

Integration and Implementation Sciences Thesaurus

A developing vocabulary for an emerging specialization

Caryn Anderson and Kyle Nicholls

Home

I2S Thesaurus

- Structure & Style
- Guidelines for Use
- Alphabetical View
- Hierarchical View

External Resources

- ERIC Thesaurus
- UNESCO Thesaurus

Development

- Bibliography
- Procedures
- Evaluation

Next Steps

Integration and Implementation Sciences Thesaurus

This thesaurus was produced specifically for [Dr. Gabriele Bammer](#) at [Australian National University](#) in support of the growing network of Individuals, Organizations, Literature and other resources that constitute the emerging specialization known as [Integration & Implementation Sciences](#). It was constructed a part of [LIS 419: Subject Analysis](#) taught by [Dr. Candy Schwartz](#) for the [Graduate School of Library and Information Science](#) at [Simmons College](#).

Since the Spring of 2004, when the thesaurus was first constructed, the framework for articulating the principles of Integration and Implementation Sciences has shifted. The original key concepts are still represented, but now have slightly different relationships to each other. In addition, specific competencies have been established. This thesaurus has not yet been updated to reflect these shifts, but it remains representative of the foundations of Integration and Implementation Sciences.

The following sections introduce the purpose and environment of the thesaurus:

- [Integration and Implementation Sciences Description](#)
- [Why an IIS Thesaurus?](#)
- [IIS Collection Description](#)
- [Users and User Activities](#)

Integration and Implementation Sciences Description

The critical social, environmental and technological problems of our age are large in scale, complex in nature, and perpetually dynamic. These challenges range from public health (e.g. flu epidemics; AIDS in Africa), to sustainable development (e.g. "Smart Growth" in Western urban contexts; "Agenda 21" priorities for international development), to security (e.g. preventing terrorism; containing nuclear threats), and public welfare (e.g. poverty eradication; drought and famine prevention/relief). Each involves the integration of multiple fields of human endeavor (e.g. biology, education, economics, chemistry, engineering, sociology, technology, etc.) within the scope of shifting political issues and ideals (e.g. sovereignty, treaties, privacy, freedom, immigration, trade, human rights, power, financing, etc.).

Diverse groups of scholars and practitioners apply the principles and knowledge of their unique disciplines to these problems. The greatest challenge is to integrate these intellectual and practical contributions into solutions that can be implemented successfully in environments characterized by complexity, change and imperfection. Researchers studying systems theory, complexity science, participatory methods, inter- and trans-disciplinarity, epistemological diversity, and knowledge management have each been developing theories and methods for working with uncertain and complex systems (physical, social and intellectual). These six areas, however,

"have typically operated in isolation from one another, with application limited to specific fields, with low levels of intellectual cross-fertilization and learning, and with limited exploitation of the significant synergies between approaches." The relevant work and knowledge of these independent fields are currently being gathered together and coordinated under the single identity of Integration and Implementation Sciences . An overview of this specialization and its elements can be found at the following Web site sponsored by Australian National University, under the supervision and guidance of Dr. Gabriele Bammer: <http://www.anu.edu.au/iisn>.

[Top](#)

Why an IIS Thesaurus?

As a network of researchers, organizations, projects, curricula and literature is coordinated and developed for Integration and Implementation Sciences, it is necessary to craft an appropriate language whereby the knowledge and relationships within and among the sciences can be organized. The elements of this networked collection of resources must then be indexed by this language to facilitate communication, interaction, and the intellectual and practical development of the specialization. The IIS Thesaurus integrates existing terminology from the Thesaurus of ERIC Descriptors with uniquely established IIS terminology.

[Top](#)

IIS Collection Description

The "collection" of Integration and Implementation Sciences (IIS) is unlike a traditional "library" collection in that it is dynamic and behaves more like a knowledge management system. Although the IIS collection includes literature citations, many of the resources are "alive" and also actively reach out to access and form relationships with other resources, thus continually expanding their own "indexable" qualities. The IIS collection is virtual. In reality it is a collection of citations and references to a globally distributed network of people, organizations, activities, literature and events. Despite this technicality, the collection is described below in terms of its collection resources (Actors: Individuals, Organizations; Scholarship & Practice: Literature, Projects, Curriculum/Toolbox; Communication: Media, Events), its users, and the activities of those users.

I. Actors

1. Individuals – This heading refers to unique persons who study, research or practice one or more of the six Integration and Implementation Sciences.
2. Organizations – This heading includes a broad range of formally organized groups of individuals, literature and activities dedicated to a particular IIS-related topic.

II. Scholarship & Practice

1. Literature – It is essential to IIS that a wide variety of literature across disciplines be indexed for IIS scholars and practitioners. This section represents the most traditional "library" type collection and will behave most like an indexing database. Literature is currently identified in two groups: relevant journals and specific bibliographic citations to items in serials (articles, reviews, etc.) or monographs.

2. Projects – Scholarly research and professional application activities contribute to the development of the specialization and will be indexed so as to be retrievable by other researchers and by practitioners seeking examples and guidance. Projects will also include working committees to develop various IIS activities.
3. Curriculum/Toolbox – This heading may be re-titled as Theory and Methods or IIS Toolbox. It represents the intellectual foundations of the specialization. As the fields are just beginning to be coordinated, there are few theories or methods of integration and implementation that are agreed upon. It is anticipated that, in future, there will be examples of course and degree curriculum to be indexed as well as a “toolbox” of theories and methods for practitioners.

III. Communication

1. Media – While literature is certainly one means of communication, this header primarily refers to the various informal and immediate vehicles of communication such as listservs, newsletters, online bulletin boards and blogs. It would be optimum if some of these media could be indexed. Any IIS newsletter would fit the profile of “Journals” (above in Literature), whereas the content would be treated according to the characteristics of “Bibliographic Citations” (above in Literature). At this time it is unclear how listservs, bulletin boards and blogs would be described beyond the name and relevant URLs. It is also very unclear if subject indexing would even be possible. As such, these vehicles are not described further here.
2. Events – Conferences, lectures and other events and activities provide unique opportunities for interaction and knowledge-sharing. The IIS network plans to maintain an international calendar of relevant events across the six IIS areas which will, ideally, be minimally indexed.

[Top](#)

Users and User Activities

Many users will also be individuals who are considered elements of the collection itself.

I. Scholars –

1. Description – These users currently form the foundation of the IIS network and represent primarily academic institutions either through research centres and institutes or through traditional departments and degree programs.
2. Interests/Needs/Goals – These users will commonly use indexed IIS resources to:
 - Locate relevant literature
 - Locate fellow scholars
 - Locate relevant events
 - Communicate with fellow scholars
 - Contribute/participate in projects or curriculum/toolbox development

II. Practitioners –

1. Description – This user category represents consultants in various areas who utilize IIS principles in approaching their

problem-solving work. They may be members of professional organizations and/or theoretical and methodological ones.

2. Interests/Needs/Goals – These users will commonly use indexed IIS resources to:
 - Locate experts
 - Locate case study literature
 - Locate curriculum/toolbox resources
 - Contribute/participate in projects
 - Contribute/participate in case study development

III. Policy Makers –

1. Description – These users are government representatives or administrators (local to international) seeking to use IIS principles in the design of policy or application of it.
2. Interests/Needs/Goals – Policy makers will commonly use indexed IIS resources to:
 - Locate expert practitioners
 - Locate case study literature
 - Locate curriculum/toolbox resources
 - Contribute/participate in projects
 - Contribute/participate in case study development

The above description is a work-in-progress. As the specialization of Integration and Implementation Sciences grows and develops, the components of the collection, the users, and their needs and activities will all evolve. Nevertheless, this outline offers an essential starting point for building a functional resource management system in a modular, stepped way that will serve the needs of IIS in each phase of its development.

Proceed to the **Integration and Implementation Sciences Thesaurus**

[Top](#)

Updated: 11 November 2005

Contact: CarynLAnderson@yahoo.com or [Kyle Nicholls](#)



SOME RIGHTS RESERVED This work is licensed under a [Creative Commons License](#) by Caryn L. Anderson.

Integration and Implementation Sciences Thesaurus

A developing vocabulary for an emerging specialization

Caryn Anderson and Kyle Nicholls

Home

I2S Thesaurus

- Structure & Style
- Guidelines for Use
- Alphabetical View
- Hierarchical View

External Resources

- ERIC Thesaurus
- UNESCO Thesaurus

Development

- Bibliography
- Procedures
- Evaluation

Next Steps

Thesaurus Components

The thesaurus consists of terms and the structured relationships between those terms, bounded by choices about style and coverage and by guidelines for its use, which include reference to external resources.

Structure & Style

- Purpose
- Sources
- Subject Coverage
- Numbers of Terms
- Style
- Structure and Relationships
- Layout and Displays
- Word Forms, Abbreviations, Spelling
- Vocabulary Control
- Term Selection
- ERIC Terms
- Place Names
- Complex Concepts

Guidelines for Use

- Using the IIS Thesaurus System
- Indexing Guidelines
- Thesaurus Maintenance
- Acknowledgements

Thesaurus Terms

- Alphabetical view (HTML)
- Hierarchical view (HTML)
- IIS Thesaurus ".the" file (requires TheW32 software)
- Download TheW32 (free thesaurus construction software)
- Thesaurus of ERIC Descriptors (to be used with IIS Thesaurus)
- UNESCO Thesaurus (for geographical place names)

Updated: 15 November 2005

Contact: CarynLAnderson@yahoo.com or [Kyle Nicholls](#)



SOME RIGHTS RESERVED This work is licensed under a [Creative Commons License](#) by Caryn L. Anderson.

Integration and Implementation Sciences Thesaurus

A developing vocabulary for an emerging specialization

Caryn Anderson and Kyle Nicholls

Home

I2S Thesaurus

- **Structure & Style**
- Guidelines for Use
- Alphabetical View
- Hierarchical View

External Resources

- ERIC Thesaurus
- UNESCO Thesaurus

Development

- Bibliography
- Procedures
- Evaluation

Next Steps

Structure & Style

- [Purpose](#)
- [Sources](#)
- [Subject Coverage](#)
- [Numbers of Terms](#)
- [Style](#)
- [Structure and Relationships](#)
- [Layout and Displays](#)
- [Word Forms, Abbreviations, Spelling](#)
- [Vocabulary Control](#)
- [Term Selection](#)
- [ERIC Terms](#)
- [Place Names](#)
- [Complex Concepts](#)

Purpose

The Thesaurus of ERIC Descriptors, used to index documents of the Educational Resources Information Center (ERIC) of the United States government, provides a wealth of terminology appropriate for indexing Integration and Implementation Sciences (IIS) resources. These resources include articles, monographs and case studies as well as individuals, organizations, projects and events. The ERIC thesaurus does not provide full coverage, however, and thus the IIS Thesaurus was created as a supplement to provide terminology for indexing unique IIS concepts.

Together, the ERIC thesaurus and the IIS Thesaurus constitute the IIS thesaurus system which represents the full scope of available controlled vocabulary for indexing and retrieving Integration and Implementation Sciences resources.

[Top](#)

Sources

The IIS Thesaurus operates in conjunction with the Thesaurus of ERIC Descriptors, but also relies on the UNESCO Thesaurus to provide the authority for geographic place names. The official Web site for Integration and Implementation Sciences, hosted by Australian National University, and managed by Dr. Gabriele Bammer, was essential for identifying candidate vocabulary. Additional resources consulted in the construction of the IIS Thesaurus (articles, monographs, Web resources and other indexing languages) can be found in the [Annotated Bibliography](#).

[Top](#)

Subject Coverage

The field of Integration and Implementation Sciences coordinates six primary areas of research from the exact and social sciences:

- Complexity Science - study of unpredictability
- Systems Thinking - study of whole phenomena vs. reducing to parts
- Participatory Methods - study of human engagement with others: causes and results
- Diverse Epistemologies - study of different world views and definitions of knowledge
- Inter- and Transdisciplinarity - study of integrating fields of study
- Knowledge Management - study of collecting, interpreting, disseminating and utilising information

The IIS thesaurus system (ERIC and the IIS Thesaurus) is designed to cover these subjects to a moderate level of detail. For example, terms are included to represent the general concepts that comprise Complexity Science, including nonlinear dynamics, emergence, self-organisation, etc., but detailed terms more appropriate for a physics or mathematics thesaurus (e.g. bifurcation, phase transition, strange attractors, Lyapunov exponent) are not included.

The IIS thesaurus also covers activities and conditions that comprise or affect the processes of integrating ideas, goals, disciplines and world views to solve complex, large scale problems. For example, the IIS Thesaurus distinctly recognize the value of unique concepts like PROBLEM DEFINITION, INDIGENOUS KNOWLEDGE, MARGINALISATION AND SCALABILITY.

[Top](#)

Numbers of Terms

There are nearly 6,300 terms in the ERIC thesaurus.

The IIS Thesaurus contains 200 terms. 174 of these are preferred terms, while the remaining 26 terms provide entry vocabulary that guide users from the term they are investigating to the preferred term that is to be used in indexing.

33 terms in the IIS Thesaurus are originally from the ERIC thesaurus. The reasons for including ERIC terms are discussed in the Vocabulary Control section below.

[Top](#)

Style

The follow descriptions refer only to the IIS Thesaurus.

Structure and Relationships

BTs, NTs, RTs

Broad (BT) and narrow (NT) relationships between terms usually reflect a class/member relationship (e.g. BT: KNOWLEDGE, NT: EXPERT KNOWLEDGE). Other BT/NT relationships include whole/part (e.g. BT: HUMAN BODY, NT: BRAIN) and process/thing (e.g. BT: INSTRUCTION, NT: ASSIGNMENTS).

The IIS Thesaurus is not currently poly-hierarchical. Each term has only one broader term (BT). When a term could logically be considered to fall under two broader terms, the second term is included as a related term. For example, in the IIS Thesaurus,

COMPLEXITY THEORY is a narrower term (NT) of THEORIES (ERIC). It could also be considered a narrower term (NT) of COMPLEXITY SCIENCE, which is instead listed as a related term (RT).

In the IIS Thesaurus, an average of 6 related terms (RTs) are provided for each preferred term. These terms have been included to alert the user to other potentially relevant terms also in the thesaurus.

Preferred and Non-preferred Terms (USE, UF)

Entry vocabulary is provided so that searchers may be lead from the term they are investigating to the approved (preferred) term to use in indexing and searching. These non-preferred to preferred relationships are identified by use (USE) references (e.g. COLLABORATION, USE COOPERATION (ERIC)). The reciprocal relationship is identified by a used for (UF) reference (e.g. COOPERATION (ERIC), UF COLLABORATION).

Scope Notes (SN)

Scope notes (SN) are often used only to differentiate between similar terms in a thesaurus. The IIS thesaurus, however, uses scope notes more liberally to clarify definitions even when a similar term is not present. This is necessary because similar terms to IIS Thesaurus terms may actually exist in the ERIC thesaurus. The scope notes (SN) in the IIS Thesaurus also help to give a stronger characterization of the field of Integration and Implementation Sciences than the terms alone.

Reciprocal Relationships

All relationships within the IIS Thesaurus are reciprocal (for each BT there is an NT, for each NT there is a BT, for each RT there is a corresponding RT, and for each USE there is a corresponding UF reference). At this time, however, BTs, NTs, RTs or other references are not made between the ERIC and IIS thesauri.

[Top](#)

Layout and Displays

ALPHA (Alphabetical)

The alphabetical display lists all preferred and non-preferred terms in alphabetical order with any relationships (BT, NT, RT, USE, UF) or scope notes (SN). This display is most useful for scanning to find a specific term and then understanding the context and scope of that term. In the Alpha display of the IIS Thesaurus on the Web, all BT, NT, RT, USE, and UF references are hyperlinked to the referenced term(s).

Example of a preferred term in alphabetical display:

MEDIATION

SN Process of facilitating discussion between disputing parties such that they reconcile, settle or compromise without judicial intervention or arbitration

BT LAW

RT ALTERNATIVE DISPUTE RESOLUTION
CONFLICT RESOLUTION (ERIC)
FACILITATION

FACILITATION METHODS
 FACILITATORS
 INTERMEDIARIES
 MEDIATION THEORY
 PARTICIPATORY METHODS
 PRINCIPLED NEGOTIATION

* The scope note (SN) and broader term (BT) restrict the use of this term and do not allow its use for the mediation of chemicals, emotions, or any other entities.

Example of a non-preferred term and reciprocal preferred term in alphabetical display:

COLLABORATION

USE COOPERATION (ERIC)

COOPERATION (ERIC)

SN Act of working together toward a common goal
 (Note: Use a more specific term if possible) (ERIC)
 Index with other terms to represent UF references.

UF COLLABORATION
 COLLABORATIVE METHODS
 COLLABORATIVE RESEARCH
 BT PROCESS-BASED ACTIVITIES
 RT PARTNERSHIPS

TREE (Hierarchical)

The tree display is a hierarchical display which shows only the preferred terms in a rudimentary classification system established by the broader term (BT) and narrower term (NT) relationships. This display is useful for browsing and exploring subject areas to discover available terms that may not have been considered previously. The tree display does not show related terms or scope notes or allow for hyperlinking.

EXACT SCIENCES
 NT COMPLEXITY SCIENCE
 NT EMERGENCE
 NONLINEAR DYNAMICS
 UNCERTAINTY
 SYSTEMS SCIENCE
 NT COMPLEX SYSTEMS
 SELF-ORGANISATION
 SYSTEM DYNAMICS

[Top](#)

Word Forms, Abbreviations, Spelling

Singular/Plural Noun Forms

All terms are formatted in noun forms. The plural form is used for count nouns (nouns about which one would ask "how many?"), and the singular form is used for mass nouns (nouns about which one would ask "how much?").

Composite Terms

Composite terms, consisting of two or more words, appear in natural

word order (e.g. COMPLEX PROBLEMS, not PROBLEMS, COMPLEX).

Parenthetical Expressions

Parenthetical expressions are used to differentiate between terms with more than one accepted meaning (e.g. INUIT (PEOPLE), INUIT (LANGUAGE)).

Abbreviations

The IIS Thesaurus uses the following abbreviations:

SN: Scope note
UF: Used for this non-preferred term
USE: Use this term instead
BT: Broader term(s)
NT: Narrower term(s)
RT: Related term(s)

"(ERIC)" Designation

All terms and scope notes (SN) borrowed from ERIC for inclusion in the IIS Thesaurus are followed with the "(ERIC)" designation. The reasons for including ERIC terms are discussed in the Vocabulary Control section below.

Spelling

It was determined that the IIS Thesaurus should be written in International (British) English in service to the majority of its anticipated users (and the key scholar). The Thesaurus of ERIC Descriptors is a product of the American government and, as such, appears in American English. The IIS Thesaurus does its best to use British English, but it cannot when terms have been borrowed from ERIC. As such, the language of the IIS Thesaurus currently appears somewhat inconsistent. Once the relevant terms from ERIC have been imported into the IIS Thesaurus (See [Next Steps](#)), they can be modified to reflect the appropriate spellings.

[Top](#)

Vocabulary Control

How terms were selected

Terms in the IIS Thesaurus were selected via a three step process. First a review was conducted of seminal IIS literature and published descriptions of key personnel and organizations conducting IIS related research and activities. Approximately 500 key concepts representing ideas, entities or activities were identified as candidates for indexing terminology. After other indexing languages were eliminated, the Thesaurus of ERIC Descriptors was consulted to identify terms that adequately represented each concept. Finally, each concept that was not satisfactorily represented by an ERIC descriptor was added to the IIS Thesaurus as a unique term, assigned preferred or non-preferred status, and formatted according to the word form conventions outlined in the Style section above.

Borrowing ERIC Terms

It was necessary to include some ERIC terms in the IIS Thesaurus. There are a number of reasons for "borrowing" ERIC terms:

- the ERIC term provides a necessary Broader Term (BT) for

narrower IIS specific terms. (e.g. THEORIES (ERIC) contains 10 narrower terms (NTs) like COMPLEXITY THEORY and SYSTEMS THEORY)

- the ERIC term represents one of the 6 key IIS research areas or 8 sectors of application (e.g. INTERDISCIPLINARY APPROACH (ERIC), BUSINESS (ERIC))
- sibling terms from ERIC have been included in order to provide a full range of narrower terms. (e.g. CRITICAL THEORY (ERIC) and POSTMODERNISM (ERIC) are included with POSITIVIST THEORY and INTERPRETIVIST THEORY, etc. to show a range of epistemologies)
- the ERIC term is included when a non-preferred IIS term indicates that an ERIC term should be used. (e.g. QUANTITATIVE METHODS use STATISTICAL ANALYSIS (ERIC))

All terms and scope notes (SN) borrowed from ERIC for inclusion the IIS Thesaurus are followed with the "(ERIC)" designation.

Geographic Place Names

With the exception of STATES, PROVINCES and NATIONS, geographic entities are not included in either the ERIC or IIS thesauri. Use the "Countries and country groupings" section of the UNESCO thesaurus to find approved terminology (<http://www.ulcc.ac.uk/unesco/7.htm>). You will not find smaller units than the states and commonwealths of the United States. The terms STATES and NATIONS are both included in the IIS Thesaurus. While some documents refer to sovereign nations as states, the IIS Thesaurus refers the user to the term NATIONS for this purpose. STATES is used only to refer to U.S. provincial entities.

