing" or "sailing" or "swimming" or "white water rafting" or "windsurfing" or "wrestling") or(DE="culture") or(DE="arts") or(DE=("art" or "aboriginal art" or "contemporary art" or "drawings" or "cartoons" or "computer drawings" or "figure drawings" or "line drawings" or "paintings" or "impressionistic paintings" or "post impressionistic paintings" or "nature paintings" or "nude paintings" or "portraits" or "selfportraits" or "postmodern art" or "public art" or "ritual art" or "street art") or(DE="plays") or(DE=("films" or "documentary films" or "educational films" or "erotic films" or "gangster films" or "horror films" or "silent films" or "suspense films" or "war films" or "western films")) or(DE="literature") or(DE="concerts"))) or(DE=("culture" or "popular culture" or "traditions")) or (DE=("museums" or "archives" or "libraries" or "heritage"))))

OR

((((AB=(sport* OR swimming OR diving OR cycling OR BMX OR cyclo-cross OR biking OR bowls OR bowling OR aerobics OR gym OR judo OR karate OR taekwando OR taekwondo OR self-defence OR tai chi OR weight training OR body building OR weightlifting OR gymnastics OR snooker OR pool OR billiards OR darts OR rugby OR football OR camogie OR hurling OR handball OR shinty OR cricket OR hockey OR archery OR baseball OR softball OR netball OR tennis OR badminton OR squash OR basketball OR athletics OR jogging OR cross-country OR running OR angling OR fishing OR yachting OR sailing OR canoeing OR windsurfing OR boardsailing OR skating OR curling OR golf OR skiing OR horse riding OR climbing OR mountaineering OR trekking OR shooting OR volleyball OR orienteering OR rounders OR rowing OR triathlon OR boxing OR waterskiing OR lacrosse OR fencing OR yoga)) OR AB(=(dance exercise) OR (keep fit) OR (motor sports) OR (pitch and putt) OR (tae kwon do)

OR (martial arts))) or(AB=("museum" or "museums" or "gallery" or "galleries" or "library" or "libraries" or "archive" or "archives" or "heritage")) or(AB=((historic* city) or (historic* town) or (historic* building) or (historic* park) or (historic* garden) or (historic* landscape) or (historic* transport system) or (historic* place of worship) or (archaeological site) or (heritage site) or (historic* interest) or (historic* place) or (historic* space) or (historic* environment) or (historic* site) or (furniture making) or (jewellery making))) or(AB=(monument or castle* or ruin* or photography or sculpture* or video* or festival* or drama* or theatr* or musical* or pantomime* or opera or operas or music* or jazz or ballet* or dance* or dancing or songs or singing or orchestra or painting* or drawing* or printmaking or animation* or textile* or craft* or calligraphy or pottery or poetry)))

near

((AB=(engage* or participat* or visit* or access* or aware* or join* or volunteer* or attend* or watch* or listen* or perform* or rehears* or play* or writ* or make or making or makes or creat* or buy* or member* or campaign* or teach or teaching or instruct* or train* or archive* or document* or collect* or produc*)) or (AB=((go to) or (going to) or (take part) or (taking part) or (decision making))) or(AB=(effect* OR impact* OR value* OR benefit* OR implication* OR advantage* OR disadvantage OR disadvantages or factor* or reason* or barrier* or facilitator*))))

International Bibliography of the Social Sciences (IBSS)