Complex Concepts

Terms in the IIS and ERIC thesauri are simple terms and not pre-coordinated to represent complex concepts. Therefore a concept like "collaborative research partnerships" might have to be represented with component terms like COOPERATION (ERIC), RESEARCH (ERIC), and PARTNERSHIPS.

Decisions regarding word forms (plural, singular, etc.) are discussed in the Style section above.

[Top](#)

Updated: 15 November 2005

Contact: CarynLAnderson@yahoo.com or [Kyle Nicholls](#)



SOME RIGHTS RESERVED This work is licensed under a [Creative Commons License](#) by Caryn L. Anderson.

Integration and Implementation Sciences Thesaurus

A developing vocabulary for an emerging specialization

Caryn Anderson and Kyle Nicholls

Home

I2S Thesaurus

- Structure & Style
- **Guidelines for Use**
- Alphabetical View
- Hierarchical View

External Resources

- ERIC Thesaurus
- UNESCO Thesaurus

Development

- Bibliography
- Procedures
- Evaluation

Next Steps

Guidelines for Use

- [Using the IIS Thesaurus System](#)
- [Indexing Guidelines](#)
- [Thesaurus Maintenance](#)
- [Acknowledgements](#)

Using the IIS Thesaurus Systems

The IIS thesaurus system may be used by indexers choosing descriptors (terms) for resources they are indexing and also by searchers wanting to know what terms will be most successful in finding indexed resources that relate to their topic of interest. Both will have an IIS concept or topic in mind, in their own words, and want to find the appropriate term to describe it.

To find the appropriate term, consult both the Thesaurus of ERIC Descriptors AND the IIS Thesaurus in the following order:

LOOK IN ERIC - Look first in the Thesaurus of ERIC Descriptors to find an appropriate term that most closely resembles the concept you are looking for. Pay attention to Synonym and Use references and index or search with the preferred term.

LOOK IN THE IIS THEAURUS - If you don't find a term in ERIC that represents your term successfully, next check the IIS Thesaurus.

EXPLORE BOTH THESAURI - If you still don't like what you find in IIS, remember that possibly related terms (RTs) in ERIC are not currently referenced from the IIS Thesaurus, so feel free to return to ERIC for further exploration if necessary.

[Top](#)

Indexing Guidelines

Policies governing indexing practices are determined by the organizations financing the unique indexing activity. The following guidelines are recommended as minimum policies for indexing Integration and Implementation resources.

1. For each resource, assign at least one descriptor to identify which of the 6 key IIS areas the resource primarily concerns itself with. IIS research area descriptors are identified in the IIS Thesaurus as follows:

COMPLEXITY SCIENCE
SYSTEMS THINKING
PARTICIPATORY METHODS
DIVERSE EPISTEMOLOGIES
INTERDISCIPLINARY APPROACH (ERIC)
KNOWLEDGE MANAGEMENT

Assign descriptors for any research areas that apply. If all apply, use INTEGRATION AND IMPLEMENTATION SCIENCES.

2. For each resource, assign at least one descriptor to identify which of the 8 principle sectors of social activity the resource primarily concerns itself with. IIS sector descriptors are identified in the IIS Thesaurus as follows:

EDUCATION (ERIC)
ENVIRONMENT
HEALTH (ERIC)
INNOVATION AND BUSINESS
INTERNATIONAL DEVELOPMENT
POLICY AND GOVERNMENT
RISK AND SECURITY
SOCIETY, HUMAN BEHAVIOUR AND CULTURE

Assign descriptors for any sectors that apply. If the resource is concerned exclusively with academic level research with no reference to sector application, use EDUCATION (ERIC).

3. Assign 5 to 8 total terms (descriptors) to each resource being indexed.

4. Do not distinguish weights for different terms (i.e. no minor vs. major descriptors).

5. Be as specific as you can possibly be (e.g. don't index everything with Integration and Implementation Sciences), and be exhaustive (e.g. assign as many descriptors as possible within the 5-8 range to represent all the subjects under which an investigator might find a use for the resource).

[Top](#)

Thesaurus Maintenance

The first draft of the IIS Thesaurus was made available on the Web on 19 April 2004. Comments, questions, and suggestions regarding additional terms or presentation are encouraged and appreciated. Please contact Caryn Anderson at:

Caryn L. Anderson
P.O. Box 300788
Jamaica Plain, MA 02130
USA
E-mail: CarynLAnderson@yahoo.com.

Acknowledgements

The creators would like to especially thank Dr. Candy Schwartz at Simmons College in Boston, Massachusetts, USA and Dr. Gabriele Bammer at Australian National University in Canberra, ACT, Australia for their invaluable support and contributions to this project.

[Top](#)

Updated: 11 November 2005

Contact: CarynLAnderson@yahoo.com or [Kyle Nicholls](#)



SOME RIGHTS RESERVED This work is licensed under a [Creative Commons License](#) by Caryn L. Anderson.

Integration and Implementation Sciences Thesaurus

A developing vocabulary for an emerging specialization

Caryn Anderson and Kyle Nicholls

Home

I2S Thesaurus

- Structure & Style
- Guidelines for Use
- **Alphabetical View**
- Hierarchical View

External Resources

- ERIC Thesaurus
- UNESCO Thesaurus

Development

- Bibliography
- Procedures
- Evaluation

Next Steps

Alphabetical View

[A](#) | [B](#) | [C](#) | [D](#) | [E](#) | [F](#) | [G](#) | [H](#) | [I](#) | [K](#) | [L](#) | [M](#) | [N](#) | [O](#) | [P](#) | [Q](#) | [R](#) | [S](#) |
[T](#) | [U](#) | [W](#)

ACADEMIC AREAS

- USE
 - [INTELLECTUAL DISCIPLINES \(ERIC\)](#)

ACADEMIC INSTITUTIONS

- BT
 - [INSTITUTIONS](#)
- RT
 - [ACADEMIC THEORY](#)
 - [EDUCATION \(ERIC\)](#)
 - [HIGHER EDUCATION \(ERIC\)](#)
 - [INTEGRATIVE STUDIES](#)
 - [INTELLECTUAL DISCIPLINES \(ERIC\)](#)

ACADEMIC THEORY

- SN
 - Concerning the development and operation of schools and higher education in particular
- BT
 - [THEORIES \(ERIC\)](#)
- RT
 - [ACADEMIC INSTITUTIONS](#)
 - [EDUCATION \(ERIC\)](#)
 - [HIGHER EDUCATION \(ERIC\)](#)
 - [INTEGRATIVE STUDIES](#)
 - [INTELLECTUAL DISCIPLINES \(ERIC\)](#)
 - [INTERDISCIPLINARY APPROACH \(ERIC\)](#)
 - [MULTIDISCIPLINARY APPROACH](#)
 - [TRANSDISCIPLINARY APPROACH](#)

ACADEMY, THE

- USE
 - [HIGHER EDUCATION \(ERIC\)](#)

ACTIVITIES (ERIC)

- SN
 - Pursuits or experiences, usually requiring active participation, engaged in because they are of intrinsic interest or lead to some goal sought by the participant (Note: Use a more specific term if possible) (ERIC)
- NT
 - [PRACTICE](#)
 - [RESEARCH-BASED ACTIVITIES](#)

ACTORS

- USE
 - [AGENTS](#)

ADVANTAGED (ERIC)

- SN
 - Individuals or groups who have high status in a particular society for reasons of race, sex, ethnicity, economics, language, geographic location, environment, education, etc.
- UF
 - [COMPARATIVE ADVANTAGES](#)
- BT
 - [INDIVIDUAL AND GROUP CONDITIONS](#)
- RT
 - [EXCLUSION](#)
 - [INCLUSION](#)
 - [MARGINALISATION](#)
 - [POWER](#)

ADVOCACY COALITIONS

- USE
 - [INTEREST GROUPS](#)

AGENTS

- UF
 - [ACTORS](#)
- NT
 - [GROUPS](#)
 - [PEOPLE](#)

AGREEMENT

- SN
 - Harmony of opinion. Agreement between parties or individuals regarding a course of action.
- UF
 - [CONSENSUS](#)
- BT
 - [INDIVIDUAL AND GROUP CONDITIONS](#)

ALLIANCES

- SN
 - A close association of groups, individuals or nations formed to advance common causes of interests.
- BT
 - [PROCESSES STRUCTURES](#)
- RT
 - [CONTROL](#)
 - [FRAGMENTATION](#)
 - [PARTNERSHIPS](#)

ALTERNATIVE DISPUTE RESOLUTION

- SN
 - Processes for resolving conflict outside of the judicial system (e.g. mediation, arbitration)
- BT
 - [LAW](#)
- RT
 - [CONFLICT RESOLUTION \(ERIC\)](#)

- [FACILITATION](#)
- [FACILITATION METHODS](#)
- [FACILITATORS](#)
- [INTERMEDIARIES](#)
- [MEDIATION](#)
- [MEDIATION THEORY](#)
- [MEDIATORS](#)
- [NEGOTIATION](#)
- [PARTICIPATORY METHODS](#)
- [PRINCIPLED NEGOTIATION](#)

ANALYSIS

- SN
 - Non-preferred term in ERIC for preferred term EVALUATION METHODS. In IIS term represents ANALYSIS as an activity vs. a method, but review ERIC for specific narrower terms (e.g. DATA ANALYSIS)
- BT
 - [METHODS \(ERIC\)](#)
- RT
 - [ANALYTICAL THINKING](#)
 - [FEASABILITY](#)
 - [QUALITATIVE METHODS](#)
 - [QUALITATIVE RESEARCH \(ERIC\)](#)
 - [QUANTITATIVE RESEARCH](#)
 - [STATISTICAL ANALYSIS \(ERIC\)](#)

ANALYTICAL THINKING

- SN
 - Mentally deconstructing problems into smaller parts and causal relationships to aid solution. Antonym to SYSTEMS THINKING.
- BT
 - [METHODS \(ERIC\)](#)
- RT
 - [ANALYSIS](#)
 - [QUALITATIVE METHODS](#)
 - [STATISTICAL ANALYSIS \(ERIC\)](#)
 - [SYSTEMS THINKING](#)

APPLICATION

- USE
 - [PRACTICE](#)

ASSOCIATIONS

- SN
 - Groups of individuals or smaller groups, bound together by membership and common goals and interests. Used most often for professional or theoretical groups.
- BT
 - [GROUPS](#)
- RT
 - [ORGANISATIONS](#)

ASSUMPTIONS

- SN
 - Taking for granted or accepting as true without proof.

- BT
 - [INDIVIDUAL AND GROUP CONDITIONS](#)
- RT
 - [KNOWLEDGE](#)

BARRIERS

- SN
 - Separating or holding apart.
- BT
 - [INDIVIDUAL AND GROUP CONDITIONS](#)
- RT
 - [BOUNDARIES](#)

BEST PRACTICES

- SN
 - Activities generally accepted and recommended as most effective and appropriate in a given field of study or sector.
- BT
 - [PROCESS-BASED ACTIVITIES](#)

[Top](#)

BOUNDARIES

- SN
 - Limits and or indicated borders.
- BT
 - [PROCESSES STRUCTURES](#)
- RT
 - [BARRIERS](#)
 - [INTERMEDIARIES](#)

BOUNDARY SPANNERS

- USE
 - [INTERMEDIARIES](#)

BUSINESS (ERIC)

- SN
 - Activities concerned with the production or exchange of goods or the rendering of financial or other services to the public for profit (ERIC)
- BT
 - [INNOVATION AND BUSINESS](#)
- RT
 - [ECONOMIC PROBLEMS](#)
 - [ENTREPRENEURSHIP \(ERIC\)](#)
 - [INNOVATION \(ERIC\)](#)
 - [TECHNOLOGICAL PROBLEMS](#)

[Top](#)

COALESCENCE

- SN
 - To grow or come together so as to form one whole; fuse.
- BT
 - [PROCESSES STRUCTURES](#)
- RT

- [CRITICAL MASS](#)
- [FRAGMENTATION](#)
- [SELF-ORGANISATION](#)
- [SYNERGIES](#)

CODIFIED KNOWLEDGE

- SN
 - Arranged or systematized knowledge.
- BT
 - [KNOWLEDGE](#)
- RT
 - [COLLECTIVE KNOWLEDGE](#)
 - [EXISTING KNOWLEDGE](#)
 - [EXPERIENTIAL KNOWLEDGE](#)
 - [EXPERT KNOWLEDGE](#)
 - [INDEGENOUS KNOWLEDGE \(ERIC\)](#)
 - [KNOWLEDGE MANAGEMENT](#)

COGNITIVE SCIENCE

- SN
 - Scientific study of the mind, including issues of perception, influence, learning, etc.
- BT
 - [SOCIAL SCIENCES \(ERIC\)](#)
- RT
 - [CONSTRUCTIVISM \(LEARNING\) \(ERIC\)](#)
 - [DIVERSE EPISTEMOLOGIES](#)
 - [EPISTEMOLOGY \(ERIC\)](#)
 - [KNOWLEDGE](#)

COLLABORATION

- USE
 - [COOPERATION \(ERIC\)](#)

COLLABORATIVE METHODS

- USE
 - [COOPERATION \(ERIC\)](#)
 - [METHODS \(ERIC\)](#)

COLLABORATIVE RESEARCH

- USE
 - [COOPERATION \(ERIC\)](#)
 - [RESEARCH \(ERIC\)](#)

COLLECTIVE KNOWLEDGE

- SN
 - Knowledge held collectively amongst a group.
- BT
 - [KNOWLEDGE](#)
- RT
 - [CODIFIED KNOWLEDGE](#)
 - [EXISTING KNOWLEDGE](#)
 - [EXPERIENTIAL KNOWLEDGE](#)
 - [EXPERT KNOWLEDGE](#)
 - [INDEGENOUS KNOWLEDGE \(ERIC\)](#)
 - [KNOWLEDGE MANAGEMENT](#)

COMPARATIVE ADVANTAGES

- USE
 - [ADVANTAGED \(ERIC\)](#)

COMPLEX ADAPTIVE SYSTEMS

- USE
 - [COMPLEX SYSTEMS](#)

COMPLEX PROBLEMS

- SN
 - Problems characterised by multiple interactive, interconnected dimensions and uncertainty
- BT
 - [PROBLEMS](#)
- RT
 - [COMPLEX SYSTEMS](#)
 - [COMPLEXITY SCIENCE](#)
 - [COMPLEXITY THEORY](#)
 - [ECONOMIC PROBLEMS](#)
 - [EMERGENCE](#)
 - [ENVIRONMENTAL PROBLEMS](#)
 - [IMPERFECTION](#)
 - [INTEGRATIVE STUDIES](#)
 - [LARGE SCALE PROBLEMS](#)
 - [NATIONAL PROBLEMS](#)
 - [NONLINEAR DYNAMICS](#)
 - [POLITICAL PROBLEMS](#)
 - [PRACTICAL PROBLEMS](#)
 - [PROBLEM DEFINITION](#)
 - [REGIONAL PROBLEMS](#)
 - [RISK AND SECURITY](#)
 - [SELF-ORGANISATION](#)
 - [SYSTEM DYNAMICS](#)
 - [SYSTEMS SCIENCE](#)
 - [SYSTEMS THEORY](#)
 - [SYSTEMS THINKING](#)
 - [TECHNOLOGICAL PROBLEMS](#)
 - [UNCERTAINTY](#)
 - [WORLD PROBLEMS \(ERIC\)](#)

COMPLEX SYSTEMS

- UF
 - [COMPLEX ADAPTIVE SYSTEMS](#)
- BT
 - [SYSTEMS SCIENCE](#)
- RT
 - [COMPLEX PROBLEMS](#)
 - [COMPLEXITY SCIENCE](#)
 - [COMPLEXITY THEORY](#)
 - [EMERGENCE](#)
 - [IMPERFECTION](#)
 - [NONLINEAR DYNAMICS](#)
 - [SELF-ORGANISATION](#)
 - [SYSTEM DYNAMICS](#)
 - [SYSTEMS THEORY](#)
 - [UNCERTAINTY](#)

COMPLEXITY SCIENCE

- SN
 - Study of complexity in nature as characterized by nonlinear dynamic, emergent properties, adaptive and self-organising systems and dissipative structures

- BT
 - EXACT SCIENCES
- NT
 - EMERGENCE
 - NONLINEAR DYNAMICS
 - UNCERTAINTY
- RT
 - COMPLEX PROBLEMS
 - COMPLEX SYSTEMS
 - COMPLEXITY THEORY
 - IMPERFECTION
 - INTEGRATION AND IMPLEMENTATION SCIENCES
 - SELF-ORGANISATION
 - SYSTEM DYNAMICS
 - SYSTEMS SCIENCE
 - SYSTEMS THEORY
 - SYSTEMS THINKING

COMPLEXITY THEORY

- SN
 - Theoretical foundation of COMPLEXITY SCIENCE characterized by sub-theories related to non-linear dynamics, emergent properties, adaptive and self-organizing systems and dissipative structures.
- BT
 - THEORIES (ERIC)
- RT
 - COMPLEX PROBLEMS
 - COMPLEX SYSTEMS
 - COMPLEXITY SCIENCE
 - EMERGENCE
 - IMPERFECTION
 - NONLINEAR DYNAMICS
 - SELF-ORGANISATION
 - SYSTEM DYNAMICS
 - SYSTEMS THEORY
 - SYSTEMS THINKING
 - UNCERTAINTY

CONDITIONS

- NT
 - INDIVIDUAL AND GROUP CONDITIONS
 - PROBLEMS
 - PROCESSES STRUCTURES
 - SOCIAL CONDITIONS

CONFLICT RESOLUTION (ERIC)

- SN
 - Use to represent process of resolving conflicts among full range of parties including interpersonal, interorganizational, intergovernmental, intersocial and combinations of these groups
- UF
 - DISPUTE SETTLEMENT
- BT
 - GOAL-BASED ACTIVITIES
- RT
 - ALTERNATIVE DISPUTE RESOLUTION
 - FACILITATION
 - FACILITATION METHODS
 - FACILITATORS
 - INTERMEDIARIES
 - LAW

- [MEDIATION](#)
- [MEDIATION THEORY](#)
- [MEDIATORS](#)
- [PARTICIPATORY METHODS](#)
- [PRINCIPLED NEGOTIATION](#)

CONSENSUS

- USE
 - [AGREEMENT](#)

CONSTRUCTIVISM (LEARNING) (ERIC)

- SN
 - Viewpoint in learning theory which holds that individuals acquire knowledge by building it from innate capabilities interacting with the environment (ERIC)
- UF
 - [SOCIAL CONSTRUCTION THEORY](#)
- BT
 - [THEORIES \(ERIC\)](#)
- RT
 - [COGNITIVE SCIENCE](#)
 - [CRITICAL THEORY \(ERIC\)](#)
 - [DIVERSE EPISTEMOLOGIES](#)
 - [EPISTEMOLOGY \(ERIC\)](#)
 - [FEMINIST THEORY](#)
 - [INTERPRETIVIST THEORY](#)
 - [POSITIVIST THEORY](#)
 - [POSTMODERNISM \(ERIC\)](#)

CONSUMERS

- SN
 - Purchasers of goods and services
- BT
 - [GROUPS](#)

CONTROL

- SN
 - Ability and power to determine course of events or outcomes
- BT
 - [INDIVIDUAL AND GROUP CONDITIONS](#)
- RT
 - [ALLIANCES](#)
 - [POWER](#)
 - [STABILITY](#)

COOPERATION (ERIC)

- SN
 - Act of working together toward a common goal (Note: Use a more specific term if possible) (ERIC) Index with other terms to represent UF references.
- UF
 - [COLLABORATION](#)
 - [COLLABORATIVE METHODS](#)
 - [COLLABORATIVE RESEARCH](#)
- BT
 - [PROCESS-BASED ACTIVITIES](#)
- RT
 - [PARTNERSHIPS](#)

CRITICAL MASS

- SN
 - An amount or level needed for a specific result or new action to occur
- BT
 - [SOCIAL CONDITIONS](#)
- RT
 - [COALESCENCE](#)
 - [SYNERGIES](#)

CRITICAL SYSTEMS

- SN
 - Infrastructure essential to the operation of human societies including power systems (electricity), telecommunications systems, transportation systems
- BT
 - [RISK AND SECURITY](#)
- RT
 - [RISK MANAGEMENT \(ERIC\)](#)
 - [SECURITY](#)
 - [SYSTEMS THINKING](#)
 - [TECHNOLOGICAL PROBLEMS](#)

CRITICAL SYSTEMS THINKING

- SN
 - A method of analysis and approach to problem solving that combines systems thinking with critical theory - in effect, using systems thinking to emancipate people.
- BT
 - [METHODS \(ERIC\)](#)
- RT
 - [CRITICAL THEORY](#)
 - [SYSTEMS SCIENCE](#)
 - [SYSTEMS THEORY](#)
 - [SYSTEMS THINKING](#)

CRITICAL THEORY (ERIC)

- SN
 - An evaluative approach to social science research ...that aims to criticize as well as analyze society -- ... its goal is to promote human emancipatory forces and to expose ideas and systems that impede them (ERIC) See ERIC for full SN.
- BT
 - [THEORIES \(ERIC\)](#)
- RT
 - [CONSTRUCTIVISM \(LEARNING\) \(ERIC\)](#)
 - [DIVERSE EPISTEMOLOGIES](#)
 - [EPISTEMOLOGY \(ERIC\)](#)
 - [FEMINIST THEORY](#)
 - [INTERPRETIVIST THEORY](#)
 - [POSITIVIST THEORY](#)
 - [POSTMODERNISM \(ERIC\)](#)

CROSS-CULTURAL COMPETENCE

- SN
 - Ability to function successfully in different cultures (geographic, political, disciplinary)
- UF

- BT
 - [TRANSCULTURAL COMPETENCE](#)
- RT
 - [INDIVIDUAL AND GROUP CONDITIONS](#)
 - [CULTURE \(ERIC\)](#)
 - [CULTURE MAPPING](#)

CROSS-FERTILISATION

- SN
 - Exchange of ideas, theories and methods between disciplines resulting in new directions in theory, methods, or application in either, both or all disciplines
- BT
 - [PROCESS-BASED ACTIVITIES](#)
- RT
 - [INTEGRATION](#)

CULTURE (ERIC)

- SN
 - Set of patterns, of and for behavior, that regulate interaction and enable mutual communication among a plurality of people, establishing them into a particular and distinct human group (ERIC)
- BT
 - [SOCIETY, HUMAN BEHAVIOUR AND CULTURE](#)
- RT
 - [CROSS-CULTURAL COMPETENCE](#)
 - [CULTURE MAPPING](#)
 - [SOCIAL BEHAVIOR \(ERIC\)](#)
 - [SOCIOLOGY \(ERIC\)](#)

CULTURE MAPPING

- SN
 - DO NOT USE; Use one of over 100 specific "culture" related terms from ERIC
- BT
 - [PROCESS-BASED ACTIVITIES](#)
- RT
 - [CROSS-CULTURAL COMPETENCE](#)
 - [CULTURE \(ERIC\)](#)

CYCLES

- SN
 - Consistent patterns of change
- BT
 - [PROCESSES STRUCTURES](#)
- RT
 - [DEVELOPMENT \(ERIC\)](#)
 - [PATTERNS](#)
 - [PROGRESS](#)
 - [STABILITY](#)
 - [TRANSFORMATION](#)
 - [TRANSITION](#)

[Top](#)

DEVELOPMENT (ERIC)

- SN
 - Progression from earlier to later stages of growth or

organization -- includes gradual realization of potential, usually accompanied by advances in size, complexity, efficiency, etc. (Note: Do not confuse with "Change,") (ERIC)

- BT
 - Review multiple narrower terms in ERIC
- NT
 - [GOAL-BASED ACTIVITIES](#)
 - [DOMAIN DEVELOPMENT](#)
- RT
 - [CYCLES](#)
 - [ECONOMIC PROBLEMS](#)
 - [GOVERNMENT \(ADMINISTRATIVE BODY\) \(ERIC\)](#)
 - [INTERNATIONAL DEVELOPMENT](#)
 - [LARGE SCALE PROBLEMS](#)
 - [POLICY AND GOVERNMENT](#)
 - [POLICY MAKERS](#)
 - [PROGRESS](#)
 - [PUBLIC ADMINISTRATION \(ERIC\)](#)
 - [PUBLIC POLICY \(ERIC\)](#)

DISCIPLINES

- USE
 - [INTELLECTUAL DISCIPLINES \(ERIC\)](#)

DISPUTE SETTLEMENT

- USE
 - [CONFLICT RESOLUTION \(ERIC\)](#)

DIVERSE EPISTEMOLOGIES

- SN
 - IIS approach
- BT
 - [HUMANITIES](#)
- RT
 - [COGNITIVE SCIENCE](#)
 - [CONSTRUCTIVISM \(LEARNING\) \(ERIC\)](#)
 - [CRITICAL THEORY \(ERIC\)](#)
 - [EPISTEMOLOGY \(ERIC\)](#)
 - [FEMINIST THEORY](#)
 - [INTEGRATION AND IMPLEMENTATION SCIENCES](#)
 - [INTERPRETIVIST THEORY](#)
 - [KNOWLEDGE](#)
 - [POSITIVIST THEORY](#)
 - [POSTMODERNISM \(ERIC\)](#)
 - [SOCIOLOGY \(ERIC\)](#)

DOMAIN DEVELOPMENT

- SN
 - Processes related to expansion and increased credibility of a new field of study or sector
- BT
 - [DEVELOPMENT \(ERIC\)](#)

DOMAINS

- NT
 - [INTEGRATION AND IMPLEMENTATION SCIENCES](#)
 - [INTELLECTUAL DISCIPLINES \(ERIC\)](#)
 - [SECTORS](#)

[Top](#)**ECONOMIC PROBLEMS**

- SN
 - Problems concerning financial matters (e.g. budgets, trade, pricing, funding)
- BT
 - [PROBLEMS](#)
- RT
 - [BUSINESS \(ERIC\)](#)
 - [COMPLEX PROBLEMS](#)
 - [DEVELOPMENT \(ERIC\)](#)
 - [ENTREPRENEURSHIP \(ERIC\)](#)
 - [ENVIRONMENTAL PROBLEMS](#)
 - [INNOVATION \(ERIC\)](#)
 - [INNOVATION AND BUSINESS](#)
 - [INTERNATIONAL DEVELOPMENT](#)
 - [LARGE SCALE PROBLEMS](#)
 - [LOCAL PROBLEMS](#)
 - [NATIONAL PROBLEMS](#)
 - [POLITICAL PROBLEMS](#)
 - [PRACTICAL PROBLEMS](#)
 - [PROBLEM DEFINITION](#)
 - [REGIONAL PROBLEMS](#)
 - [TECHNOLOGICAL PROBLEMS](#)
 - [WORLD PROBLEMS \(ERIC\)](#)

EDUCATION (ERIC)

- SN
 - IIS Sector; infrastructure and systems of education as well as ERIC scope note of process of education (learning)
- BT
 - [SECTORS](#)
- RT
 - [ACADEMIC INSTITUTIONS](#)
 - [ACADEMIC THEORY](#)
 - [HIGHER EDUCATION \(ERIC\)](#)
 - [INTEGRATION AND IMPLEMENTATION SCIENCES](#)
 - [INTELLECTUAL DISCIPLINES \(ERIC\)](#)

EMERGENCE

- SN
 - Property of complex systems where new behaviour patterns or phenomena emerge unpredictably at certain scales or after certain time periods
- BT
 - [COMPLEXITY SCIENCE](#)
- RT
 - [COMPLEX PROBLEMS](#)
 - [COMPLEX SYSTEMS](#)
 - [COMPLEXITY THEORY](#)
 - [IMPERFECTION](#)
 - [IMPLEMENTATION](#)
 - [NONLINEAR DYNAMICS](#)
 - [SYSTEM DYNAMICS](#)
 - [SYSTEMS SCIENCE](#)
 - [SYSTEMS THEORY](#)
 - [SYSTEMS THINKING](#)
 - [TRANSFORMATION](#)
 - [UNCERTAINTY](#)

ENTREPRENEURSHIP (ERIC)

- SN
 - Initiation, organization, promotion, and/or management of a business or enterprise with assumption of the risk of loss or failure
- BT
 - [INNOVATION AND BUSINESS](#)
- RT
 - [BUSINESS \(ERIC\)](#)
 - [ECONOMIC PROBLEMS](#)
 - [INNOVATION \(ERIC\)](#)

ENVIRONMENT

- SN
 - IIS sector; concerning the natural environment; ranging from conservation, to use (e.g. logging, oil drilling, mining, etc.)
- BT
 - [SECTORS](#)
- RT
 - [ENVIRONMENTAL PROBLEMS](#)
 - [INTEGRATION AND IMPLEMENTATION SCIENCES](#)

ENVIRONMENTAL PROBLEMS

- SN
 - Problems concerning the natural environment (e.g. habitat conservation, natural resource speculation)
- BT
 - [PROBLEMS](#)
- RT
 - [COMPLEX PROBLEMS](#)
 - [ECONOMIC PROBLEMS](#)
 - [ENVIRONMENT](#)
 - [LARGE SCALE PROBLEMS](#)
 - [LOCAL PROBLEMS](#)
 - [NATIONAL PROBLEMS](#)
 - [POLITICAL PROBLEMS](#)
 - [PRACTICAL PROBLEMS](#)
 - [PROBLEM DEFINITION](#)
 - [REGIONAL PROBLEMS](#)
 - [TECHNOLOGICAL PROBLEMS](#)
 - [WORLD PROBLEMS \(ERIC\)](#)

EPISTEMOLOGY (ERIC)

- SN
 - The study of how knowledge is acquired (ERIC) Also used as general characterisation for different THEORIES/Philosophies about how the world works which influence different disciplines and sectors
- BT
 - [HUMANITIES](#)
- RT
 - [COGNITIVE SCIENCE](#)
 - [CONSTRUCTIVISM \(LEARNING\) \(ERIC\)](#)
 - [CRITICAL THEORY \(ERIC\)](#)
 - [DIVERSE EPISTEMOLOGIES](#)
 - [FEMINIST THEORY](#)
 - [INTERPRETIVIST THEORY](#)
 - [KNOWLEDGE](#)
 - [POSITIVIST THEORY](#)
 - [POSTMODERNISM \(ERIC\)](#)
 - [SOCIOLOGY \(ERIC\)](#)

EXACT SCIENCES

- SN
 - Includes physical sciences (e.g. physics, chemistry, biology and medicine) and also mathematics
- BT
 - [INTELLECTUAL DISCIPLINES \(ERIC\)](#)
- NT
 - [COMPLEXITY SCIENCE](#)
 - [SYSTEMS SCIENCE](#)
- RT
 - [INNOVATION \(ERIC\)](#)
 - [INNOVATION AND BUSINESS](#)
 - [TECHNOLOGICAL PROBLEMS](#)

EXCLUSION

- SN
 - Act of restricting access to activity or benefit
- BT
 - [PROCESSES STRUCTURES](#)
- RT
 - [ADVANTAGED \(ERIC\)](#)
 - [HETEROGENEOUS](#)
 - [INCLUSION](#)
 - [MARGINALISATION](#)
 - [POWER](#)

EXISTING KNOWLEDGE

- SN
 - Knowledge in an individual or group at a given point of time; usually referred to as knowledge to be built upon
- BT
 - [KNOWLEDGE](#)
- RT
 - [CODIFIED KNOWLEDGE](#)
 - [COLLECTIVE KNOWLEDGE](#)
 - [EXPERIENTIAL KNOWLEDGE](#)
 - [EXPERT KNOWLEDGE](#)
 - [INDEGENOUS KNOWLEDGE \(ERIC\)](#)
 - [KNOWLEDGE MANAGEMENT](#)

EXPERIENTIAL KNOWLEDGE

- SN
 - Knowledge gained through experience (as opposed to study)
- BT
 - [KNOWLEDGE](#)
- RT
 - [CODIFIED KNOWLEDGE](#)
 - [COLLECTIVE KNOWLEDGE](#)
 - [EXISTING KNOWLEDGE](#)
 - [EXPERT KNOWLEDGE](#)
 - [INDEGENOUS KNOWLEDGE \(ERIC\)](#)
 - [KNOWLEDGE MANAGEMENT](#)

EXPERT KNOWLEDGE

- SN
 - Knowledge of specialists
- BT
 - [KNOWLEDGE](#)
- RT
 - [CODIFIED KNOWLEDGE](#)

- [COLLECTIVE KNOWLEDGE](#)
- [EXISTING KNOWLEDGE](#)
- [EXPERIENTIAL KNOWLEDGE](#)
- [INDEGENOUS KNOWLEDGE \(ERIC\)](#)
- [KNOWLEDGE MANAGEMENT](#)

[Top](#)

FACILITATION

- SN
 - Coordinating, mediating or otherwise bringing together people, groups, materials or concepts to achieve a goal while avoiding digression, distraction or complication
- BT
 - [PROCESS-BASED ACTIVITIES](#)
- RT
 - [ALTERNATIVE DISPUTE RESOLUTION](#)
 - [CONFLICT RESOLUTION \(ERIC\)](#)
 - [FACILITATION METHODS](#)
 - [FACILITATORS](#)
 - [INTEGRATION](#)
 - [INTERMEDIARIES](#)
 - [KNOWLEDGE MANAGEMENT](#)
 - [MEDIATION](#)
 - [MEDIATION THEORY](#)
 - [MEDIATORS](#)
 - [NEGOTIATION](#)
 - [PARTICIPATORY METHODS](#)
 - [PRINCIPLED NEGOTIATION](#)

FACILITATION METHODS

- SN
 - Processes and procedures specifically designed for coordinating, mediating or otherwise bringing together people, groups, materials or concepts to achieve a goal while avoiding digression, distraction or complication
- BT
 - [METHODS \(ERIC\)](#)
- RT
 - [ALTERNATIVE DISPUTE RESOLUTION](#)
 - [CONFLICT RESOLUTION \(ERIC\)](#)
 - [FACILITATION](#)
 - [FACILITATORS](#)
 - [INTEGRATION](#)
 - [INTERMEDIARIES](#)
 - [KNOWLEDGE MANAGEMENT](#)
 - [MEDIATION](#)
 - [MEDIATION THEORY](#)
 - [MEDIATORS](#)
 - [NEGOTIATION](#)
 - [PARTICIPATORY METHODS](#)
 - [PRINCIPLED NEGOTIATION](#)

FACILITATORS

- SN
 - Individuals who coordinate, mediate or otherwise bring together people, groups, materials or concepts to achieve a goal while minimizing digression, distraction or complication; sometimes can be process or thing as facilitator
- BT
 - [PEOPLE](#)

- RT
 - [ALTERNATIVE DISPUTE RESOLUTION](#)
 - [CONFLICT RESOLUTION \(ERIC\)](#)
 - [FACILITATION](#)
 - [FACILITATION METHODS](#)
 - [INTEGRATION](#)
 - [INTERMEDIARIES](#)
 - [KNOWLEDGE MANAGEMENT](#)
 - [MEDIATION](#)
 - [MEDIATION THEORY](#)
 - [MEDIATORS](#)
 - [NEGOTIATION](#)
 - [PARTICIPATORY METHODS](#)
 - [PRINCIPLED NEGOTIATION](#)

FEASABILITY

- SN
 - Capacity or ability for a proposed action to be executed successfully
- BT
 - [PROCESSES STRUCTURES](#)
- RT
 - [ANALYSIS](#)

FEMINIST THEORY

- SN
 - Conceptual foundation of world view from a feminist perspective (i.e., of female consciousness, women's rights, and the resistance to male domination) (partially extracted from ERIC SN for FEMINIST CRITICISM)
- BT
 - [THEORIES \(ERIC\)](#)
- RT
 - [CONSTRUCTIVISM \(LEARNING\) \(ERIC\)](#)
 - [CRITICAL THEORY \(ERIC\)](#)
 - [DIVERSE EPISTEMOLOGIES](#)
 - [EPISTEMOLOGY \(ERIC\)](#)
 - [INTERPRETIVIST THEORY](#)
 - [POSITIVIST THEORY](#)
 - [POSTMODERNISM \(ERIC\)](#)

FIELDS OF STUDY

- USE
 - [INTELLECTUAL DISCIPLINES \(ERIC\)](#)

FRAGMENTATION

- SN
 - Distribution of components of single entity (or concept/field) into isolated, disconnected areas
- BT
 - [PROCESSES STRUCTURES](#)
- RT
 - [ALLIANCES](#)
 - [COALESCENCE](#)
 - [PARTNERSHIPS](#)
 - [SYNERGIES](#)

[Top](#)

GEOGRAPHIC SCALE

- SN
 - The amount of geographic space an entity involves or affects
- BT
 - [PROCESSES STRUCTURES](#)
- RT
 - [INTERNATIONAL DEVELOPMENT](#)
 - [LARGE SCALE PROBLEMS](#)
 - [SCALABILITY](#)
 - [TEMPORAL SCALE](#)

GLOBAL PROBLEMS

- USE
 - [WORLD PROBLEMS \(ERIC\)](#)

GOAL-BASED ACTIVITIES

- SN
 - Includes activities and activity based concepts concerned with particular goal (e.g. international development, urban planning, projects)
- BT
 - [PRACTICE](#)
- NT
 - [CONFLICT RESOLUTION \(ERIC\)](#)
 - [DEVELOPMENT \(ERIC\)](#)
 - [PROJECTS](#)
 - [SOCIAL IMPROVEMENT](#)
 - [SOLUTIONS](#)

GOVERNMENT (ADMINISTRATIVE BODY) (ERIC)

- SN
 - IIS sector
- BT
 - [POLICY AND GOVERNMENT](#)
- RT
 - [DEVELOPMENT \(ERIC\)](#)
 - [INTERNATIONAL DEVELOPMENT](#)
 - [LAW](#)
 - [LOCAL PROBLEMS](#)
 - [NATIONAL PROBLEMS](#)
 - [POLICY INSTRUMENTS](#)
 - [POLICY MAKERS](#)
 - [POLITICAL PROBLEMS](#)
 - [PUBLIC ADMINISTRATION \(ERIC\)](#)
 - [REGIONAL PROBLEMS](#)
 - [WORLD PROBLEMS \(ERIC\)](#)

GRANTMAKERS

- SN
 - Public or private bodies providing project or operational funds for goal-based purposes (i.e. research or program), usually awarded based on need or merit and requiring application by individual, group or institution
- BT
 - [GROUPS](#)

GROUPS

- BT
 - [AGENTS](#)

- NT
 - [ASSOCIATIONS](#)
 - [CONSUMERS](#)
 - [GRANTMAKERS](#)
 - [INSTITUTIONS](#)
 - [INTEREST GROUPS](#)
 - [ORGANISATIONS](#)
 - [SOCIETIES](#)

[Top](#)

HEALTH (ERIC)

- SN
 - IIS sector
- BT
 - [SECTORS](#)
- RT
 - [INTEGRATION AND IMPLEMENTATION SCIENCES](#)

HETEROGENEOUS

- SN
 - of dissimilar elements or parts; of completely different types, species, genders, etc.
- BT
 - [INDIVIDUAL AND GROUP CONDITIONS](#)
- RT
 - [EXCLUSION](#)
 - [INCLUSION](#)

HIERARCHY

- SN
 - A categorised series in which elements are graded or ranked;
- BT
 - [PROCESSES STRUCTURES](#)
- RT
 - [POWER](#)

HIGHER EDUCATION (ERIC)

- SN
 - All education beyond the secondary level leading to a formal degree (Note: Also appears in the list of mandatory educational level Descriptors)
- UF
 - [ACADEMY, THE](#)
- BT
 - [SOCIAL SCIENCES \(ERIC\)](#)
- RT
 - [ACADEMIC INSTITUTIONS](#)
 - [ACADEMIC THEORY](#)
 - [EDUCATION \(ERIC\)](#)
 - [INTEGRATIVE STUDIES](#)
 - [INTELLECTUAL DISCIPLINES \(ERIC\)](#)
 - [INTERDISCIPLINARY APPROACH \(ERIC\)](#)
 - [MULTIDISCIPLINARY APPROACH](#)
 - [TRANSDISCIPLINARY APPROACH](#)

HUMANITIES

- SN
 - Includes arts, literature, history, religion and

philosophy

- BT
 - [INTELLECTUAL DISCIPLINES \(ERIC\)](#)
- NT
 - [DIVERSE EPISTEMOLOGIES](#)
 - [EPISTEMOLOGY \(ERIC\)](#)

[Top](#)**IMPERFECTION**

- BT
 - [PROCESSES STRUCTURES](#)
- RT
 - [COMPLEX PROBLEMS](#)
 - [COMPLEX SYSTEMS](#)
 - [COMPLEXITY SCIENCE](#)
 - [COMPLEXITY THEORY](#)
 - [EMERGENCE](#)
 - [NONLINEAR DYNAMICS](#)
 - [SYSTEM DYNAMICS](#)
 - [SYSTEMS SCIENCE](#)
 - [SYSTEMS THEORY](#)
 - [SYSTEMS THINKING](#)
 - [TRANSFORMATION](#)
 - [TRANSITION](#)
 - [UNCERTAINTY](#)

IMPLEMENTATION

- SN
 - Primary term in the field of IIS, denotes conversion of ideas, research and planning into practice
- BT
 - [PROCESS-BASED ACTIVITIES](#)
- RT
 - [EMERGENCE](#)
 - [INTEGRATED ASSESSMENT](#)
 - [INTEGRATION](#)
 - [INTEGRATION AND IMPLEMENTATION SCIENCES](#)
 - [INTEGRATIVE RESEARCH](#)
 - [INTEGRATIVE STUDIES](#)
 - [INTERMEDIARIES](#)
 - [LAW](#)
 - [PRACTICAL PROBLEMS](#)
 - [PRACTICE](#)
 - [PRACTITIONERS](#)

INCLUSION

- SN
 - Act of extending access to activity or benefit
- BT
 - [PROCESSES STRUCTURES](#)
- RT
 - [ADVANTAGED \(ERIC\)](#)
 - [EXCLUSION](#)
 - [HETEROGENEOUS](#)
 - [MARGINALISATION](#)
 - [POWER](#)

INDEGENOUS KNOWLEDGE (ERIC)

- SN
 - The unique, traditional, local knowledge existing within and developed around the specific conditions

of persons indigenous to a particular geographic area

- BT
- RT
 - KNOWLEDGE
 - CODIFIED KNOWLEDGE
 - COLLECTIVE KNOWLEDGE
 - EXISTING KNOWLEDGE
 - EXPERIENTIAL KNOWLEDGE
 - EXPERT KNOWLEDGE
 - KNOWLEDGE MANAGEMENT
 - LOCAL PROBLEMS
 - REGIONAL PROBLEMS