((TX "Keep Fit" OR TX "aerobics" OR TX "swimming" OR TX "diving" OR TX "cycling" OR TX "biking" OR TX "bowls" OR TX "bowling" OR TX "gym" OR TX "judo" OR TX "karate" OR TX "taekwando" OR TX "tai chi" OR TX "weight training" OR TX "weightlifting" OR TX "body building" OR TX "gymnastics" OR TX "snooker" OR TX "pool" OR TX "billiards" OR TX "darts" OR TX "rugby" OR TX "camogie" OR TX "hurling" OR TX "handball" OR TX "shinty" OR TX "cricket" OR TX "hockey" OR TX "softball" OR TX "netball" OR TX "tennis" OR TX "badminton" OR TX "squash" OR TX "basketball" OR TX "athletics" OR TX "jogging" OR TX "cross-country" OR TX "running" OR TX "yachting" OR TX "sailing" OR TX "canoeing" OR TX "windsurfing" OR TX "skating" OR TX "curling" OR TX "golf" OR TX "putt" OR TX "climbing" OR TX "trekking" OR TX "motor sports" OR TX "shooting" OR TX "volley ball" OR TX "orienteering" OR TX "rounders" OR TX "rowing" OR TX "triathlon" OR TX "boxing" OR TX "waterskiing" OR TX "lacrosse" OR TX "fencing" OR DE "Sport games" OR DE "Ball games" OR DE "Olympic Games" or DE "Sports" OR DE "Equestrian sport" OR DE "Football" OR DE "Baseball" OR DE "Racing" OR DE "Skis" OR DE "Martial arts" OR DE "Archery" OR DE "Fishing" OR DE "Yoga")

OR (DE "Culture" or DE "Museums" or DE "Visual culture" or DE "Cultural behaviour" OR DE "Cultural areas" OR DE "Cultural property" OR DE "Cultural heritage" OR DE "Preservation of cultural heritage" or DE "Cultural life" OR DE "Cultural environment" OR DE "Cultural exhibitions" OR DE "Cultural expenditure" OR DE "Cultural industry" OR DE "Cultural practices" OR DE "Popular culture" or DE "Popular literature" or DE "Popular music" or DE "Popular poetry" or DE "Popular theatre" OR DE "Archaeological museums" OR DE "Art museums" OR DE "Ethnographic museums" OR DE "Galleries" OR DE "Historical museums"

OR DE "Municipal museums" OR DE "Museum acquisitions" OR DE "Museum collections" OR DE "Museum objects" OR DE "National museums" OR DE "Natural history museums" OR DE "Open air museums" OR DE "Regional museums" OR DE "Science museums" OR DE "Libraries" OR DE "Map library" OR DE "Record library" OR DE "historical monuments" OR DE "historical sites" or DE "Archaeological collections" or DE "Archaeological exhibitions" or DE "Archaeological sites"DE "Culture" or DE "Ancient cultures" or DE "Disappearing cultures" or DE "Folk culture" or DE "Indigenous culture" or DE "Local culture" or DE "Mass culture" or DE "Minority culture" or DE "Museums" or DE "Musical culture" or DE "Subculture" or DE "Traditional culture" or DE "Visual culture" or DE "Working class culture" or DE "Youth culture" or DE "Cultural behaviour" OR DE "Cultural areas" OR DE "Cultural property" OR DE "Cultural heritage" OR DE "Preservation of cultural heritage" or DE "Cul OR DE "Galleries" OR DE "Arts" OR DE "Art" OR DE "Performing arts" OR DE "Visual arts" OR DE "Sculpture and carving" OR DE "Music" OR DE "Ancient music" OR DE "Choral music" OR DE "Classical music" OR DE "Contemporary music" OR DE "Dance music" OR DE "Opera" OR DE "Folk music" OR DE "Instrumental music" OR DE "Modern music" OR DE "Orchestras" OR DE "Pop music" OR DE "Reggae" OR DE "Religious music" OR DE "Ritual music" OR DE "Rock music" OR DE "Traditional music" OR DE "Vocal music" OR DE "Musical instruments" OR DE "Songs" Or DE "Dance" OR DE "Ballet" OR DE "Folk dance" OR DE "Modern dance" OR DE "Traditional dance" OR DE "Literature" OR DE "Classical literature" OR DE "Contemporary literature" OR DE "Drama" OR DE "Folk literature" OR DE "Literary works" OR DE "Novels" OR DE "Oral literature" OR DE "Poem" OR DE "Poetry" OR DE "Popular literature" OR DE "Prose" OR DE "Traditional literature" OR DE "Theatre" OR DE "Ancient theatre" OR DE "Classical theatre" OR DE "Contemporary theatre" OR DE "Mime" OR DE "National theatre" OR DE "Open air theatre" OR DE "Popular theatre" OR DE "Puppet theatre" OR DE "Shadow theatre" OR DE "Traditional theatre" OR DE "Visual arts" OR DE "Fine arts" OR DE "Graphic arts" OR DE "Iconography" OR DE "Textile arts" OR DE "Photography" OR DE "Batik" OR DE "Embroidery" OR DE "Wood-carving" OR DE "Pottery" or DE "Ceramics" OR DE "Calligraphy" OR DE "Jewellery" OR DE "Painting" OR DE "Drawing" OR DE "Carnivals" OR DE "Festivals"))