INDIVIDUAL AND GROUP CONDITIONS

- SN
 - Conditions that affect the way an individual or group interacts with the world and makes choices
- BT
- NT
 - CONDITIONS
 - ADVANTAGED (ERIC)
 - AGREEMENT
 - ASSUMPTIONS
 - BARRIERS
 - CONTROL
 - CROSS-CULTURAL COMPETENCE
 - HETEROGENEOUS
 - KNOWLEDGE
 - POWER
 - STABILITY
 - SYNERGIES
- RT
 - SOCIAL BEHAVIOR (ERIC)

INITIATIVES

- USE
 - PROJECTS

INNOVATION (ERIC)

- SN
 - The introduction of new ideas, methods, devices, etc. (Note: Use a more specific term if possible) (ERIC)
- BT
- RT
 - INNOVATION AND BUSINESS
 - BUSINESS (ERIC)
 - ECONOMIC PROBLEMS
 - ENTREPRENEURSHIP (ERIC)
 - EXACT SCIENCES
 - PROGRESS
 - TECHNOLOGICAL PROBLEMS

INNOVATION AND BUSINESS

- SN
 - IIS sector
- BT
- NT
 - SECTORS
 - BUSINESS (ERIC)
 - ENTREPRENEURSHIP (ERIC)

- RT
 - [INNOVATION \(ERIC\)](#)
 - [ECONOMIC PROBLEMS](#)
 - [EXACT SCIENCES](#)
 - [INTEGRATION AND IMPLEMENTATION SCIENCES](#)
 - [TECHNOLOGICAL PROBLEMS](#)

INSTITUTIONS

- SN
 - Large organisations, governmental, academic or health-focused in nature. (e.g. United Nationsl, Oxford University, Mass. General Hospital); DO NOT USE for "institutions" of marriage or other like references
- BT
 - [GROUPS](#)
- NT
 - [ACADEMIC INSTITUTIONS](#)

INTEGRATED ASSESSMENT

- SN
 - Method for accurately representing and analyzing real world problems, usually requiring interdisciplinary research; frequently a combination of modeling and participatory methods (conducting modeling exercises with stakeholders)
- BT
 - [METHODS \(ERIC\)](#)
- RT
 - [IMPLEMENTATION](#)
 - [INTEGRATION](#)
 - [INTEGRATIVE RESEARCH](#)
 - [INTEGRATIVE STUDIES](#)
 - [PARTICIPATORY METHODS](#)

INTEGRATION

- SN
 - For racial integration use [INTEGRATION \(SOCIAL\) \(ERIC\)](#)
 - Primary term in the field of IIS, denotes combination and interaction of activities, ideas, philosophies or research
- BT
 - [PROCESS-BASED ACTIVITIES](#)
- RT
 - [CROSS-FERTILISATION](#)
 - [FACILITATION](#)
 - [FACILITATION METHODS](#)
 - [FACILITATORS](#)
 - [IMPLEMENTATION](#)
 - [INTEGRATED ASSESSMENT](#)
 - [INTEGRATION AND IMPLEMENTATION SCIENCES](#)
 - [INTEGRATIVE RESEARCH](#)
 - [INTEGRATIVE STUDIES](#)
 - [INTERDISCIPLINARY APPROACH \(ERIC\)](#)
 - [INTERMEDIARIES](#)

INTEGRATION AND IMPLEMENTATION SCIENCES

- SN
 - 6 major IIS sciences: systems thinking, participatory methods, complexity science, diverse epistemologies, inter- and trans-disciplinary approaches and

- knowledge management
- 8 major IIS sectors where IIS are being applied: education, environment, health, innovation and business, international development, policy and government, risk and security, and society, human behaviour and culture
- Collection of approaches to research and practice contributing to more effective integration of theories, methods and best practices in order to facilitate better implementation in solving large scale complex problems
- DO NOT USE this term; select narrower terms;
- BT
 - **DOMAINS**
- RT
 - **COMPLEXITY SCIENCE**
 - **DIVERSE EPISTEMOLOGIES**
 - **EDUCATION (ERIC)**
 - **ENVIRONMENT**
 - **HEALTH (ERIC)**
 - **IMPLEMENTATION**
 - **INNOVATION AND BUSINESS**
 - **INTEGRATION**
 - **INTEGRATIVE STUDIES**
 - **INTERDISCIPLINARY APPROACH (ERIC)**
 - **INTERNATIONAL DEVELOPMENT**
 - **KNOWLEDGE MANAGEMENT**
 - **PARTICIPATORY METHODS**
 - **POLICY AND GOVERNMENT**
 - **RISK AND SECURITY**
 - **SOCIETY, HUMAN BEHAVIOUR AND CULTURE**
 - **SYSTEMS SCIENCE**
 - **SYSTEMS THINKING**
 - **TRANSDISCIPLINARY APPROACH**

INTEGRATIVE APPLIED RESEARCH

- USE
 - **INTEGRATIVE RESEARCH**

INTEGRATIVE RESEARCH

- SN
 - Integrative Applied Research was original name for Integration and Implementation Sciences. Integrative Research is current preferred term for research which integrates theory and methods from multiple disciplines.
- UF
 - **INTEGRATIVE APPLIED RESEARCH**
- BT
 - **RESEARCH (ERIC)**
- RT
 - **IMPLEMENTATION**
 - **INTEGRATED ASSESSMENT**
 - **INTEGRATION**
 - **INTEGRATIVE STUDIES**
 - **INTERDISCIPLINARY APPROACH (ERIC)**
 - **MULTIDISCIPLINARY APPROACH**
 - **TRANSDISCIPLINARY APPROACH**

INTEGRATIVE STUDIES

- SN
 - Academic field of study focused on integrating multiple disciplines
- BT

- RT
 - [INTELLECTUAL DISCIPLINES \(ERIC\)](#)
 - [ACADEMIC INSTITUTIONS](#)
 - [ACADEMIC THEORY](#)
 - [COMPLEX PROBLEMS](#)
 - [HIGHER EDUCATION \(ERIC\)](#)
 - [IMPLEMENTATION](#)
 - [INTEGRATED ASSESSMENT](#)
 - [INTEGRATION](#)
 - [INTEGRATION AND IMPLEMENTATION SCIENCES](#)
 - [INTEGRATIVE RESEARCH](#)
 - [INTERDISCIPLINARY APPROACH \(ERIC\)](#)
 - [MULTIDISCIPLINARY APPROACH](#)
 - [TRANSDISCIPLINARY APPROACH](#)

INTEGRATORS

- USE
 - [INTERMEDIARIES](#)

INTELLECTUAL DISCIPLINES (ERIC)

- SN
 - Areas of knowledge or instruction (ERIC)
- UF
 - [ACADEMIC AREAS](#)
 - [DISCIPLINES](#)
 - [FIELDS OF STUDY](#)
- BT
 - [DOMAINS](#)
- NT
 - [EXACT SCIENCES](#)
 - [HUMANITIES](#)
 - [INTEGRATIVE STUDIES](#)
 - [SOCIAL SCIENCES \(ERIC\)](#)
- RT
 - [ACADEMIC INSTITUTIONS](#)
 - [ACADEMIC THEORY](#)
 - [EDUCATION \(ERIC\)](#)
 - [HIGHER EDUCATION \(ERIC\)](#)
 - [INTERDISCIPLINARY APPROACH \(ERIC\)](#)
 - [MULTIDISCIPLINARY APPROACH](#)
 - [TRANSDISCIPLINARY APPROACH](#)

INTERDISCIPLINARY APPROACH (ERIC)

- SN
 - Processes and methodologies concerned with activity between disciplines; interdisciplinary research also usually results in an ability to publish in journals of both disciplines
- BT
 - [PROCESS-BASED ACTIVITIES](#)
- RT
 - [ACADEMIC THEORY](#)
 - [HIGHER EDUCATION \(ERIC\)](#)
 - [INTEGRATION](#)
 - [INTEGRATION AND IMPLEMENTATION SCIENCES](#)
 - [INTEGRATIVE RESEARCH](#)
 - [INTEGRATIVE STUDIES](#)
 - [INTELLECTUAL DISCIPLINES \(ERIC\)](#)
 - [MULTIDISCIPLINARY APPROACH](#)
 - [TRANSDISCIPLINARY APPROACH](#)

INTEREST GROUPS

- SN
 - Collection of individuals and/or organisations with common interests. May be informal (as opposed to "organisations" or "associations") or not active.
- UF
 - [ADVOCACY COALITIONS](#)
- BT
 - [GROUPS](#)

INTERMEDIARIES

- SN
 - Individuals or groups that facilitate, mediate and/or translate between one or more individuals or groups
- UF
 - [BOUNDARY SPANNERS](#)
 - [INTEGRATORS](#)
 - [KNOWLEDGE BROKERS](#)
- BT
 - [PEOPLE](#)
- RT
 - [ALTERNATIVE DISPUTE RESOLUTION](#)
 - [BOUNDARIES](#)
 - [CONFLICT RESOLUTION \(ERIC\)](#)
 - [FACILITATION](#)
 - [FACILITATION METHODS](#)
 - [FACILITATORS](#)
 - [IMPLEMENTATION](#)
 - [INTEGRATION](#)
 - [KNOWLEDGE MANAGEMENT](#)
 - [LAW](#)
 - [MEDIATION](#)
 - [MEDIATION THEORY](#)
 - [MEDIATORS](#)
 - [NEGOTIATION](#)
 - [PARTICIPATORY METHODS](#)
 - [PRINCIPLED NEGOTIATION](#)

INTERNATIONAL DEVELOPMENT

- SN
 - IIS sector
 - Sector concerned with growth activities at international level. Usually concerned with the development of "third world" or "developing" countries
- BT
 - [SECTORS](#)
- RT
 - [DEVELOPMENT \(ERIC\)](#)
 - [ECONOMIC PROBLEMS](#)
 - [GEOGRAPHIC SCALE](#)
 - [GOVERNMENT \(ADMINISTRATIVE BODY\) \(ERIC\)](#)
 - [INTEGRATION AND IMPLEMENTATION SCIENCES](#)
 - [LARGE SCALE PROBLEMS](#)
 - [POLICY AND GOVERNMENT](#)
 - [PROGRESS](#)
 - [PUBLIC ADMINISTRATION \(ERIC\)](#)
 - [PUBLIC POLICY \(ERIC\)](#)
 - [WORLD PROBLEMS \(ERIC\)](#)

INTERPRETIVIST THEORY

- SN
 - An approach to social science research that focuses on value and meaning as criteria for evaluation

- BT
 - THEORIES (ERIC)
- RT
 - CONSTRUCTIVISM (LEARNING) (ERIC)
 - CRITICAL THEORY (ERIC)
 - DIVERSE EPISTEMOLOGIES
 - EPISTEMOLOGY (ERIC)
 - FEMINIST THEORY
 - POSITIVIST THEORY
 - POSTMODERNISM (ERIC)

[Top](#)

KNOWLEDGE

- SN
 - Familiarity, awareness, or understanding gained through experience or study. The sum or range of what has been learned or discovered (Use narrower term if possible)
- BT
 - INDIVIDUAL AND GROUP CONDITIONS
- NT
 - CODIFIED KNOWLEDGE
 - COLLECTIVE KNOWLEDGE
 - EXISTING KNOWLEDGE
 - EXPERIENTIAL KNOWLEDGE
 - EXPERT KNOWLEDGE
 - INDEGENOUS KNOWLEDGE (ERIC)
- RT
 - ASSUMPTIONS
 - COGNITIVE SCIENCE
 - DIVERSE EPISTEMOLOGIES
 - EPISTEMOLOGY (ERIC)
 - KNOWLEDGE MANAGEMENT
 - SOCIOLOGY (ERIC)

KNOWLEDGE BROKERS

- USE
 - INTERMEDIARIES

KNOWLEDGE MANAGEMENT

- SN
 - Organisation, coordination, and dissemination of knowledge and information contained in organisations and groups with the express goal of improving organisation/group outcomes
- BT
 - SOCIAL SCIENCES (ERIC)
- RT
 - CODIFIED KNOWLEDGE
 - COLLECTIVE KNOWLEDGE
 - EXISTING KNOWLEDGE
 - EXPERIENTIAL KNOWLEDGE
 - EXPERT KNOWLEDGE
 - FACILITATION
 - FACILITATION METHODS
 - FACILITATORS
 - INDEGENOUS KNOWLEDGE (ERIC)
 - INTEGRATION AND IMPLEMENTATION SCIENCES
 - INTERMEDIARIES
 - KNOWLEDGE

[Top](#)

LARGE SCALE PROBLEMS

- BT
 - PROBLEMS
- RT
 - COMPLEX PROBLEMS
 - DEVELOPMENT (ERIC)
 - ECONOMIC PROBLEMS
 - ENVIRONMENTAL PROBLEMS
 - GEOGRAPHIC SCALE
 - INTERNATIONAL DEVELOPMENT
 - LOCAL PROBLEMS
 - NATIONAL PROBLEMS
 - POLITICAL PROBLEMS
 - PRACTICAL PROBLEMS
 - PROBLEM DEFINITION
 - PUBLIC POLICY (ERIC)
 - REGIONAL PROBLEMS
 - SCALABILITY
 - TECHNOLOGICAL PROBLEMS
 - TEMPORAL SCALE
 - UNCERTAINTY
 - WORLD PROBLEMS (ERIC)

LAW

- BT
 - SOCIAL SCIENCES (ERIC)
- NT
 - ALTERNATIVE DISPUTE RESOLUTION
 - MEDIATION
 - NEGOTIATION
 - PRINCIPLED NEGOTIATION
- RT
 - CONFLICT RESOLUTION (ERIC)
 - GOVERNMENT (ADMINISTRATIVE BODY) (ERIC)
 - IMPLEMENTATION
 - INTERMEDIARIES
 - MEDIATION THEORY
 - MEDIATORS
 - POLICY AND GOVERNMENT
 - POLICY INSTRUMENTS
 - POLICY MAKERS
 - POLITICAL PROBLEMS
 - PUBLIC ADMINISTRATION (ERIC)

LOCAL PROBLEMS

- SN
 - Problems confined to an immediate area; usually at community, municipal or metropolitan level, but also locally within commercial enterprise
- BT
 - PROBLEMS
- RT
 - ECONOMIC PROBLEMS
 - ENVIRONMENTAL PROBLEMS
 - GOVERNMENT (ADMINISTRATIVE BODY) (ERIC)
 - INDEGENOUS KNOWLEDGE (ERIC)
 - LARGE SCALE PROBLEMS
 - NATIONAL PROBLEMS
 - POLICY AND GOVERNMENT
 - POLICY INSTRUMENTS
 - POLICY MAKERS
 - POLITICAL PROBLEMS
 - PRACTICAL PROBLEMS
 - PROBLEM DEFINITION

- [PUBLIC ADMINISTRATION \(ERIC\)](#)
- [PUBLIC POLICY \(ERIC\)](#)
- [REGIONAL PROBLEMS](#)
- [TECHNOLOGICAL PROBLEMS](#)
- [WORLD PROBLEMS \(ERIC\)](#)

LOCATIONS

- NT
 - [NATIONS](#)
 - [PROVINCES](#)
 - [STATES](#)

[Top](#)

MARGINALISATION

- SN
 - Experience of being impeded in access to activity, benefit, or opportunity to express/contribute opinion; usually used in reference to less-advantaged social groups
- BT
 - [PROCESSES STRUCTURES](#)
- RT
 - [ADVANTAGED \(ERIC\)](#)
 - [EXCLUSION](#)
 - [INCLUSION](#)
 - [POWER](#)

MEDIATION

- SN
 - Process of facilitating discussion between disputing parties such that they reconciliate, settlement or compromise without judicial intervention or arbitration
- BT
 - [LAW](#)
- RT
 - [ALTERNATIVE DISPUTE RESOLUTION](#)
 - [CONFLICT RESOLUTION \(ERIC\)](#)
 - [FACILITATION](#)
 - [FACILITATION METHODS](#)
 - [FACILITATORS](#)
 - [INTERMEDIARIES](#)
 - [MEDIATION THEORY](#)
 - [MEDIATORS](#)
 - [NEGOTIATION](#)
 - [PARTICIPATORY METHODS](#)
 - [PRINCIPLED NEGOTIATION](#)

MEDIATION THEORY

- SN
 - Conceptual foundation of MEDIATION, characterized by a focus on reaching agreement and consensus in resolving conflicts
- BT
 - [THEORIES \(ERIC\)](#)
- RT
 - [ALTERNATIVE DISPUTE RESOLUTION](#)
 - [CONFLICT RESOLUTION \(ERIC\)](#)
 - [FACILITATION](#)
 - [FACILITATION METHODS](#)
 - [FACILITATORS](#)

- [INTERMEDIARIES](#)
- [LAW](#)
- [MEDIATION](#)
- [MEDIATORS](#)
- [NEGOTIATION](#)
- [PARTICIPATORY METHODS](#)
- [PRINCIPLED NEGOTIATION](#)

MEDIATORS

- SN
 - Individuals presiding over processes which parties resolve conflict by mutual agreement
- BT
 - [PEOPLE](#)
- RT
 - [ALTERNATIVE DISPUTE RESOLUTION](#)
 - [CONFLICT RESOLUTION \(ERIC\)](#)
 - [FACILITATION](#)
 - [FACILITATION METHODS](#)
 - [FACILITATORS](#)
 - [INTERMEDIARIES](#)
 - [LAW](#)
 - [MEDIATION](#)
 - [MEDIATION THEORY](#)
 - [NEGOTIATION](#)
 - [PARTICIPATORY METHODS](#)
 - [PRINCIPLED NEGOTIATION](#)

METHODS (ERIC)

- SN
 - Systematic approaches to the conduct of an operation or process -- includes steps of procedure, application of techniques, systems of reasoning or analysis, and the modes of inquiry employed by a science or discipline (ERIC)
- UF
 - [COLLABORATIVE METHODS](#)
- BT
 - [RESEARCH-BASED ACTIVITIES](#)
- NT
 - [ANALYSIS](#)
 - [ANALYTICAL THINKING](#)
 - [CRITICAL SYSTEMS THINKING](#)
 - [FACILITATION METHODS](#)
 - [INTEGRATED ASSESSMENT](#)
 - [PARTICIPATORY METHODS](#)
 - [POLICY INSTRUMENTS](#)
 - [QUALITATIVE METHODS](#)
 - [STATISTICAL ANALYSIS \(ERIC\)](#)
 - [SYSTEMS THINKING](#)

MULTIDISCIPLINARY APPROACH

- SN
 - Processes and methodologies concerned with activity of more than two disciplines; multidisciplinary research may be a composite of contributions from experts in each discipline rather than a fully integrated result
- BT
 - [PROCESS-BASED ACTIVITIES](#)
- RT
 - [ACADEMIC THEORY](#)
 - [HIGHER EDUCATION \(ERIC\)](#)

- [INTEGRATIVE RESEARCH](#)
- [INTEGRATIVE STUDIES](#)
- [INTELLECTUAL DISCIPLINES \(ERIC\)](#)
- [INTERDISCIPLINARY APPROACH \(ERIC\)](#)
- [TRANSDISCIPLINARY APPROACH](#)

[Top](#)

NATIONAL PROBLEMS

- SN
 - Problems at the level of sovereignty/nations
- BT
 - [PROBLEMS](#)
- RT
 - [COMPLEX PROBLEMS](#)
 - [ECONOMIC PROBLEMS](#)
 - [ENVIRONMENTAL PROBLEMS](#)
 - [GOVERNMENT \(ADMINISTRATIVE BODY\) \(ERIC\)](#)
 - [LARGE SCALE PROBLEMS](#)
 - [LOCAL PROBLEMS](#)
 - [POLICY AND GOVERNMENT](#)
 - [POLICY INSTRUMENTS](#)
 - [POLICY MAKERS](#)
 - [POLITICAL PROBLEMS](#)
 - [PRACTICAL PROBLEMS](#)
 - [PROBLEM DEFINITION](#)
 - [PUBLIC ADMINISTRATION \(ERIC\)](#)
 - [PUBLIC POLICY \(ERIC\)](#)
 - [REGIONAL PROBLEMS](#)
 - [TECHNOLOGICAL PROBLEMS](#)
 - [WORLD PROBLEMS \(ERIC\)](#)

NATIONS

- SN
 - Sovereign entities; political entities; usually used for UN recognized entities, but may also be used to refer to indigenous groups recognized by governments (e.g. Sioux Nation, Oglala Nation)
- BT
 - [LOCATIONS](#)
- RT
 - [PROVINCES](#)
 - [STATES](#)

NEGOTIATION

- SN
 - Discussion between parties to reach agreement on a contract or plan of action or resolution; frequently used to characterise collective bargaining in employer/union contracts
- BT
 - [LAW](#)
- RT
 - [ALTERNATIVE DISPUTE RESOLUTION](#)
 - [FACILITATION](#)
 - [FACILITATION METHODS](#)
 - [FACILITATORS](#)
 - [INTERMEDIARIES](#)
 - [MEDIATION](#)
 - [MEDIATION THEORY](#)
 - [MEDIATORS](#)
 - [PARTICIPATORY METHODS](#)
 - [POWER](#)
 - [PRINCIPLED NEGOTIATION](#)

NONLINEAR DYNAMICS

- SN
 - Characteristic behaviour of agents in complex systems; no predictable, linear, cause and effect behaviour
- BT
 - [COMPLEXITY SCIENCE](#)
- RT
 - [COMPLEX PROBLEMS](#)
 - [COMPLEX SYSTEMS](#)
 - [COMPLEXITY THEORY](#)
 - [EMERGENCE](#)
 - [IMPERFECTION](#)
 - [SYSTEM DYNAMICS](#)
 - [SYSTEMS SCIENCE](#)
 - [SYSTEMS THEORY](#)
 - [SYSTEMS THINKING](#)
 - [TRANSFORMATION](#)
 - [UNCERTAINTY](#)

[Top](#)

ORGANISATION

- SN
 - For description of process, structure, condition of operation, as in "good organisation is important in large projects"
- BT
 - [PROCESSES STRUCTURES](#)
- RT
 - [PROBLEM DEFINITION](#)
 - [PROBLEMS](#)

ORGANISATIONS

- SN
 - Broadest term for formally organised groups; includes commerical, academic, advocacy, community, recreational, governmental, etc. Use Narrower Term
 - Use ERIC for specific organisations.
- BT
 - [GROUPS](#)
- RT
 - [ASSOCIATIONS](#)

[Top](#)

PARTICIPATORY METHODS

- SN
 - IIS approach
 - Processes and activities designed to encourage, facilitate and strengthen involvement of stakeholders in decision-making or conflict resolution
- BT
 - [METHODS \(ERIC\)](#)
- RT
 - [ALTERNATIVE DISPUTE RESOLUTION](#)
 - [CONFLICT RESOLUTION \(ERIC\)](#)
 - [FACILITATION](#)
 - [FACILITATION METHODS](#)
 - [FACILITATORS](#)
 - [INTEGRATED ASSESSMENT](#)
 - [INTEGRATION AND IMPLEMENTATION SCIENCES](#)

- INTERMEDIARIES
- MEDIATION
- MEDIATION THEORY
- MEDIATORS
- NEGOTIATION
- PRINCIPLED NEGOTIATION

PARTNERSHIPS

- SN
 - Formal cooperative relationships between individuals or groups
- BT
 - PROCESSES STRUCTURES
- RT
 - ALLIANCES
 - COOPERATION (ERIC)
 - FRAGMENTATION

PATTERNS

- SN
 - A consistent, characteristic form, style, or method
- BT
 - PROCESSES STRUCTURES
- RT
 - CYCLES
 - STABILITY

PEOPLE

- BT
 - AGENTS
- NT
 - FACILITATORS
 - INTERMEDIARIES
 - MEDIATORS
 - POLICY MAKERS
 - PRACTITIONERS
 - RESEARCHERS (ERIC)

POLICY AND GOVERNMENT

- SN
 - IIS sector
- BT
 - SECTORS
- NT
 - GOVERNMENT (ADMINISTRATIVE BODY) (ERIC)
 - PUBLIC ADMINISTRATION (ERIC)
 - PUBLIC POLICY (ERIC)
- RT
 - DEVELOPMENT (ERIC)
 - INTEGRATION AND IMPLEMENTATION SCIENCES
 - INTERNATIONAL DEVELOPMENT
 - LAW
 - LOCAL PROBLEMS
 - NATIONAL PROBLEMS
 - POLICY INSTRUMENTS
 - POLICY MAKERS
 - POLITICAL PROBLEMS
 - REGIONAL PROBLEMS
 - RESEARCH POLICY RELATIONSHIP
 - WORLD PROBLEMS (ERIC)

POLICY INSTRUMENTS

- SN
 - Administrative tools designed to achieve a desired goal by indirect effect. Usually refers to government-level activity (e.g. laws, regulations, tax incentives)
- BT
 - [METHODS \(ERIC\)](#)
- RT
 - [GOVERNMENT \(ADMINISTRATIVE BODY\) \(ERIC\)](#)
 - [LAW](#)
 - [LOCAL PROBLEMS](#)
 - [NATIONAL PROBLEMS](#)
 - [POLICY AND GOVERNMENT](#)
 - [POLICY MAKERS](#)
 - [POLITICAL PROBLEMS](#)
 - [PUBLIC ADMINISTRATION \(ERIC\)](#)
 - [PUBLIC POLICY \(ERIC\)](#)
 - [REGIONAL PROBLEMS](#)
 - [REGULATION](#)
 - [RESEARCH POLICY RELATIONSHIP](#)

POLICY MAKERS

- SN
 - Individuals who establish formal policy; usually refers to government-related (e.g. legislators, government administrators/regulators); also can refer to corporate leadership when executing similar function
- BT
 - [PEOPLE](#)
- RT
 - [DEVELOPMENT \(ERIC\)](#)
 - [GOVERNMENT \(ADMINISTRATIVE BODY\) \(ERIC\)](#)
 - [LAW](#)
 - [LOCAL PROBLEMS](#)
 - [NATIONAL PROBLEMS](#)
 - [POLICY AND GOVERNMENT](#)
 - [POLICY INSTRUMENTS](#)
 - [POLITICAL PROBLEMS](#)
 - [PRACTITIONERS](#)
 - [PUBLIC ADMINISTRATION \(ERIC\)](#)
 - [PUBLIC POLICY \(ERIC\)](#)
 - [REGIONAL PROBLEMS](#)
 - [REGULATION](#)
 - [RESEARCH POLICY RELATIONSHIP](#)
 - [RESEARCHERS \(ERIC\)](#)

POLITICAL PROBLEMS

- SN
 - Problems concerning the power and influence of policy makers and stakeholders
- BT
 - [PROBLEMS](#)
- RT
 - [COMPLEX PROBLEMS](#)
 - [ECONOMIC PROBLEMS](#)
 - [ENVIRONMENTAL PROBLEMS](#)
 - [GOVERNMENT \(ADMINISTRATIVE BODY\) \(ERIC\)](#)
 - [LARGE SCALE PROBLEMS](#)
 - [LAW](#)
 - [LOCAL PROBLEMS](#)
 - [NATIONAL PROBLEMS](#)
 - [POLICY AND GOVERNMENT](#)
 - [POLICY INSTRUMENTS](#)
 - [POLICY MAKERS](#)

- POWER
- PRACTICAL PROBLEMS
- PROBLEM DEFINITION
- REGIONAL PROBLEMS
- TECHNOLOGICAL PROBLEMS
- WORLD PROBLEMS (ERIC)

POSITIVIST THEORY

- SN
 - Perspective based fundamentally on discovery of natural laws via experimentation and hinged on ability to predict events, with the further intention of controlling them. Theory which POSTMODERNISM is a reaction against
- BT
- RT
 - THEORIES (ERIC)
 - CONSTRUCTIVISM (LEARNING) (ERIC)
 - CRITICAL THEORY (ERIC)
 - DIVERSE EPISTEMOLOGIES
 - EPISTEMOLOGY (ERIC)
 - FEMINIST THEORY
 - INTERPRETIVIST THEORY
 - POSTMODERNISM (ERIC)

POSTMODERNISM (ERIC)

- SN
 - the postmodern period or approach is characterized by a relativistic or pluralistic sense that truth or reality is dependent on specific context or individual perspective (ERIC) Antonym of POSITIVIST THEORY
- BT
- RT
 - THEORIES (ERIC)
 - CONSTRUCTIVISM (LEARNING) (ERIC)
 - CRITICAL THEORY (ERIC)
 - DIVERSE EPISTEMOLOGIES
 - EPISTEMOLOGY (ERIC)
 - FEMINIST THEORY
 - INTERPRETIVIST THEORY
 - POSITIVIST THEORY

POWER

- SN
 - The ability or official capacity to exercise control; authority; or influence by force or coercion
- BT
- RT
 - INDIVIDUAL AND GROUP CONDITIONS
 - ADVANTAGED (ERIC)
 - CONTROL
 - EXCLUSION
 - HIERARCHY
 - INCLUSION
 - MARGINALISATION
 - NEGOTIATION
 - POLITICAL PROBLEMS
 - PRINCIPLED NEGOTIATION

PRACTICAL APPLICATION

- USE
 - PRACTICE

PRACTICAL PROBLEMS

- SN
 - Problems concerning implementation (technical, logistical, temporal, scale, etc.)
- BT
 - PROBLEMS
- RT
 - COMPLEX PROBLEMS
 - ECONOMIC PROBLEMS
 - ENVIRONMENTAL PROBLEMS
 - IMPLEMENTATION
 - LARGE SCALE PROBLEMS
 - LOCAL PROBLEMS
 - NATIONAL PROBLEMS
 - POLITICAL PROBLEMS
 - PRACTITIONERS
 - PROBLEM DEFINITION
 - REGIONAL PROBLEMS
 - RISK AND SECURITY
 - TECHNOLOGICAL PROBLEMS
 - WORLD PROBLEMS (ERIC)

PRACTICE

- SN
 - Activity conducted in the context of daily human life, industry and problems. As opposed to RESEARCH.
- UF
 - APPLICATION
 - PRACTICAL APPLICATION
- BT
 - ACTIVITIES (ERIC)
- NT
 - GOAL-BASED ACTIVITIES
 - PROCESS-BASED ACTIVITIES
- RT
 - IMPLEMENTATION
 - PRACTITIONERS
 - RESEARCH PRACTICE RELATIONSHIP

PRACTITIONERS

- SN
 - Individuals applying research and knowledge in practice (daily social life) (e.g. commercial enterprise, service provision, industry, etc.)
- BT
 - PEOPLE
- RT
 - IMPLEMENTATION
 - POLICY MAKERS
 - PRACTICAL PROBLEMS
 - PRACTICE
 - RESEARCH PRACTICE RELATIONSHIP
 - RESEARCHERS (ERIC)

PRINCIPLED NEGOTIATION

- SN
 - Also called "interest-based negotiation"; characterized by focus on openly addressing interests of both parties in order to reach consensus, rather than by concealing agendas in order to gain competitive advantage
- BT

- RT
 - LAW
 - ALTERNATIVE DISPUTE RESOLUTION
 - CONFLICT RESOLUTION (ERIC)
 - FACILITATION
 - FACILITATION METHODS
 - FACILITATORS
 - INTERMEDIARIES
 - MEDIATION
 - MEDIATION THEORY
 - MEDIATORS
 - NEGOTIATION
 - PARTICIPATORY METHODS
 - POWER

PROBLEM DEFINITION

- SN
 - Process of identifying the exact nature of a particular problem. A fundamental issue in complex problems is determining what exactly the problem is to be solved.
- BT
 - PROCESS-BASED ACTIVITIES
- RT
 - COMPLEX PROBLEMS
 - ECONOMIC PROBLEMS
 - ENVIRONMENTAL PROBLEMS
 - LARGE SCALE PROBLEMS
 - LOCAL PROBLEMS
 - NATIONAL PROBLEMS
 - ORGANISATION
 - POLITICAL PROBLEMS
 - PRACTICAL PROBLEMS
 - PROBLEMS
 - REGIONAL PROBLEMS
 - RISK AND SECURITY
 - SOLUTIONS
 - TECHNOLOGICAL PROBLEMS
 - WORLD PROBLEMS (ERIC)

PROBLEMS

- BT
 - CONDITIONS
- NT
 - COMPLEX PROBLEMS
 - ECONOMIC PROBLEMS
 - ENVIRONMENTAL PROBLEMS
 - LARGE SCALE PROBLEMS
 - LOCAL PROBLEMS
 - NATIONAL PROBLEMS
 - POLITICAL PROBLEMS
 - PRACTICAL PROBLEMS
 - REGIONAL PROBLEMS
 - TECHNOLOGICAL PROBLEMS
 - WORLD PROBLEMS (ERIC)
- RT
 - ORGANISATION
 - PROBLEM DEFINITION
 - SOLUTIONS

PROCESS-BASED ACTIVITIES

- SN
 - Includes activities and activity based concepts concerned with particular process (e.g. integration,

collaboration, planning, mediation, management)

- BT
 - PRACTICE
- NT
 - BEST PRACTICES
 - COOPERATION (ERIC)
 - CROSS-FERTILISATION
 - CULTURE MAPPING
 - FACILITATION
 - IMPLEMENTATION
 - INTEGRATION
 - INTERDISCIPLINARY APPROACH (ERIC)
 - MULTIDISCIPLINARY APPROACH
 - PROBLEM DEFINITION
 - STRATEGIES
 - TRANSDISCIPLINARY APPROACH
 - TRANSITION

PROCESSES STRUCTURES

- BT
 - CONDITIONS
- NT
 - ALLIANCES
 - BOUNDARIES
 - COALESCENCE
 - CYCLES
 - EXCLUSION
 - FEASABILITY
 - FRAGMENTATION
 - GEOGRAPHIC SCALE
 - HIERARCHY
 - IMPERFECTION
 - INCLUSION
 - MARGINALISATION
 - ORGANISATION
 - PARTNERSHIPS
 - PATTERNS
 - PROGRESS
 - REGULATION
 - REWARDS (ERIC)
 - SCALABILITY
 - TEMPORAL SCALE
 - TRANSFORMATION
- RT
 - SOCIAL BEHAVIOR (ERIC)

PROGRESS

- SN
 - Steady improvement, as of a society or civilization
- BT
 - PROCESSES STRUCTURES
- RT
 - CYCLES
 - DEVELOPMENT (ERIC)
 - INNOVATION (ERIC)
 - INTERNATIONAL DEVELOPMENT
 - TRANSITION

PROJECTS

- SN
 - Structured goal-based activities occurring usually within a specific time-frame and scope
- UF

- BT
 - [INITIATIVES](#)
 - [GOAL-BASED ACTIVITIES](#)

PROVINCES

- SN
 - Refers to two or more of secondary geographic units (below nation or country) in most countries (except where "STATES" is used)
- BT
 - [LOCATIONS](#)
- RT
 - [NATIONS](#)
 - [STATES](#)

PUBLIC ADMINISTRATION (ERIC)

- SN
 - The organization and management of government or community affairs (ERIC)
- BT
 - [POLICY AND GOVERNMENT](#)
- RT
 - [DEVELOPMENT \(ERIC\)](#)
 - [GOVERNMENT \(ADMINISTRATIVE BODY\) \(ERIC\)](#)
 - [INTERNATIONAL DEVELOPMENT](#)
 - [LAW](#)
 - [LOCAL PROBLEMS](#)
 - [NATIONAL PROBLEMS](#)
 - [POLICY INSTRUMENTS](#)
 - [POLICY MAKERS](#)
 - [PUBLIC POLICY \(ERIC\)](#)
 - [REGIONAL PROBLEMS](#)
 - [WORLD PROBLEMS \(ERIC\)](#)

PUBLIC POLICY (ERIC)

- SN
 - Governing principles that serve as guidelines or rules for decision-making and action as embodied in legislative and judicial enactments (ERIC)
- BT
 - [POLICY AND GOVERNMENT](#)
- RT
 - [DEVELOPMENT \(ERIC\)](#)
 - [INTERNATIONAL DEVELOPMENT](#)
 - [LARGE SCALE PROBLEMS](#)
 - [LOCAL PROBLEMS](#)
 - [NATIONAL PROBLEMS](#)
 - [POLICY INSTRUMENTS](#)
 - [POLICY MAKERS](#)
 - [PUBLIC ADMINISTRATION \(ERIC\)](#)
 - [REGIONAL PROBLEMS](#)
 - [WORLD PROBLEMS \(ERIC\)](#)

[Top](#)

QUALITATIVE METHODS

- SN
 - Methods associated with producing QUALITATIVE RESEARCH; often include interviews, document analysis, and other non-numerical methods.
- BT
 - [METHODS \(ERIC\)](#)

- RT
 - [ANALYSIS](#)
 - [ANALYTICAL THINKING](#)
 - [QUALITATIVE RESEARCH \(ERIC\)](#)
 - [QUANTITATIVE RESEARCH](#)
 - [STATISTICAL ANALYSIS \(ERIC\)](#)

QUALITATIVE RESEARCH (ERIC)

- SN
 - Research providing detailed narrative descriptions and explanations of phenomena investigated, with lesser emphasis given to numerical quantifications (ERIC)
- BT
 - [RESEARCH \(ERIC\)](#)
- RT
 - [ANALYSIS](#)
 - [QUALITATIVE METHODS](#)
 - [QUANTITATIVE RESEARCH](#)
 - [RESEARCHERS \(ERIC\)](#)
 - [STATISTICAL ANALYSIS \(ERIC\)](#)

QUANTITATIVE METHODS

- USE
 - [STATISTICAL ANALYSIS \(ERIC\)](#)

QUANTITATIVE RESEARCH

- SN
 - Research conducted to produce numerical results using STATISTICAL ANALYSIS (quantitative methods)
- BT
 - [RESEARCH \(ERIC\)](#)
- RT
 - [ANALYSIS](#)
 - [QUALITATIVE METHODS](#)
 - [QUALITATIVE RESEARCH \(ERIC\)](#)
 - [RESEARCHERS \(ERIC\)](#)
 - [STATISTICAL ANALYSIS \(ERIC\)](#)

[Top](#)

REGIONAL PROBLEMS

- SN
 - Problems within an area larger than a metropolis, but less than a nation); usually geographic region, but can apply to disciplinary "regions"
- BT
 - [PROBLEMS](#)
- RT
 - [COMPLEX PROBLEMS](#)
 - [ECONOMIC PROBLEMS](#)
 - [ENVIRONMENTAL PROBLEMS](#)
 - [GOVERNMENT \(ADMINISTRATIVE BODY\) \(ERIC\)](#)
 - [INDEGENOUS KNOWLEDGE \(ERIC\)](#)
 - [LARGE SCALE PROBLEMS](#)
 - [LOCAL PROBLEMS](#)
 - [NATIONAL PROBLEMS](#)
 - [POLICY AND GOVERNMENT](#)
 - [POLICY INSTRUMENTS](#)
 - [POLICY MAKERS](#)
 - [POLITICAL PROBLEMS](#)
 - [PRACTICAL PROBLEMS](#)

- [PROBLEM DEFINITION](#)
- [PUBLIC ADMINISTRATION \(ERIC\)](#)
- [PUBLIC POLICY \(ERIC\)](#)
- [TECHNOLOGICAL PROBLEMS](#)
- [WORLD PROBLEMS \(ERIC\)](#)

REGULATION

- SN
 - Restriction on activity as imposed by government policy (e.g. environmental regulation, energy regulation, trade regulation); for regulation as part of feedback mechanisms in systems, use [SYSTEMS DYNAMICS](#)
- BT
 - [PROCESSES STRUCTURES](#)
- RT
 - [POLICY INSTRUMENTS](#)
 - [POLICY MAKERS](#)

RESEARCH (ERIC)

- SN
 - Systematic investigation, collection, and analysis of data to reach conclusions, estimate effects, or test hypotheses (Note: Use a more specific term if possible) (ERIC)
- UF
 - [COLLABORATIVE RESEARCH](#)
- BT
 - [RESEARCH-BASED ACTIVITIES](#)
- NT
 - [INTEGRATIVE RESEARCH](#)
 - [QUALITATIVE RESEARCH \(ERIC\)](#)
 - [QUANTITATIVE RESEARCH](#)
 - [RESEARCH POLICY RELATIONSHIP](#)
 - [RESEARCH PRACTICE RELATIONSHIP](#)

RESEARCH POLICY RELATIONSHIP

- BT
 - [RESEARCH \(ERIC\)](#)
- RT
 - [POLICY AND GOVERNMENT](#)
 - [POLICY INSTRUMENTS](#)
 - [POLICY MAKERS](#)
 - [RESEARCH PRACTICE RELATIONSHIP](#)
 - [RESEARCHERS \(ERIC\)](#)

RESEARCH PRACTICE RELATIONSHIP

- BT
 - [RESEARCH \(ERIC\)](#)
- RT
 - [PRACTICE](#)
 - [PRACTITIONERS](#)
 - [RESEARCH POLICY RELATIONSHIP](#)
 - [RESEARCHERS \(ERIC\)](#)

RESEARCH-BASED ACTIVITIES

- BT
 - [ACTIVITIES \(ERIC\)](#)
- NT
 - [METHODS \(ERIC\)](#)

- [RESEARCH \(ERIC\)](#)
- [THEORIES \(ERIC\)](#)

RESEARCHERS (ERIC)

- SN
 - Individuals conducting formal inquiry into nature of structures and processes and/or collecting data and information in support of decision making
- BT
 - [PEOPLE](#)
- RT
 - [POLICY MAKERS](#)
 - [PRACTITIONERS](#)
 - [QUALITATIVE RESEARCH \(ERIC\)](#)
 - [QUANTITATIVE RESEARCH](#)
 - [RESEARCH POLICY RELATIONSHIP](#)
 - [RESEARCH PRACTICE RELATIONSHIP](#)

REWARD SYSTEMS

- USE
 - [REWARDS \(ERIC\)](#)

REWARDS (ERIC)

- UF
 - [REWARD SYSTEMS](#)
- BT
 - [PROCESSES STRUCTURES](#)

RISK AND SECURITY

- SN
 - IIS sector; includes both financial and physical risk and security (e.g. economic markets, insurance, terrorism)
- BT
 - [SECTORS](#)
- NT
 - [CRITICAL SYSTEMS](#)
 - [RISK MANAGEMENT \(ERIC\)](#)
 - [SECURITY](#)
- RT
 - [COMPLEX PROBLEMS](#)
 - [INTEGRATION AND IMPLEMENTATION SCIENCES](#)
 - [PRACTICAL PROBLEMS](#)
 - [PROBLEM DEFINITION](#)
 - [TECHNOLOGICAL PROBLEMS](#)

RISK MANAGEMENT (ERIC)