and

((DE "Engagement" or DE "Access to culture" or DE "Cultural barriers" or DE "Creativity" OR DE "Creative work" or DE "Consumption" OR DE "Cultural consumption" OR DE "Performance" OR DE "Individual performance" OR DE "Theatrical performance" OR DE "Musical performances") OR (TX participat* OR attend* OR access OR visit* OR create OR creates OR watch* OR volunteer* OR listen* OR join Or joins OR conserve OR aware* OR play OR plays OR write OR teach OR buy* OR member* OR campaign* OR coach* OR instruct OR train* OR archive OR document OR collect OR rehearse OR make OR produce) OR (TX effect* OR impact* OR value* OR benefit* OR implication* OR advantage* OR disadvantage OR disadvantages or factor* or reason* or barrier* or facilitator*) OR (TX "take part" OR "taking part"))

Social Science Citation Index (SSCI) and Arts and Humanities Citation Index (AHCI)

TS= (engage* or participat* OR attend* OR access OR visit* OR create OR watch* OR volunteer* OR listen* OR join OR conserve OR aware* OR play OR teach OR produce Or perform)

and

(TI =(Sport or "swimming" OR "diving" OR "cycling" OR "BMX" OR "cyclo-cross" OR "biking" OR "bowls" OR "bowling" OR "keep fit" OR "aerobics" OR "dance exercise" OR "gym" OR "judo" OR "karate" OR "taekwando" OR "martial arts" OR "self-defence" OR "tai chi" OR "weight training" OR "body building" OR "weightlifting" OR "gymnastics" OR "snooker" OR "pool" OR "billiards" OR "darts" OR "rugby" OR "football" OR "camogie" OR "hurling" OR "handball" OR "shinty" OR "cricket" OR "hockey" OR "archery" OR "baseball" OR "softball" OR "netball" OR "tennis" OR "badminton" OR "squash" OR "basketball" OR "athletics" OR "jogging" OR "cross-country" OR "running" OR "angling" OR "fishing" OR "yachting" OR "sailing" OR "canoeing" OR "windsurfing" OR "boardsailing" OR "skating" OR "curling" OR "golf" OR "pitch and putt" OR "skiing" OR "horse riding" OR "climbing" OR "mountaineering" OR "trekking" OR "motor sports" OR "shooting" OR "volleyball" OR "orienteering" OR "rounders" OR "rowing" OR "triathlon" OR "boxing" OR "waterskiing" OR "lacrosse" OR "fencing" OR "yoga")) OR (TI= (culture or art or arts or museums or libraries or archives or galleries or heritage or (historic* city) or (historic* town) or (historic* building) or (historic* park) or (historic* garden) or (historic* landscape) or (historic* transport system) or (historic* place of worship) or (archaeological site) or (heritage site) or (historic* interest) or (historic* place) or (historic* space) or (historic* environment) or (historic* site) or (furniture making) or (jewellery making) or monument or castle* or ruin* or photography or sculpture* or video* or festival* or drama* or theatr* or musical* or pantomime* or opera or operas or music* or jazz or ballet* or dance* or dancing or songs or singing or instrument or orchestra or painting* or drawing* or printmaking or film* or animation* or textile* or craft* or calligraphy or pottery or story or stories or poetry))