- SN
 - Technique or profession of minimizing and preventing loss or harm to a business, institution, group, or individual, as through safety measures, the use of insurance, etc. (ERIC)
- BT
 - [RISK AND SECURITY](#)
- RT
 - [CRITICAL SYSTEMS](#)
 - [SECURITY](#)

[Top](#)

SCALABILITY

- SN
 - Ability of idea, activity, method to be utilized at larger or smaller scales
- BT
 - PROCESSES STRUCTURES
- RT
 - GEOGRAPHIC SCALE
 - LARGE SCALE PROBLEMS
 - TEMPORAL SCALE

SCHOLARS

- USE
 - RESEARCHERS (ERIC)

SECTORS

- BT
 - DOMAINS
- NT
 - EDUCATION (ERIC)
 - ENVIRONMENT
 - HEALTH (ERIC)
 - INNOVATION AND BUSINESS
 - INTERNATIONAL DEVELOPMENT
 - POLICY AND GOVERNMENT
 - RISK AND SECURITY
 - SOCIETY, HUMAN BEHAVIOUR AND CULTURE

SECURITY

- SN
 - Condition of protection from catastrophe or dramatic negative changes; applies to financial, human and societal (nationa) security
- BT
 - RISK AND SECURITY
- RT
 - CRITICAL SYSTEMS
 - RISK MANAGEMENT (ERIC)

SELF-ORGANISATION

- SN
 - Characteristic behaviour of entities and phenomena in complex systems
- BT
 - SYSTEMS SCIENCE
- RT
 - COALESCENCE
 - COMPLEX PROBLEMS
 - COMPLEX SYSTEMS
 - COMPLEXITY SCIENCE
 - COMPLEXITY THEORY
 - SYNERGIES
 - SYSTEM DYNAMICS
 - SYSTEMS THEORY
 - SYSTEMS THINKING
 - TRANSFORMATION

SOCIAL BEHAVIOR (ERIC)

- SN
 - Behavior influenced or controlled by other persons or by organized society (ERIC)
- BT
 - [SOCIETY, HUMAN BEHAVIOUR AND CULTURE](#)
- RT
 - [CULTURE \(ERIC\)](#)
 - [INDIVIDUAL AND GROUP CONDITIONS](#)
 - [PROCESSES STRUCTURES](#)
 - [SOCIETIES](#)
 - [SOCIOLOGY \(ERIC\)](#)

SOCIAL CONDITIONS

- BT
 - [CONDITIONS](#)
- NT
 - [CRITICAL MASS](#)

SOCIAL CONSTRUCTION THEORY

- USE
 - [CONSTRUCTIVISM \(LEARNING\) \(ERIC\)](#)

SOCIAL IMPROVEMENT

- SN
 - Change, transformation and transition of societal conditions and infrastructure such that the majority of the social group achieves a higher quality of life
- BT
 - [GOAL-BASED ACTIVITIES](#)
- RT
 - [SOCIETIES](#)

SOCIAL SCIENCES (ERIC)

- BT
 - [INTELLECTUAL DISCIPLINES \(ERIC\)](#)
- NT
 - [COGNITIVE SCIENCE](#)
 - [HIGHER EDUCATION \(ERIC\)](#)
 - [KNOWLEDGE MANAGEMENT](#)
 - [LAW](#)
 - [SOCIOLOGY \(ERIC\)](#)

SOCIETIES

- BT
 - [GROUPS](#)
- RT
 - [SOCIAL BEHAVIOR \(ERIC\)](#)
 - [SOCIAL IMPROVEMENT](#)
 - [SOCIETY, HUMAN BEHAVIOUR AND CULTURE](#)
 - [SOCIOLOGY \(ERIC\)](#)

SOCIETY, HUMAN BEHAVIOUR AND CULTURE

- SN
 - IIS sector; activities concerning social endeavors, behaviours and heritage (e.g. sports, welfare, racism)
- BT
 - [SECTORS](#)
- NT

- RT
 - [CULTURE \(ERIC\)](#)
 - [SOCIAL BEHAVIOR \(ERIC\)](#)
 - [INTEGRATION AND IMPLEMENTATION SCIENCES](#)
 - [SOCIETIES](#)
 - [SOCIOLOGY \(ERIC\)](#)

SOCIOLOGY (ERIC)

- SN
 - Study of social forces and phenomena and their effect on individuals and groups
- BT
 - [SOCIAL SCIENCES \(ERIC\)](#)
- RT
 - [CULTURE \(ERIC\)](#)
 - [DIVERSE EPISTEMOLOGIES](#)
 - [EPISTEMOLOGY \(ERIC\)](#)
 - [KNOWLEDGE](#)
 - [SOCIAL BEHAVIOR \(ERIC\)](#)
 - [SOCIETIES](#)
 - [SOCIETY, HUMAN BEHAVIOUR AND CULTURE](#)

SOLUTIONS

- SN
 - Actions resulting in the elimination of problems
- BT
 - [GOAL-BASED ACTIVITIES](#)
- RT
 - [PROBLEM DEFINITION](#)
 - [PROBLEMS](#)

STABILITY

- SN
 - Condition of consistent patterns of behaviour; does not preclude change (e.g. cycles are stable change)
- BT
 - [INDIVIDUAL AND GROUP CONDITIONS](#)
- RT
 - [CONTROL](#)
 - [CYCLES](#)
 - [PATTERNS](#)
 - [TRANSFORMATION](#)
 - [TRANSITION](#)

STATES

- SN
 - Refers to two or more of the 50 states and provinces of the United States, Mexico, etc., otherwise use PROVINCES; for "Nation States" use NATIONS; DO NOT USE for "states of being" (refer to ERIC for more specific term)
- BT
 - [LOCATIONS](#)
- RT
 - [NATIONS](#)
 - [PROVINCES](#)

STATISTICAL ANALYSIS (ERIC)

- SN
 - Application of statistical processes and theory to the

compilation, presentation, discussion, and interpretation of numerical data (Note: Use a more specific term if possible) (ERIC)

- UF
- BT
- RT
 - [QUANTITATIVE METHODS](#)
 - [METHODS \(ERIC\)](#)
 - [ANALYSIS](#)
 - [ANALYTICAL THINKING](#)
 - [QUALITATIVE METHODS](#)
 - [QUALITATIVE RESEARCH \(ERIC\)](#)
 - [QUANTITATIVE RESEARCH](#)

STRATEGIES

- SN
 - Plans or methods designed to achieve a desired result
- BT
 - [PROCESS-BASED ACTIVITIES](#)

SYNERGIES

- SN
 - Cooperative interaction among groups or ideas that creates an enhanced combined effect
- BT
 - [INDIVIDUAL AND GROUP CONDITIONS](#)
- RT
 - [COALESCENCE](#)
 - [CRITICAL MASS](#)
 - [FRAGMENTATION](#)
 - [SELF-ORGANISATION](#)

SYSTEM DYNAMICS

- SN
 - Methodology for studying and managing complex feedback systems (cause & effect chains where X influences Y, which in turn influences X)
- BT
 - [SYSTEMS SCIENCE](#)
- RT
 - [COMPLEX PROBLEMS](#)
 - [COMPLEX SYSTEMS](#)
 - [COMPLEXITY SCIENCE](#)
 - [COMPLEXITY THEORY](#)
 - [EMERGENCE](#)
 - [IMPERFECTION](#)
 - [NONLINEAR DYNAMICS](#)
 - [SELF-ORGANISATION](#)
 - [SYSTEMS THEORY](#)
 - [SYSTEMS THINKING](#)
 - [TRANSFORMATION](#)
 - [UNCERTAINTY](#)

SYSTEMS SCIENCE

- SN
 - Study and principles of systems as characterized by focusing on the whole instead of parts and on communication and feedback mechanisms
- BT
 - [EXACT SCIENCES](#)

- NT
 - COMPLEX SYSTEMS
 - SELF-ORGANISATION
 - SYSTEM DYNAMICS
- RT
 - COMPLEX PROBLEMS
 - COMPLEXITY SCIENCE
 - CRITICAL SYSTEMS THINKING
 - EMERGENCE
 - IMPERFECTION
 - INTEGRATION AND IMPLEMENTATION SCIENCES
 - NONLINEAR DYNAMICS
 - SYSTEMS THEORY
 - SYSTEMS THINKING
 - UNCERTAINTY

SYSTEMS THEORY

- SN
 - Theoretical foundation of SYSTEMS SCIENCE characterised by focusing on the whole instead of part and on communication and feedback mechanisms
- BT
 - THEORIES (ERIC)
- RT
 - COMPLEX PROBLEMS
 - COMPLEX SYSTEMS
 - COMPLEXITY SCIENCE
 - COMPLEXITY THEORY
 - CRITICAL SYSTEMS THINKING
 - EMERGENCE
 - IMPERFECTION
 - NONLINEAR DYNAMICS
 - SELF-ORGANISATION
 - SYSTEM DYNAMICS
 - SYSTEMS SCIENCE
 - SYSTEMS THINKING
 - UNCERTAINTY

SYSTEMS THINKING

- SN
 - Mentally considering problems holistically in terms of interconnected, circular and reciprocal relationships to aid solution. Antonym to ANALYTICAL THINKING.
- BT
 - METHODS (ERIC)
- RT
 - ANALYTICAL THINKING
 - COMPLEX PROBLEMS
 - COMPLEXITY SCIENCE
 - COMPLEXITY THEORY
 - CRITICAL SYSTEMS
 - CRITICAL SYSTEMS THINKING
 - EMERGENCE
 - IMPERFECTION
 - INTEGRATION AND IMPLEMENTATION SCIENCES
 - NONLINEAR DYNAMICS
 - SELF-ORGANISATION
 - SYSTEM DYNAMICS
 - SYSTEMS SCIENCE
 - SYSTEMS THEORY
 - UNCERTAINTY

[Top](#)

TECHNOLOGICAL PROBLEMS

- SN
 - Problems related to technology and its capacity to meet needs
- BT
 - PROBLEMS
- RT
 - BUSINESS (ERIC)
 - COMPLEX PROBLEMS
 - CRITICAL SYSTEMS
 - ECONOMIC PROBLEMS
 - ENVIRONMENTAL PROBLEMS
 - EXACT SCIENCES
 - INNOVATION (ERIC)
 - INNOVATION AND BUSINESS
 - LARGE SCALE PROBLEMS
 - LOCAL PROBLEMS
 - NATIONAL PROBLEMS
 - POLITICAL PROBLEMS
 - PRACTICAL PROBLEMS
 - PROBLEM DEFINITION
 - REGIONAL PROBLEMS
 - RISK AND SECURITY
 - WORLD PROBLEMS (ERIC)

TEMPORAL SCALE

- SN
 - Range of time
- BT
 - PROCESSES STRUCTURES
- RT
 - GEOGRAPHIC SCALE
 - LARGE SCALE PROBLEMS
 - SCALABILITY

THEORIES (ERIC)

- SN
 - Generalizations or principles, supported by substantial evidence but not conclusively established, proposed as explanations of observed phenomena or of the relations in a given body of facts (Use a more specific term if possible) (ERIC)
- BT
 - RESEARCH-BASED ACTIVITIES
- NT
 - ACADEMIC THEORY
 - COMPLEXITY THEORY
 - CONSTRUCTIVISM (LEARNING) (ERIC)
 - CRITICAL THEORY (ERIC)
 - FEMINIST THEORY
 - INTERPRETIVIST THEORY
 - MEDIATION THEORY
 - POSITIVIST THEORY
 - POSTMODERNISM (ERIC)
 - SYSTEMS THEORY

TRANSCULTURAL COMPETENCE

- USE
 - CROSS-CULTURAL COMPETENCE

TRANSDISCIPLINARY APPROACH

- SN
 - Processes and methodologies concerned with activity that transcends or is common to all disciplines involved; usually held together by a common idealogical framework
- BT
 - [PROCESS-BASED ACTIVITIES](#)
- RT
 - [ACADEMIC THEORY](#)
 - [HIGHER EDUCATION \(ERIC\)](#)
 - [INTEGRATION AND IMPLEMENTATION SCIENCES](#)
 - [INTEGRATIVE RESEARCH](#)
 - [INTEGRATIVE STUDIES](#)
 - [INTELLECTUAL DISCIPLINES \(ERIC\)](#)
 - [INTERDISCIPLINARY APPROACH \(ERIC\)](#)
 - [MULTIDISCIPLINARY APPROACH](#)

TRANSFORMATION

- SN
 - Experience of changing the nature, function, or condition of; convert
- BT
 - [PROCESSES STRUCTURES](#)
- RT
 - [CYCLES](#)
 - [EMERGENCE](#)
 - [IMPERFECTION](#)
 - [NONLINEAR DYNAMICS](#)
 - [SELF-ORGANISATION](#)
 - [STABILITY](#)
 - [SYSTEM DYNAMICS](#)
 - [TRANSITION](#)
 - [UNCERTAINTY](#)

TRANSITION

- SN
 - Passage from one form, state, style, or place to another
- BT
 - [PROCESS-BASED ACTIVITIES](#)
- RT
 - [CYCLES](#)
 - [IMPERFECTION](#)
 - [PROGRESS](#)
 - [STABILITY](#)
 - [TRANSFORMATION](#)
 - [UNCERTAINTY](#)

[Top](#)

UNCERTAINTY

- SN
 - Characteristic of complex systems and key principle of complexity science; refers to unpredictability of complex systems
- BT
 - [COMPLEXITY SCIENCE](#)
- RT
 - [COMPLEX PROBLEMS](#)
 - [COMPLEX SYSTEMS](#)
 - [COMPLEXITY THEORY](#)
 - [EMERGENCE](#)
 - [IMPERFECTION](#)

- [LARGE SCALE PROBLEMS](#)
- [NONLINEAR DYNAMICS](#)
- [SYSTEM DYNAMICS](#)
- [SYSTEMS SCIENCE](#)
- [SYSTEMS THEORY](#)
- [SYSTEMS THINKING](#)
- [TRANSFORMATION](#)
- [TRANSITION](#)

[Top](#)

WORLD PROBLEMS (ERIC)

- SN
 - Problems of concern to the entire world or large regions of the world; for African problems use WORLD PROBLEMS, for East African problems us REGIONAL PROBLEMS
- UF
 - [GLOBAL PROBLEMS](#)
- BT
 - [PROBLEMS](#)
- RT
 - [COMPLEX PROBLEMS](#)
 - [ECONOMIC PROBLEMS](#)
 - [ENVIRONMENTAL PROBLEMS](#)
 - [GOVERNMENT \(ADMINISTRATIVE BODY\) \(ERIC\)](#)
 - [INTERNATIONAL DEVELOPMENT](#)
 - [LARGE SCALE PROBLEMS](#)
 - [LOCAL PROBLEMS](#)
 - [NATIONAL PROBLEMS](#)
 - [POLICY AND GOVERNMENT](#)
 - [POLITICAL PROBLEMS](#)
 - [PRACTICAL PROBLEMS](#)
 - [PROBLEM DEFINITION](#)
 - [PUBLIC ADMINISTRATION \(ERIC\)](#)
 - [PUBLIC POLICY \(ERIC\)](#)
 - [REGIONAL PROBLEMS](#)
 - [TECHNOLOGICAL PROBLEMS](#)

Updated: 15 November 2005

Contact: CarynLAnderson@yahoo.com or [Kyle Nicholls](#)



SOME RIGHTS RESERVED This work is licensed under a [Creative Commons License](#) by Caryn L. Anderson.

Integration and Implementation Sciences Thesaurus

A developing vocabulary for an emerging specialization

Caryn Anderson and Kyle Nicholls

Home

I2S Thesaurus

- Structure & Style
- Guidelines for Use
- Alphabetical View
- Hierarchical View

External Resources

- ERIC Thesaurus
- UNESCO Thesaurus

Development

- Bibliography
- Procedures
- Evaluation

Next Steps

Hierarchical View

Activities | Agents | Conditions | Domains | Locations

ACTIVITIES (ERIC)

- NT
 - PRACTICE
 - NT
 - GOAL-BASED ACTIVITIES
 - NT
 - CONFLICT RESOLUTION (ERIC)
 - DEVELOPMENT (ERIC)
 - NT
 - DOMAIN DEVELOPMENT
 - PROJECTS
 - SOCIAL IMPROVEMENT
 - SOLUTIONS
 - PROCESS-BASED ACTIVITIES
 - NT
 - BEST PRACTICES
 - COOPERATION (ERIC)
 - CROSS-FERTILISATION
 - CULTURE MAPPING
 - FACILITATION
 - IMPLEMENTATION
 - INTEGRATION
 - INTERDISCIPLINARY APPROACH (ERIC)
 - MULTIDISCIPLINARY APPROACH
 - PROBLEM DEFINITION
 - STRATEGIES
 - TRANSDISCIPLINARY APPROACH
 - TRANSITION
 - RESEARCH-BASED ACTIVITIES
 - NT
 - METHODS (ERIC)
 - NT
 - ANALYSIS
 - ANALYTICAL THINKING
 - CRITICAL SYSTEMS THINKING
 - FACILITATION METHODS
 - INTEGRATED ASSESSMENT
 - PARTICIPATORY METHODS
 - POLICY INSTRUMENTS
 - QUALITATIVE METHODS
 - STATISTICAL ANALYSIS (ERIC)
 - SYSTEMS THINKING
 - RESEARCH (ERIC)
 - NT
 - INTEGRATIVE RESEARCH
 - QUALITATIVE RESEARCH (ERIC)
 - QUANTITATIVE RESEARCH
 - RESEARCH POLICY RELATIONSHIP
 - RESEARCH PRACTICE RELATIONSHIP
 - THEORIES (ERIC)
 - NT
 - ACADEMIC THEORY
 - COMPLEXITY THEORY
 - CONSTRUCTIVISM (LEARNING) (ERIC)
 - CRITICAL THEORY (ERIC)
 - FEMINIST THEORY
 - INTERPRETIVIST THEORY
 - MEDIATION THEORY
 - POSITIVIST THEORY
 - POSTMODERNISM (ERIC)
 - SYSTEMS THEORY

AGENTS

- NT
 - GROUPS
 - NT
 - ASSOCIATIONS
 - CONSUMERS
 - GRANTMAKERS
 - INSTITUTIONS
 - NT
 - ACADEMIC INSTITUTIONS
 - INTEREST GROUPS
 - ORGANISATIONS
 - SOCIETIES
 - PEOPLE
 - NT
 - FACILITATORS
 - INTERMEDIARIES
 - MEDIATORS
 - POLICY MAKERS
 - PRACTITIONERS
 - RESEARCHERS (ERIC)

[Top](#)

CONDITIONS

- NT
 - INDIVIDUAL AND GROUP CONDITIONS
 - NT
 - ADVANTAGED (ERIC)
 - AGREEMENT
 - ASSUMPTIONS
 - BARRIERS
 - CONTROL
 - CROSS-CULTURAL COMPETENCE

- HETEROGENEOUS
 - KNOWLEDGE
 - NT
 - CODIFIED KNOWLEDGE
 - COLLECTIVE KNOWLEDGE
 - EXISTING KNOWLEDGE
 - EXPERIENTIAL KNOWLEDGE
 - EXPERT KNOWLEDGE
 - INDEGENOUS KNOWLEDGE (ERIC)
 - POWER
 - STABILITY
 - SYNERGIES
- PROBLEMS
 - NT
 - COMPLEX PROBLEMS
 - ECONOMIC PROBLEMS
 - ENVIRONMENTAL PROBLEMS
 - LARGE SCALE PROBLEMS
 - LOCAL PROBLEMS
 - NATIONAL PROBLEMS
 - POLITICAL PROBLEMS
 - PRACTICAL PROBLEMS
 - REGIONAL PROBLEMS
 - TECHNOLOGICAL PROBLEMS
 - WORLD PROBLEMS (ERIC)
- PROCESSES STRUCTURES
 - NT
 - ALLIANCES
 - BOUNDARIES
 - COALESCENCE
 - CYCLES
 - EXCLUSION
 - FEASIBILITY
 - FRAGMENTATION
 - GEOGRAPHIC SCALE
 - HIERARCHY
 - IMPERFECTION
 - INCLUSION
 - MARGINALISATION
 - ORGANISATION
 - PARTNERSHIPS
 - PATTERNS
 - PROGRESS
 - REGULATION
 - REWARDS (ERIC)
 - SCALABILITY
 - TEMPORAL SCALE
 - TRANSFORMATION
- SOCIAL CONDITIONS
 - NT
 - CRITICAL MASS

[Top](#)

DOMAINS

- NT
 - INTEGRATION AND IMPLEMENTATION SCIENCES
 - INTELLECTUAL DISCIPLINES (ERIC)
 - NT
 - EXACT SCIENCES
 - NT
 - COMPLEXITY SCIENCE
 - NT
 - EMERGENCE
 - NONLINEAR DYNAMICS
 - UNCERTAINTY
 - SYSTEMS SCIENCE
 - NT
 - COMPLEX SYSTEMS
 - SELF-ORGANISATION
 - SYSTEM DYNAMICS
 - HUMANITIES
 - NT
 - DIVERSE EPISTEMOLOGIES
 - EPISTEMOLOGY (ERIC)
 - INTEGRATIVE STUDIES
 - SOCIAL SCIENCES (ERIC)
 - NT
 - COGNITIVE SCIENCE
 - HIGHER EDUCATION (ERIC)
 - KNOWLEDGE MANAGEMENT
 - LAW
 - NT
 - ALTERNATIVE DISPUTE RESOLUTION
 - MEDIATION
 - NEGOTIATION
 - PRINCIPLED NEGOTIATION
 - SECTORS
 - NT
 - EDUCATION (ERIC)
 - ENVIRONMENT
 - HEALTH (ERIC)
 - INNOVATION AND BUSINESS
 - NT
 - BUSINESS (ERIC)
 - ENTREPRENEURSHIP (ERIC)
 - INNOVATION (ERIC)
 - INTERNATIONAL DEVELOPMENT
 - POLICY AND GOVERNMENT
 - NT
 - GOVERNMENT (ADMINISTRATIVE BODY) (ERIC)
 - PUBLIC ADMINISTRATION (ERIC)
 - PUBLIC POLICY (ERIC)
 - RISK AND SECURITY
 - NT
 - CRITICAL SYSTEMS
 - RISK MANAGEMENT (ERIC)
 - SECURITY
 - SOCIETY, HUMAN BEHAVIOUR AND CULTURE
 - NT
 - CULTURE (ERIC)
 - SOCIAL BEHAVIOR (ERIC)

[Top](#)

LOCATIONS

- NT
 - NATIONS
 - PROVINCES
 - STATES

Updated: 15 November 2005

Contact: CarynLAnderson@yahoo.com or [Kyle Nicholls](#)



SOME RIGHTS RESERVED This work is licensed under a [Creative Commons License](#) by Caryn L. Anderson.