British Humanities Index (BHI)

(DE=("heritage" or "culture" or "archives" or "art" or "arts" or "athletes" or "athletics" or "badminton game" or "baseball" or "basketball" or "bicycle racing" or "body building" or "bowls game" or "boxing" or "curling" or "darts" or "drama" or "fencing" or "football" or "golf" or "hockey" or "horseracing" or "horseriding" or "ice hockey" or "ice skating" or "kabadi" or "libraries" or "martial arts" or "music" or "parachuting" or "performing arts" or "polo" or "rock climbing" or "roller skating" or "rugby football" or "running" or "shooting" or "skiing" or "skydiving" or "snooker" or "sports" or "squash" or "tennis" or "theatre" or "volleyball" or "watersports" or "weightlifting" or "winter sports"))

and

(AB=("engagement" or "participate" or "visit" or "access" or "aware" or "join" or "volunteer" or "attend" or "watch" or "listen" or "perform" or "rehearse" or "play" or "write" or "create" or "purchase" or "member" or "campaign" or "teach" or "instruct" or "document" or

"collect" or "produce" or "study" or "impact" or "involvement" or "go to" or "going to" or "take part" or "taking part" or "decision making" or "effect" or "value"))

Econlit

1 (engage or participate or visit or access or aware or join or volunteer or attend or watch or listen or perform or rehearse or play or write or make or create or buy or member or campaign or teach or instruct or train or archive or document or collect or produce).mp. [mp=heading words, abstract, title, country as subject] (69996)

2 limit 1 to yr="1997 -Current" (57999)

3 (effect or value or impact).mp. [mp=heading words, abstract, title, country as subject] (128620)

4 limit 3 to yr="1997 -Current" (96143)

5 1 or 3 (180875)

6 (sport or culture or art or arts or museums or libraries or archives or galleries or heritage).mp. [mp=heading words, abstract, title, country as subject] (12439)

7 limit 6 to yr="1997 -Current" (9723)

8 (sport* or culture or art* or museum* or librar* or archive* or galler* or heritage).mp. [mp=heading words, abstract, title, country as subject] (80436)

9 limit 8 to yr="1997 -Current" (59389)

10 9 and 5 (17925)

11 7 and 5 (2781)

12 limit 11 to (yr="1997 -Current" and English) (2440)

13 from 12 keep 1-2440 (2440)

ERIC

(AB=("engagement" or "participate" or "visit" or "access" or "aware" or "join" or "volunteer" or "attend" or "watch" or "listen" or "perform" or "rehearse" or "play" or "write" or "create" or "purchase" or "member" or "campaign" or "teach" or "instruct" or "document" or "collect" or "produce" or "study" or "impact" or "involvement" or "go to" or "going to" or "take part" or "taking part" or "decision making" or "effect" or "value"))

and

(DE=("theatre arts" or "aquatic sports" or "archives" or "art" or "art history" or "athletics" or "culture" or "dance" or "drama" or "fine arts" or "folk culture" or "historic sites" or "libraries" or "museums" or "music" or "painting visual arts" or "public libraries" or "racquet sports" or "recreational activities" or "sports" or "animation"))

Medline

Set A: culture and engagement

1. *Culture/

2. *art/ or *paintings/ or *sculpture/

3. exp *libraries/ or exp *libraries, dental/ or exp *libraries, digital/ or exp *libraries, hospital/ or exp *libraries, medical/ or exp *"national library of medicine (u.s.)"/ or exp *libraries, nursing/

4. exp *archives/ or exp *museums/

5. engagement.mp.

6. participat*.mp.