[Collection](#)[Thesaurus](#)[Advanced
Search Tips](#)☐ Peer reviewed only ☐ Full text available on ERIC

50 Years of ERIC

The Education Resources Information Center (ERIC) is celebrating its 50th Birthday! First opened on May 15th, 1964 ERIC continues the long tradition of ongoing innovation and enhancement.

[Learn more about the history of ERIC here.](#) 



[Privacy](#) | [Copyright](#) | [Contact Us](#) | [Selection Policy](#)
[Journals](#) | [Non-Journals](#) | [Download](#) | [Submit](#)

Thesaurus

Search

Services

UNESDOC

Library

Tools

UNESCO Terminology

Other thesauri

About us

Contacts

Search the thesaurus



The UNESCO Thesaurus is a controlled and structured list of terms used in subject analysis and retrieval of documents and publications in the fields of education, culture, natural sciences, social and human sciences, communication and information. Continuously enriched and updated, its multidisciplinary terminology reflects the evolution of the Organization's programmes and activities. The UNESCO Thesaurus contains 7,000 terms in English and in Russian, 8,600 terms in French and in Spanish. The UNESCO Thesaurus is also available on [CD-ROM](#).

Alphabetical display

Type a few letters then click:

- **'Search'** for [alphabetical display](#)
- **'Index'** to display the [permuted list](#)

Search - Index

[Need help?](#)

Hierarchical display

[List of the seven major subject domains](#), broken down into microthesauri which allow you to gain a quick overview of the subject matter.

> Select a field

▼ > Then select a microthesaurus ▼

Search

[Need help?](#)

You can launch a query in the online catalogue (UNESDOC) directly from the thesaurus.

Click on the number next to the desired descriptor to obtain the records indexed with that term in unesdoc/unesbib.

General Information

About us

Governing Bodies

Director-General

Secretariat

Field Offices

Institutes

Communities

Events

Join us

Resources

UNESDOC database

UNESDOC@lerts

Information centres

Library

Archives

Thesaurus

UNESCO Terminology

[Terms of use](#)[Contact us](#)[Sitemap](#)

© UNESCO 1995-2010

Integration and Implementation Sciences Thesaurus

A developing vocabulary for an emerging specialization

Caryn Anderson and Kyle Nicholls

Home

I2S Thesaurus

- Structure & Style
- Guidelines for Use
- Alphabetical View
- Hierarchical View

External Resources

- ERIC Thesaurus
- UNESCO Thesaurus

Development

- Bibliography
- Procedures
- Evaluation

Next Steps

Thesaurus Development

Literature Review (see [Annotated Bibliography](#))

The construction project included an extensive literature review of works on thesaurus construction and indexing languages; faceted classification and classification theory; classification and the internet; and finally, an examination of indexing languages.

Procedures and Problems (see [Procedures](#))

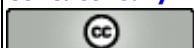
Upon completion of the literature review, a thorough examination of IIS literature was undertaken. From the IIS literature, we extracted many concepts, which we checked against existing thesauri and in some cases developed into terms. The terms relationships were then analyzed and formal connections were established.

Evaluation (see [Evaluation](#))

Upon completion of the thesaurus, we were ready to start testing. We recruited a pool of testers to index a selection of IIS abstracts using the ERIC and IIS thesauri. Once the test results were compiled, we made the first (of potentially many) revision to the thesaurus. The construction of a thesaurus is not a finite project; alterations continue to evolve the content throughout the life of the thesaurus.

Updated: 15 November 2005

Contact: CarynLAnderson@yahoo.com or [Kyle Nicholls](#)



SOME RIGHTS RESERVED This work is licensed under a [Creative Commons License](#) by Caryn L. Anderson.

Integration and Implementation Sciences Thesaurus

A developing vocabulary for an emerging specialization
Caryn Anderson and Kyle Nicholls

Home

I2S Thesaurus

- Structure & Style
- Guidelines for Use
- Alphabetical View
- Hierarchical View

External Resources

- ERIC Thesaurus
- UNESCO Thesaurus

Development

- Bibliography
- Procedures
- Evaluation

Next Steps

Annotated Bibliography

- [On Thesaurus Construction and Indexing Languages](#)
- [On Faceted Classification and Classification Theory](#)
- [Classification and the Internet](#)
- [Indexing Languages Reviewed](#)

On Thesaurus Construction and Indexing Languages

Aitchison, J., A. Gilchrist, and David Bawden. 1997. Thesaurus construction and use: A practical manual. London, England: A
 • This book is the current bible for thesaurus construction. Incorporating all the updated relevant standards (ANSI, BSI, ISO, NISO), A book is designed as more of a "workbook," outlining a step by step process that is easy to follow. It will remain always open as a ready reference point throughout the project.

Aitchison, Jean. 1969. Thesaurofacet: A thesaurus & faceted classification for engineering & related subjects. Leicester, Eng
English Electric Co. Ltd.

- Aitchison's seminal work product for the electrical engineering field is the key reference example for integrating a faceted classification with a thesaurus (rather than just attaching an alphabetical index to the classification scheme). While some elements of faceted class were valuable for the IIS Thesaurus, the development of a full scheme is beyond the scope of this project in Spring 2004. This reference of greater use in later phases of the project.

American National Standards Institute. 1980. American National Standard Guidelines for Thesaurus Structure, Construction, New York:

- This resource is relevant and demands inclusion, but is in essence covered by Aitchison, Gilchrist and Bawden.

Anderson, James D., Jose Perez-Carballo. 2001. The nature of indexing: How humans and machines analyze messages and retrieval. Part I: Research, and the nature of human indexing. Information Processing & Management 37: 231-254.

- The most useful part of this article was the summaries of the views of leading experts on the human analysis skills of indexing. Schol reviewed included Mulvaney, Chan, Fugmann, Soergel, Lancaster, Fairthorne, Wellisch, Wilson, Taylor, and Hjxrland. This outline provided defining fence around the slippery nature of indexing and conceptual analysis. As the process of indexing is the action served by the tool, it was valuable to obtain a general sense of the nature of the activity.

Bates, Marcia. 2002. After the dot-bomb: getting Web information retrieval right this time. First Monday 7, no. 7: Internet or Available from <http://firstmonday.dk/issues/issue7_7/bates/index.html> [8 February 2004].

- By identifying what went wrong in information retrieval in the early, heady days of the Web, Bates lays out a map of the mine field for constructing an information retrieval system. The reverse of her list of pitfalls constitutes a useful checklist: 1. Use faceted classification hierarchical; 2. Forget "ontologies" – they mislead into believing things can be organized definitively; 3. Roget's is a stylistic writer's thesaurus info retrieval thesauri have different purposes and must be structured differently; 4. Bradford distributions/power laws operate in full for retrieval – prepare for and work with them; 5. Design for scalability or you will be sorry; 6. User interface design of indexing tools is as as (or more than) the structure/logic of the tool itself; 7. Take advantage of existing experts – rest assured, every wheel has been invented you are only making a new kind of cart. Good advice, all of it.

Batty, D. 1998. WWW - wealth, weariness or waste: Controlled vocabulary and thesauri in support of online information access. Magazine. (Electronic version available via Simmons Libraries)

- Written as an introduction to controlled vocabulary (and as an advocacy piece for controlled vocabulary on the Web) the treatment somewhat cursory, but it is a clear, quick reference and reminder. In particular, Batty reminds us that although modern keyword search is wonderful, the increasing volume of items, and therefore the increasingly overwhelming retrieval results, demand a return to controlled vocabulary.

Berners-Lee, Tim, James Hendler, and Ora Lassila. 2001. The Semantic Web. Scientific American 284, no. 5: 34-43. Available from <<http://www.sciam.com/article.cfm?articleID=00048144-10D2-1C70-84A9809EC588EF21>> [8 February 2004].

- It appears that this article is cited frequently less because of its direct application to the various subjects within which it is referenced more because it serves as an outstanding point on the horizon against which all information retrieval development activities can navigate measure their progress. It is almost a little reminder to developers, "just remember, whatever you do is ultimately going to have to fit a model of the world..." Useful vision, if not specifically relevant to the heavy lifting in thesauri construction.

Booth, Pat F. 1987. Thesauri: Their uses for indexers. The Indexer 15, no. 3: 141-144.

- This article expands awareness about the variety of uses of a thesaurus. Booth reminds us that thesauri are useful for: 1. subject familiarization (Cliff notes for self-education); 2. meaning and authenticity checks (better than dictionaries because provide hierarchical and more frequently updated because in active use); 3. vocabulary control (associated with indexing activity-most commonly understood); and; 4. standard vocabulary for successive indexes (quality control). It is valuable to keep these four applications in mind in order to develop a fully developed, mature and effective tool. These applications are also good measures for evaluation.

British Standards Institution. 1987. Guidelines for the Establishment and Development of Monolingual Thesauri. London

- This resource is relevant and demands inclusion, but is in essence covered by Aitchison, Gilchrist and Bawden.

Cleveland, Donald B., and Ana D. Cleveland. 2001. Introduction to Indexing and Abstracting. Littleton, CO: Libraries Unlimited

- Situated as it is within a volume focused primarily on activities rather than tools, the chapter on Vocabulary Control is introductory but yet surprisingly comprehensive and dense. Not only does it define and describe thesauri, but it does a good job of outlining construction procedures, including evaluation. It is most valuable for its easily comprehensible lists (checklists in some cases) describing character activities, rules, and criteria. A good reference document for ongoing guidance.

Craven, Tim. Freeware. 21 January 2004. Internet on-line. Available from <<http://publish.uwo.ca/~craven/freeware.htm>> [8 February, 2004].

- This freeware was very easy to download and quick to learn. The interface/display is not fancy, but is very simple to use, with simple instructions and help. The fact that it is free allows for the option of users of the IIS thesaurus to actually download the software and thesaurus file for easier access than scrolling a static Web page.

Craven, Tim. Thesaurus Construction [Tutorial]. 19 February 2002. Internet on-line. Available from <<http://instruct.uwo.ca/gplis/677/thesaur/main00.htm>>. [8 February, 2004].

- This was the first resource consulted for this project. It appeared deceptively simple at the time, but after further review of more complex documents, it is clear that this resource is an outstanding introduction and a good reference when more complex literature and/or activities generate theoretical or logical confusion.

Foskett, A.C. 1996. The subject approach to information. London, England: Library Association.

- Foskett's book is a thorough textbook on subject access but does not provide the in-depth coverage of thesaurus construction that dedicated resources have. Nevertheless, the chapters on "Assigned Indexing" cover the key theoretical/linguistic concepts of semantic syntactic relationships.

Foskett, D.M. 1980. Thesaurus. In Encyclopedia of library and information science. New York: Marcel Dekker.

- This encyclopedia entry provided a useful overview of the nature, structure and operation of thesauri. Of greatest interest were Fos seven major purposes of a thesaurus which were used to reinforce the evaluation design of this project and were particularly relevant. Also of use was a visually effective chart outlining the conditions under which thesauri terms should be in the singular or plural form. A

checklist for this component of thesaurus construction.

Gilchrist, A. 2003. Thesauri, taxonomies and ontologies - an etymological note. *Journal of Documentation* 59, no. 1: 7-18.

Haas, Stephanie W. 1996. Sublanguages and the automatic identification of sublanguage terms. In *Encyclopedia of library and information science*.

- Haas focuses primarily on research to automatically identify sub-language terms for specific domains, but the value of this article to project is as a reminder to pay special attention to the unique "jargon" of the field and identify the boundaries between the sub-language and the parent domain of which it is a part. Additionally, it is useful to note the various types of terms including those that are invented or situations where "the meanings of existing words may be modified to become more specialized, such as the world linear. In general language describes something having the characteristics of a line; in mathematics, it refers to a particular kind of function; and in botany, it describes a specific arrangement of pollen grains." It is through the hierarchical and faceted relationships of the thesaurus that these invented or modified common terms will define their significance in the sub-language of IIS.

International Organization for Standardization. 1986. Guidelines for the Establishment and Development of Multilingual Thesauri. Geneva.

- This resource is relevant and demands inclusion, but is in essence covered by Aitchison, Gilchrist and Bawden.

Jones, S. 1993. A thesaurus data model for an intelligent retrieval system. *Journal of Information Science* 19: 167-178.

- Not only does this article outline the structure of thesauri in a way that is easily understood by a student of Database Management with Entity-Relationship diagramming), but it provides an outstanding framework for integrating the thesaurus into the database containing the Integration and Implementation resources. This document will continue to serve as an active reference tool like Aitchison's Thesaurus construction and use.

Krooks, David A., F.W. Lancaster. 1993. The evolution of guidelines for thesaurus construction. *Libri* 43, no. 4: 326-342.

- It was expected that this article might emphasize particular elements of the thesaurus construction process by identifying when and entered the "standards." The article was more concerned, however, with the individuals and organizations involved and provided a much more historical than functional view of the standards. Students pursuing doctoral work specifically in thesaurus construction will no doubt be interested, and the article deserves a place in this Bibliography, but the work will not play an active role in this project.

Lancaster, F.W. 1998. Indexing and abstracting in theory and practice. Champaign, IL: University of Illinois, Graduate School of Library & Information Science.

- In this volume Lancaster is primarily concerned with the theoretical, philosophical and practical elements of indexing and abstracting and considers thesauri only in their role as a tool. The value of this resource lies in its full treatment of the challenges of indexing, thus a context to hold in mind during the tool-building process.

Lancaster, F.W. 1986. Vocabulary control for information retrieval. Washington, DC: IRP.

- This volume is a critical resource for thesaurus development treating all elements of construction carefully and thoroughly. It is an excellent addition to the Aitchison, Gilchrist and Bawden bible, though certain sections stood out as more memorable or useful. The discussion of gathering material and term selection based on both literary and user warrant provided some key direction in the early stages of this project. The section on Vocabulary Failures provided a reasonably extensive treatment of the term choices that cause failures and how to balance the competing elements involved in term selection. Highly valuable was Lancaster's discussion of quantitative evaluation measures including: equivalence ratio, definition, flexibility, pre-coordination level, and size of term groups. Some of these measures are included in the evaluation design for this project.

Michel, Dee. Appendix A: Report to the ALCTS/CCS Subject Analysis Committee July 1996. Internet on-line. Available from <<http://www.ala.org/ala/alctscontent/catalogingsection/catcommittees/subjectanalysis/subjectrelations/appendix.htm>>. [8 February, 2004].

- This Web page serves primarily as an explanatory and contextual note for Dee Michel's Taxonomy of subject relationships (listed below) of itself it did not contribute much to the project but must be listed independently to reflect its unique URL.

Michel, Dee. Appendix B (part 1): Taxonomy of subject relationships. Internet on-line. Available from <<http://archive.ala.org/alcts/organization/ccs/sac/msrscu2.pdf>>. [8 February, 2004].

- This document is an un-annotated list, presented with BT, NT, RT, and USE references, of Michel's analysis of the many different types of subject relationships. It is fascinating, and great risk is run that many hours will be wasted away using Michel's taxonomy to investigate, and debate the nature of unique relationships between individual terms as this IIS thesaurus is constructed. This list may prove useful. Integration and Implementation Sciences is a field characterized by the re-combination of existing philosophies, principles and practice different relationships. It is anticipated that Michel's relationship definitions will provide the foundation of highly instructive scope notes as facilitating more effective use of facets and BT, NT, RT for IIS terminology.

Michel, Dee. Appendix B (part 2): Taxonomy of subject relationships. Internet on-line. Available from <<http://www.ala.org/ala/alctscontent/catalogingsection/catcommittees/subjectanalysis/subjectrelations/appendixbpa.htm>>. [8 February, 2004].

- This page represents the short list of subject relationships (no BT, NT, RT, etc.), as identified by Michel, grouped generally into the three categories of Associative, Equivalence and Hierarchical relationships.

Middleton, Michael. Controlled Vocabularies. Queensland University of Technology. Internet on-line. Available from <http://sky.fit.qut.edu.au/~middletm/cont_voc.html>. [2 March, 2004].

- This is an amazing gateway providing a fabulous first step in the journey into thesaurus construction. Resources are arranged into three groupings: Thesaurus building & use guidance, Thesaurus online sites, Thesaurus software, Databases of thesauri, Bibliography, Classification schemes online, and Website compilations from elsewhere. In addition to Candy's pages and the Will's (see below), it is an excellent place to start for beginning students of thesaurus construction.

Milstead, Jessica L. About Thesauri. 2000. Internet on-line. Available from <<http://www.bayside-indexing.com/Milstead/about.htm>>. [8 February, 2004].

- Milstead succinctly hits all the key points a key decision-maker would want to know about thesauri. The page appears designed for those that have had someone say to them, "You need a thesaurus..." and then says to themselves, "What? Why? How? Ugh." Once they've had that page they will move on to other resources, but Milstead excels at outlining the key elements of the essential processes. The software reviews provided are not relevant to this project, but the process outlines are a good reference for a double check in the development process.

Milstead, Jessica L. 1993. Thesaurus management software. In *Encyclopedia of library and information science*.

- Once again, Milstead achieves maximum density. While the purchase of thesaurus software is not a part of this project, Milstead's chapters things to consider when purchasing thesaurus software forms an outstanding outline of things to remember in the construction process.

Milstead, Jessica L. 1984. Subject access systems: Alternatives in design. Orlando: Academic Press.

- This volume treats subject access from the whole systems perspective. Milstead discusses thesauri construction, classification, indexing, cataloguing issues in turn, but her entire effort considers the complex and interconnected affects of one on the other with the intent of providing the reader/developer with the ability to make informed decisions in their design process. As she sets out in her introduction, "treats the design of a system for subject access as a set of interacting choices, describing the choices together with the ways in which choice may constrain others. Every aspect of a subject access system is the result of a choice between alternatives." This resource is a must-read cover to cover as the thesaurus construction process evolves to ensure an honorable product with healthy karma.

National Information Standards Organization. Guidelines for the Construction, Format and Management of Monolingual Thesauri. 2003. Internet on-line. Available from <<http://www.niso.org/standards/resources/Z39-19.pdf>>. [8 February, 2004].

- This resource is relevant and demands inclusion, but is in essence covered by Aitchison, Gilchrist and Bawden.

Pollard, Richard. 1993. A hypertext-based thesaurus as a subject browsing aid for bibliographic databases. *Information Processing Management* 29, no. 3: 345-357.

- The title of this article is precise. Pollard discusses the advantages of using a hypertext-based thesaurus to provide structural cues to subject domain, improving user browsing experiences. The article is fascinating, but slightly beyond the scope of this project as it currently

stands. It is anticipated that this resource will be invaluable at Phase Two of this thesaurus where the focus shifts to interactive Web user interfaces for the product.

Priss, Uta, Elin Jacob. 1999. Utilizing faceted structures for information systems design. In *ASIS '99: Proceedings of the 62nd Annual Meeting* 203-212.

- Priss and Elin have written directly to the broader endeavor of which this thesaurus construction project is a part – a full database, ultimately dynamic Web site, linking all the elements of the budding Integration and Implementation Sciences field. "This paper argues use of a faceted thesaurus as the basis for organizing a small-scale institutional website." While IIS aims to be large-scale in the future, this paper is by no means comprehensive, the proposals for organizing information set forth here are very useful.

Ross, Jan. 2000. A new way of information retrieval: 3-D indexing and concept mapping. *Learned Publishing* 13, no. 2: 119-1

Schwartz, Candy. 2001. *Sorting out the Web: Approaches to subject access*. Westport, CT: Ablex.

- Controlled vocabularies form a small component of this volume, but the components of an indexing language were laid out very clearly and concisely for easy review. Notably, Schwartz clearly includes the component of "Application Policies" – a subject absent from, or hidden in, other discussions of controlled vocabulary.

Shiri, A.A., C. Revie. 2000. Thesauri on the Web: current developments and trends. *Online Information Review* 24, no. 4: 273

- This brief article provides a reasonable assessment of the state of thesauri on the Web in 2000, and adequately identifies future activities including the next stage of thesauri standards development: standards for electronic thesauri. There was little here, however, to contribute additional knowledge to this project. To be fair, it does serve as a relevant milestone and reinforces knowledge gathered elsewhere and included.