7. ((visit* or access or aware* or volunteer* or attend* or watch* or listen* or rehears* or campaign* or 'go to' or 'tak* part') adj5 (monument or castle* or ruin* or photography or video* or festival* or drama or theatr* or musical* or pantomime* or opera or operas or music* or jazz or ballet* or dance* or dancing or songs or singing or orchestra or drawing* or printmaking or film* or animation* or textile* or craft* or calligraphy or pottery or story or stories or poetry or historic* city or historic* town or historic* building or historic* park or historic* garden or historic* landscape or historic* transport system or historic* place of worship or archaeological site or heritage site or historic* interest or historic* place or historic* space or historic* environment or historic* site or furniture making or jewellery making or galleries or gallery or heritag*)).tw.

8. ((visit* or access or aware* or volunteer* or attend* or watch* or listen* or rehears* or campaign* or 'go to' or 'tak* part') adj5 (culture or art or arts)).ti,ab.

9. 4 or 1 or 3 or 2

10. 6 or 5

11. 9 and 10

12. ((engagement or participate*) adj5 (monument or castle* or ruin* or photography or video* or festival* or drama or theatr* or musical* or pantomime* or opera or operas or music* or jazz or ballet* or dance* or dancing or songs or singing or orchestra or drawing* or printmaking or film* or animation* or textile* or craft* or calligraphy or pottery or story or stories or poetry or historic* city or historic* town or historic* building or historic* park

or historic* garden or historic* landscape or historic* transport system or historic* place of worship or archaeological site or heritage site or historic* interest or historic* place or historic* space or historic* environment or historic* site or furniture making or jewellery making or galleries or gallery or heritag*)).mp. [mp=title, original title, abstract, name of substance word, subject heading word]

13. ((visit* or access or aware* or volunteer* or attend* or watch* or listen* or rehears* or campaign* or 'go to' or 'tak* part') adj5 (painting or sculpture or library or libraries or archives or museums or archive or museum)).mp. [mp=title, original title, abstract, name of substance word, subject heading word]

14. 8 or 11 or 7 or 12 or 13

Set B Culture and Impact

1. *Culture/

2. *art/ or *paintings/ or *sculpture/

3. exp *libraries/ or exp *libraries, dental/ or exp *libraries, digital/ or exp *libraries, hospital/ or exp *libraries, medical/ or exp *"national library of medicine (u.s.)"/ or exp *libraries, nursing/

4. exp *archives/ or exp *museums/

5. (impact adj5 (monument or castle* or ruin* or photography or video* or festival* or drama or theatr* or musical* or pantomime* or opera or operas or music* or jazz or ballet* or dance* or dancing or songs or singing or orchestra or drawing* or printmaking or film* or animation* or textile* or craft* or calligraphy or pottery or story or stories or poetry)).mp. [mp=title, original title, abstract, name of substance word, subject heading word]

6. (benefit* adj5 (monument or castle* or ruin* or photography or video* or festival* or drama or theatr* or musical* or pantomime* or opera or operas or music* or jazz or ballet* or dance* or dancing or songs or singing or orchestra or drawing* or printmaking or film* or animation* or textile* or craft* or calligraphy or pottery or story or stories or poetry)).mp. [mp=title, original title, abstract, name of substance word, subject heading word]

7. (effect adj5 (monument or castle* or ruin* or photography or video* or festival* or drama or theatr* or musical* or pantomime* or opera or operas or music* or jazz or ballet* or dance* or dancing or songs or singing or orchestra or drawing* or printmaking or film* or animation* or textile* or craft* or calligraphy or pottery or story or stories or poetry)).mp. [mp=title, original title, abstract, name of substance word, subject heading word]

8. (value adj5 (monument or castle* or ruin* or photography or video* or festival* or drama or theatr* or musical* or pantomime* or opera or operas or music* or jazz or ballet* or dance* or dancing or songs or singing or orchestra or drawing* or printmaking or film* or animation* or textile* or craft* or calligraphy or pottery or story or stories or poetry)).mp. [mp=title, original title, abstract, name of substance word, subject heading word]

9. (economic adj5 (monument or castle* or ruin* or photography or video* or festival* or drama or theatr* or musical* or pantomime* or opera or operas or music* or jazz or ballet* or dance* or dancing or songs or singing or orchestra or drawing* or printmaking or film* or animation* or textile* or craft* or calligraphy or pottery or story or stories or poetry)).mp. [mp=title, original title, abstract, name of substance word, subject heading word]

10. ((impact or value or benefit or economic) adj5 (art or arts or culture)).ti.

11. ((effect or impact or value or benefit or economic) adj5 (historic* city or historic* town or historic* building or historic* park or historic* garden or historic* landscape or historic* transport system or historic* place of worship or archaeological site or heritage site or historic* interest or historic* place or historic* space or historic* environment or historic* site or furniture making or jewellery making)).tw.

12. ((effect or impact or value or benefit or economic) adj5 (galleries or gallery or heritage*)).tw.

13. (effect or impact or value or benefit or economic).ti.

14. 4 or 1 or 3 or 2

15. 14 and 13

16. 6 or 11 or 7 or 9 or 12 or 15 or 8 or 10 or 5

Set C: Sport and engagement

1. engagement.mp.

2. participat*.mp.

3. 2 or 1

4. (sport or sports).mp. [mp=title, original title, abstract, name of substance word, subject heading word]

5. ((engagement or participat* or visit* or access or aware* or volunteer* or attend* or watch* or listen* or rehears* or campaign* or 'go to' or 'tak* part') adj5 ("cycling" or "BMX" or "cyclo-cross" or "biking" or "bowls" or "bowling" or "keep fit" or "aerobics" or "dance exercise" or "gym" or "judo" or "karate" or "taekwando" or "taekwondo" or "tae kwon do" or "self-defence" or "weight training" or "body building" or "weightlifting" or "snooker" or "pool" or "billiards" or "darts" or "rugby" or "camogie" or "hurling" or "handball" or "shinty" or "cricket" or "archery" or "softball" or "netball" or "badminton" or "squash" or "cross-country" or "angling" or "fishing" or "yachting" or "sailing" or "canoeing" or "windsurfing" or "boardsailing" or "curling" or "pitch and putt" or "horse riding" or "climbing" or "trekking" or "motor sports" or "shooting" or "orienteering" or "rounders" or "rowing" or "triathlon" or "waterskiing" or "lacrosse" or "fencing" or "yoga" or sport or sports)).mp. [mp=title, original title, abstract, name of substance word, subject heading word]

6. (exp *dancing/ or exp *sports/ or exp *athletic performance/ or exp *baseball/ or exp *basketball/ or exp *bicycling/ or exp *boxing/ or exp *football/ or exp *golf/ or exp *gymnastics/ or exp *hockey/ or exp *martial arts/ or exp *tai ji/ or exp *mountaineering/ or exp *racquet sports/ or exp *tennis/ or exp *running/ or exp *jogging/ or exp *skating/ or exp *snow sports/ or exp *skiing/ or exp *soccer/ or exp *swimming/ or exp *diving/ or exp *"track and field"/ or exp *volleyball/ or exp *walking/ or exp *weight lifting/ or exp *wrestling/ or exp *sunbathing/ or exp survival/) not exercise*.tw.

7. 6 and 3

8. (visit* or access or aware* or volunteer* or attend* or watch* or listen* or rehears* or campaign* or 'go to' or 'tak* part).ab,ti.

9. 8 and 6

10. 7 or 9 or 5

Set D: Sport and impact

1. ((effect or impact or benefit* or effect or value or economic) adj5 ("cycling" or "BMX" or "cyclo-cross" or "biking" or "bowls" or "bowling" or "keep fit" or "aerobics" or "dance exercise" or "gym" or "judo" or "karate" or "taekwando" or "taekwondo" or "tae kwon do" or "self-defence" or "weight training" or "body building" or "weightlifting" or "snooker" or "pool" or "billiards" or "darts" or "rugby" or "camogie" or "hurling" or "handball" or "shinty" or "cricket" or "archery" or "softball" or "netball" or "badminton" or "squash" or "cross-country" or "angling" or "fishing" or "yachting" or "sailing" or "canoeing" or "windsurfing" or "boardsailing" or "curling" or "pitch and putt" or "horse riding" or "climbing" or "trekking" or "motor sports" or "shooting" or "orienteering" or "rounders" or "rowing" or "triathlon" or "waterskiing" or "lacrosse" or "fencing" or "yoga")).mp. [mp=title, original title, abstract, name of substance word, subject heading word]

2. (effect or impact or benefit* or value or economic).ti.

3. (exp *dancing/ or exp *sports/ or exp *athletic performance/ or exp *baseball/ or exp *basketball/ or exp *bicycling/ or exp *boxing/ or exp *football/ or exp *golf/ or exp *gymnastics/ or exp *hockey/ or exp *martial arts/ or exp *tai ji/ or exp *mountaineering/ or exp *racquet sports/ or exp *tennis/ or exp *running/ or exp *jogging/ or exp *skating/ or exp *snow sports/ or exp *skiing/ or exp *soccer/ or exp *swimming/ or exp *diving/ or exp *"track and field"/ or exp *volleyball/ or exp *walking/ or exp *weight lifting/ or exp *wrestling/ or exp *sunbathing/ or exp survival/) not exercise*.tw.

4. ((effect or impact or benefit* or effect or value or economic) adj5 (sport or sports)).mp. [mp=title, original title, abstract, name of substance word, subject heading word]

5. 3 and 2

6. 5 or 1 or 4

Appendix 3: Search strings (used to identify studies from pool of 12,439)

"controlled clinical trial" or "controlled study" or "controlled trial" or "control group" or "control groups" or "experimental design" or "comparison group" or "comparison groups" or "double blind" or "placebo" or "probability sampling" or "randomised controlled trial" or "randomized controlled trial" or "random assignment" or random* or "random sampling" or "random allocation" or "single blind" or "treatment effectiveness evaluation" or "RCT" or "difference-in-difference*" or "instrumental variable*" or "propensity matching" or "case matching" or "propensity score matching" or "PSM" or "statistical adjustment" or "covariate adjustment" or "matched group*" or "statistically equated" or "cohort*" or "longitudinal" or "quasiexperiment*" or quasi experiment*" or "quasi-experiment*" or "baseline adjustment" or "pre-post" or "pre and post" or "matched variable*" or "case-mix adjustment" or "baseline comparability" or "case control" or "case-control" or "before-and-after" or "before and after" or "time series" or "time-series" or "regression discontinuity" or "nonequivalent group*" or "non-equivalent group*" or "panel stud*" or "post-hoc" or "post hoc" or "baseline" or "trial*" or "experiment*"

museum* or librar* or archiv* or heritage or historic* or history or monument* or castle* or archaeolog*

Appendix 4: Guidance on updating the database using existing search sources

General bibliographic databases: using the databases specified above, run the same search string with limits on the date (published June 2009 onwards). The results would then need to be subject to manual or technologically assisted screening to identify studies relevant to the database.

Specialist bibliographic databases: using the databases specified above, identify and screen all items indexed since June 2009. All items listed on The Value of Sport Monitor also require manual screening for relevance to the database. There may be other specialist databases that are relevant to the CASE database (e.g. SIRC in Canada). The value of these databases is unknown so discuss with the CASE board.

Specialist Journals: handsearch the journals listed above. Screen the title and abstracts of all articles published since June 2009.

Websites: handsearch the websites listed above, screening the publications produced since June 2009.

Social science research funding bodies: handsearch the items listed on the websites of the above funding bodies. Screen those reports that have been produced since June 2009.

Subject specialist publication lists: screen additional publications produced by subject specialists since June 2009.

Google/Google Scholar: use the search string specified above but with limits placed on the date. Screen the top 50 hits for relevance.

CASE Board: consult with the CASE board to identify recently published reports. Screen each document for relevance.

Literature review reference lists: use additional literature reviews (those that were not used in the original search strategy) to identify new references of relevance to the database.