Smith, Linda C. 1992. *UNISIST revisited: Compatibility in the context of collaborations*. In *Classification research for knowledge representation and organization*. Amsterdam: Elsevier.

Soergel, Dagobert. 1974. *Indexing languages and thesauri: Construction and maintenance*. Los Angeles: Melville.

- Ugh. This was the bible in 1974, and remains a seminal reference in any article or volume discussing thesaurus construction. Soergel's comprehensive, detailed and honorably precise. Unfortunately, the sheer size and scope of this volume makes it an unwieldy resource for this project. It will be used primarily as a reference source to double check points of debate and to ensure that critical activities are not overlooked. In this regard, the inclusion of both a condensed and exploded Table of Contents, as well as an Index, is extremely valuable.

Svenonius, Elaine. 1990. Design of controlled vocabularies. In *Encyclopedia of library and information science*.

- Svenonius considers the myriad details of the narrow activity of term selection and relationship definition in this encyclopedia article. Treatment of Vocabulary, Syntax and Semantics provide detailed perspectives of well-covered ground. Of particular interest is her unique coverage of issues like scholarly usage, context independence, structural warrant, and her thorough discussions of binding vs. synthesis, syntax and category vs. referential vs. relational semantics. This is the document for the deep logic of it all – though not quite so voluminous as Soergel.

Taylor, Arlene G. 2004. *The organization of information*. Littleton, CO: Libraries Unlimited.

- Taylor's treatment is basically introductory, as a chapter within a book with a much larger subject. The sub-section on the Mechanism of Controlled Vocabularies, however, provided a diverse treatment of the various types of relationships. She covers the traditional whole/part, genus/species, class/member, topic/instance types of relationships most commonly found in thesauri. She also describes relationships in WordNet (synonyms, coordinate terms, hypernyms, hyponyms, holonyms, meronyms, and antonyms), and in the OWL Web Ontology (subClassOf, one of, equivalentClass, intersectionOf, disjointWith). The juxtaposition of these different articulations of relationships on the subject while simultaneously illustrating the need for clarity and commitment in determining how relationships will be expressed in a constructed controlled vocabulary.

Vickery, B.C. 1997. Ontologies. *Journal of Information Science* 23, no. 4: 277-286.

Weinberg, B.H. 1995. Library classification and information retrieval thesauri: comparison and contrast. *Cataloguing & Classification Quarterly* 19, no. 3/4: 23-44.

- There is little of direct practical application in this article effectively outlining the convergent course of thesauri and classification, particularly in the Web environment. However, Weinberg highlights a critical point. Greater classification structure in thesauri will enable them to serve more effective tools at the searching level (as opposed to just the indexing level). This is an important observation to keep in mind when designing a new thesaurus for a growing field.

Wellisch, Hans H. 2000. *Glossary of terminology in abstracting, indexing, classification, and thesaurus construction*. Medford Information Today, in association with the American Society of Indexers.

- This thin volume is an important reference work in deciphering much of the sub-language pervasive in the literature on thesaurus construction. Not an especially active resource for this project, but a representative one that must remain on the list.

Wellisch, Hans H. 1995. *Indexing from A to Z*. New York: H.W. Wilson Co.

Will, Leonard D., Sheena E. Will. Thesaurus principles and practice. 13 February 1998 Internet on-line. Available from

<<http://www.willpower.demon.co.uk/thesprin.htm>>. [8 February 2004].

- This introduction to thesauri is similar to that of Tim Craven, but perhaps even more focused on the beginner. One advantage of this however is that all chapters are on one page and are more easily scrolled, linked and printed. While it had little additional instructional value to this project, it remains in the bibliography as a good introductory reference. And it does provide some introductory treatment of thesauri principles for museum objects – a topic not always addressed by other treatments.

Will, Leonard D., Sheena E. Will. Publications on thesaurus construction and use. 13 August 2003 Internet on-line. Available from

<<http://www.willpower.demon.co.uk/thesbibl.htm>>. [2 March, 2004].

- The Wills maintain quite a phenomenal gateway bibliography of resources grouped according to the broad categories of thesaurus structure and use, facet analysis, search interfaces that allow for combining terms from multiple facets of a thesaurus, lists of thesauri, taxonomic ontologies, and topic maps. Many of the resources reviewed for this project, and included in this Bibliography, are listed and/or linked from Will's Publications page. Neck and neck with Michael Middleton for coverage (and they link to each other).

Williamson, Nancy J. Deriving a thesaurus from a restructured UDC. In *4th International Conference of the International Society for Knowledge Organization* 370-377.

- This article is useful for the phase of the project concerned with developing classification. Some classification schemes are being reviewed in relation to the key concepts of Integration and Implementation Sciences. If there is a classification scheme that serves the field more effectively than the hierarchical structure of a particular thesaurus, it may prove effective to derive some terms from the classification project, this resource will prove its value.

Zeng, Lei. 1993. Compatibility of indexing languages in an online access environment: A review of the approaches. *Advances in Classification Research* 3: 161-181.

- Zeng discusses the importance of compatibility and interoperability among thesauri in anticipation of the meta-searching systems that are now becoming a prevalent reality. In searching automatically across databases, discrepancies and differences in indexing terms can cause precision and recall problems. While Zeng investigates this issue in far more detail than is necessary for this project, compatibility and interoperability are important reasons why this project is structured to make the greatest use of existing thesauri prior to developing new terminology. It is hoped that existing terminology may be able to be "re-used" by establishing different relationships that will make the relevant for IIS. Zeng's analysis may prove helpful as this work comes to the fore.

[Top](#)

On Faceted Classification and Classification Theory

Ranganathan, S.R. *Elements of Library Classification*. 3rd ed. New York: Asia Publishing House, 1962.

- This book is based on a series of Ranganathan lectures on classification. The first part of the book focuses on general classification with an example of 108 "Subjects in Unhelpful Alphabetical Sequence". These 108 subjects are analyzed and grouped according to Ranganathan's Canons of Classification. This is an excellent introduction to developing a classification scheme, but can be difficult to decipher at times.

of the syntax of the language. The lectures on facet analysis are divided into four parts: facet and focus, fundamental categories, relationship levels. The five fundamental categories (personality, matter, energy, space and time) are applied in facet analysis examples where facets are applied to 18 subjects. This was particularly useful in learning how to analyze and deconstruct a complex subject.

Classification Research Group. "The Need for a Faceted Classification as the Basis of All Methods of Information Retrieval." "Subject Analysis: A Sourcebook, edited by Lois Mai Chan, Phyllis A. Richmond pp 154-67 Littleton, Colo Libraries Unlimited, :

- This is an interesting report presented by the Classification Research Group (CRG) in the early 1950's. It focuses on the need for improved classification systems to aid in two steps of information retrieval: identification of the search subject, and locating the subject through one or more subjects. The CRG argues that generic relations cannot be displayed in enumerative tree structures and that traditional are rigid and inflexible. It is suggested that faceted classification schemes are the best mechanism to allow given genus to be subdivided than one way allowing for flexibility and a better understanding of generic relationships. The report goes on to identify ten problems with classification schedules, including misplacement of subjects, distorted relationships between terms, insufficient detail and lengthy and notation. This report defines reasons for using faceted classification schemes, but does not go into much detail about the construction schemes.

Vickery, B.C. Faceted classification: a guide to construction and use of special schemes, prepared for the Classification Research Group. London, Aslib, 1960

- Vickery, a member of the Classification Research Group, provides a solid introduction to faceted classification schemes. The book includes history of facet analysis, indexing term definitions, as well as examples of facet construction, and comparison of faceted classification: uses interesting examples to demonstrate the creation of facets, the ordering, and the notation. The book also focuses on how system information using pre-coordinate and post-coordinate language. This book is an excellent how-to guide for facet classification creation

[Top](#)

Classification and the Internet

High level subject access tools and techniques in Internet cataloging / Judith R. Ahronheim ed. Binghamton, NY: Haworth Information Press, c2002

Dahlberg, Ingetraut. The future of classification in libraries and networks: a theoretical point of view. Cataloging & Classification Quarterly, 21(2), 23-36 (1995)

Denton, William. How to Make a Faceted Classification Scheme and Put it on the Web. (2003) Available:

<http://www.miskatonic.org/library/facet-web-howto.html>

- This is a fantastic paper on faceted classification creation and its use on the Web. Denton clearly explains how (and when) to create within the context of the web. This paper is not limited to the Web however. It is an excellent guide to creating a faceted scheme, as upon many of the original texts on facet creation such as S.R. Ranganathan and the Classification Research Group. This resource has been invaluable. Includes how to store information in relational databases, faceted-based navigation, as well as keyword searching.

--. Putting Facets on the Web: An Annotated Bibliography. (2003) Available:

<http://www.miskatonic.org/library/facet-biblio.html>

- A superb bibliography not only for Web and facet analysis, but also facet analysis theory and its history.

Faceted classifications and thesauri. Barbara Perles. <http://is.gseis.ucla.edu/impact/f95/Papers-projects/Papers/perles>.

Doyle, Bob. The Classification & Evaluation of Content Management Systems. The Gilbane Report 11 (2), 2-13 (2003) Available: <http://www.gilbane.com/artpdf/GR11.2.pdf>.

- This report was not particularly useful for this project, as it focuses on the actual classification of content management systems and process of classification. This paper does however serve as a terrific tool in helping one to evaluate the currently available content management systems.

Fast, Karl, Fred Leise, Mike Steckel. All About Facets and Controlled Vocabularies Boxes and Arrows, (2002) Available:

http://www.bboxesandarrows.com/archives/all_about_facets_controlled_vocabularies.php.

- This series of articles explains the basic concept of facet creation as well as controlled vocabularies. It is directed towards information architects and contains excellent, clearly written definitions and examples. This is a nice supplement to the more complicated and involved of Ranganathan and Vickery

Koch, Traugott. The Role of Classification Schemes in Internet Resource Description and Discovery. Available:

http://www.ukoln.ac.uk/metadata/desire/classification/class_tc.htm

- Classification schemes lend themselves quite well to information retrieval, browsing, and navigation on the Internet. Traugott had a comprehensive report investigating how efficient classification schemes are in aiding information retrieval in Internet environments. The Decimal Classification (UDC), Dewey Decimal Classification (DDC), Library of Congress Classification (LCC) as well as some international specific and home-grown schemes are all evaluated in terms of their Web-adaptability. Evaluation topics include Internet service availability, multilingual capabilities, classification scheme integration with controlled vocabulary / subject headings, digital availability, copyright, strengths and weakness of the scheme. This is an excellent resource for anyone who is interested in adapting and or creating a classification scheme for a body of knowledge in the Internet domain.

Kwasnik, Barbara. (1999). The Role of Classification in Knowledge Representation and Discovery. Library Trends, 48, 22-47.

McKiernan, Gerry. Beyond Bookmarks: Schemes for Organizing the Web. Available:

<http://www.iastate.edu/~CYBERSTACKS/CTW.htm>

- This is a clearinghouse of links to Web sites that have applied classification schemes and or controlled vocabularies to organize their sites. Some of the classification schemes used include: Dewey Decimal, Universal Decimal Classification, Library of Congress, and National Library of Medicine. Some of the controlled vocabularies used in Web site organization include: Library of Congress Subject Headings (LCSH), National Library of Medicine (NLM), and Medical Subject Headings (MeSH). Of interesting note, there are quite a few Finnish Web sites using them as an aid in organizing their sites.

Noy, Natalya F. et al. Ontology Development: A Guide to Creating Your First Ontology. (2002) Available:

<http://ksl.stanford.edu/people/dlm/papers/ontology101/ontology101-noy-mcguinness.html>

Spiteri, Louise. A Simplified Model for Facet Analysis: Ranganathan 101 Canadian Journal of Information and Library Science (1/2), 1-30 (April-July 1998) Available: http://aifia.org/pg/a_simplified_model_for_facet_analysis.php.

- Spiteri proposes a simplified model for facet analysis that includes elements from both S.R. Ranganathan and the Classification Research Group's (CRG) models. Spiteri reviews Ranganathan's 46 canons in the context of his three Planes of Work: Idea, Verbal, and Notation; then goes on to compare and contrast CRG principles of facet analysis with Ranganathan. The final portion of Spiteri's paper is her simplified model. This is a fantastic primer for reading Ranganathan and CRG works on facet analysis. Its comprehensive overview of Ranganathan is unique and extremely helpful.

[Top](#)

Indexing Languages Reviewed

California Environmental Resources Evaluation System. CERES. Internet on-line. Available from <<http://ceres.ca.gov/theses>>

- This environmental thesaurus was initially considered because often issues in the environmental area have a tendency to be multidisciplinary, particularly those that engage in Sustainable Development. It was not multidisciplinary enough, however, to be of use for the IIS Thesaurus

Cambridge Scientific Abstracts. Thesaurus of Sociological Indexing Terms. Internet on-line. Available from

<<http://www.csa.com/edit/socioties.html>>.

- CSA's sociological thesaurus covered a great deal of terms relevant to IIS. It presented a formidable challenge to the ERIC thesaurus: contained relevant terms that ERIC did not, and vice versa. Ultimately ERIC was chosen over CSA because ERIC had more terms relevant to academia (which were relevant considering that IIS is a new "specialization" among fields of study). The final key disadvantage for CSA

access to its thesaurus required a subscription to its services. As such, it would not be freely and easily available to a range of users.

ELDIS, Institute for Development Studies. Internet on-line. Available from <<http://www.ids.ac.uk/eldis/thessea.htm>>.

- Because much of the application of Integration and Implementation Sciences related research focuses on complex problems like Inter Sustainable Development, the ELDIS thesaurus seemed a logical source to review. It had too narrow of a focus, however, and was not the IIS thesaurus.

Global Environmental Information Exchange Network. Envoc thesaurus. Internet on-line. Available from <<http://p5uni.iw.edu.pl/envoc/>>.

- Similar to the CERES thesaurus, the Envoc thesaurus was considered for its potential to represent multidisciplinary concepts. It was important pieces of academia and sociology, however, and was quickly discarded.

HASSET/SOSIG implementation. HASSET thesaurus. Internet on-line. Available from <<http://sosig.ac.uk/roads/cgi/thesau>>.

- The HASSET sociological thesaurus is cumbersome to use and was too broad to be of use for the IIS thesaurus.

Organization for Economic Co-operation and Development. OECD Macrothesaurus. 1991. Internet on-line. Available from <<http://info.uibk.ac.at/info/oecd-macroth/>>. [8 February, 2004].

- The OECD thesaurus considered because its international focus might provide coverage of a range of complex, large scale problems. also the only thesaurus with a category devoted to research and theory, which was the most appropriate home for Integration and Implementation Sciences as a discipline. But the OECD thesaurus was entirely too narrowly focused on economics to be of use to IIS.

UNESCO. UNESCO thesaurus. 1995. Internet on-line. Available from <<http://www.ulcc.ac.uk/unesco/>>. [8 February, 2004]

- The UNESCO thesaurus contained a great many terms applicable to IIS resources, but ultimately it was too general and did not provide terms related to academic study. A portion of the UNESCO thesaurus, however, was incorporated into the IIS system and referenced in authority file for geographic place names.

United States Geological Survey. USGS Thesaurus: Gateway to the Earth Draft 9 28-Jun-2002. 2004 2002. Internet on-line. Available from <<http://geo-nsdi.er.usgs.gov/term>>. , 8 February].

- It was clear from the beginning that a geological thesaurus would not provide appropriate terms for indexing IIS resources. Instead it was reviewed as a model for its faceted structure and excellent presentation (both layout and functionality).

US Department of Education. ERIC Thesaurus (professional version). Internet on-line. Available from <<http://www.ericfacility.net/extra/pub/thesearch.cfm>>.

- ERIC contained the most terms relevant to IIS resources and provided a reasonably functional and flexible interface that was freely available to all users over the Web. As such it was selected as the primary thesaurus for the IIS thesaurus system.

USAID. USAID Thesaurus. 1998. Internet on-line. Available from <http://www.dec.org/pdf_docs/PNACD400.pdf> [8 February]

- The USAID Thesaurus was available in a PDF form which was ungainly to use. It was considered for the same reasons that the UNESCO ELDIS thesauri were considered - the broad multidisciplinary scope of international development seemed a likely area to contain the keywords needed by IIS. But USAID did not provide enough detail in the six key IIS areas and lacked the necessary academic terms. It did, however, an excellent model for how to present an introduction to a thesaurus.

[Top](#)

Updated: 15 November 2005

Contact: CarynLAnderson@yahoo.com or Kyle Nicholls



SOME RIGHTS RESERVED This work is licensed under a [Creative Commons License](#) by Caryn L. Anderson.

Integration and Implementation Sciences Thesaurus

A developing vocabulary for an emerging specialization

Caryn Anderson and Kyle Nicholls

Home

I2S Thesaurus

- Structure & Style
- Guidelines for Use
- Alphabetical View
- Hierarchical View

External Resources

- ERIC Thesaurus
- UNESCO Thesaurus

Development

- Bibliography
- **Procedures**
- Evaluation

Next Steps

Procedures and Problems

Description of Collection

The project began with an investigation of the Integration and Implementation Sciences collection that included its users, their activities, literature and related texts. This data provided an [overview of the collection](#), its setting, as well as potential users. The [overview](#) also provided the justification and need for the development of a subject specific thesaurus.

Annotated Bibliography

Once the need for a thesaurus was established, an annotated bibliography was developed. Thus began a lengthy literature review of texts and articles on and about thesaurus construction, indexing languages, faceted classification and classification theory, and also classification and the internet. All of these areas provided valuable input and perspective to the project. The practical texts on thesaurus construction proved to be invaluable, while the texts on faceted classification were instrumental in helping with the design of the classification scheme for thesaurus terms. It is intended that the annotated bibliography will continue to be of value for not only the maintainers of the thesaurus, but also, any person interested in this subject.

Key concept gathering

The IIS key concepts were established by reviewing and extracting words and/or phrases from IIS collection sample resources, including the [chief paper](#) of Dr. Gabriele Bammer. This proved to be a marginally overwhelming exercise, as approximately 600 words/phrases were generated. Although, this is not an obvious problem, it posed a challenge in the development of a strategy to slim down the list while preserving the IIS specific terms. The first pass over this list eliminated 150 redundant and obvious terms leaving a list of only 450 terms!

Thesauri review and selection

The first stage of evaluation began with a review of [10 existing thesauri](#). Comparing concepts against existing thesauri, provided a clearer picture of what terms were specifically unique to IIS, and produced a side-by-side comparison of how well these thesauri matched the initial concepts. The goal was to find a thesaurus that could be used as a foundation thesaurus for IIS. A few problems were encountered during this review process relating to selection. The evaluation produced two good candidates: ERIC and CSA. ERIC covers the most terms and is publicly available, while CSA is strong in areas that ERIC is not, but is not openly available to the public. Ultimately, ERIC was selected because it provided coverage of a wide array of areas and because of its availability.

Classification design (or, How we made a classification scheme)

After ERIC was selected as the foundation thesaurus, a few crucial design points needed to be decided on. Would the ERIC thesaurus be imported into the new system building IIS terms off of it? By using

this design approach, a better understanding of the ERIC classification was needed. A considerable amount of time was taken to review both the online and print ERIC thesauri and it was concluded that although ERIC offered 41 categories for refining searches online (each term is assigned to a category) they did not constitute the top terms of a hierarchical classification. It was found that terms within a category often referenced broader terms (BTs) in another category entirely. This conclusion was both confusing and discouraging. The intent was to fit IIS terms neatly into the ERIC classification scheme, but how could the scheme accommodate the IIS terms. In addition, to complicate matters a bit more, a cost effective way, to obtain and/or import the ERIC thesaurus of approximately 6,300 terms, was not obvious. An email was sent to ERIC requesting access to an interoperable electronic version of the thesaurus database, but there was no response. Manual data entry was not an option.

This discovery presented two problems. How could the IIS terms be accessed if they were not residing within the ERIC thesaurus? And, since IIS terms were not being housed in the ERIC thesaurus, what type of classification scheme could be used? As luck would have it, the IIS terms could easily stand alone in a thesaurus, which could employ its own classification scheme separate from ERIC. The IIS thesaurus would act as a supplemental thesaurus to ERIC. Choosing a classification scheme is not as easy as one would hope. Other classification systems were reviewed such as Bliss, CRG (Classification Research Group), and Ranganathan. In the end, it was decided that IIS concepts would be reviewed with the guidance of Ranganathan's PMEST (Personality, Matter, Energy, Space, Time) model. While this exercise proved to be fruitful, it was not easy. Lengthy discussions about the terms that could logically fall under more than one facet frequently stalled this step. Rather than creating a poly-hierarchical scheme these relationships were accommodated by multiple RT references. Ultimately, it was concluded that five facets could encompass the field of IIS: activities, agents, conditions, domains, and locations. While this is not a perfect representation on PMEST, it is quite close.

Nuts and bolts - establishing the thesaurus terms

There are several kinds of thesaurus construction software available. Some are quite expensive and are comprised of proprietary code, while others are open-source, and free. For this project, Tim Craven's [TheW32 software](#) was chosen, primarily because it was free and because the documentation is very good. Before entering any terms into the thesaurus software, terms that were either too narrow or peripheral to IIS or general knowledge were eliminated out of the 450 IIS terms. Terms that we were able to find in ERIC were also eliminated. This process was much harder than it initially appeared to be. Some of the terms found in ERIC had scope notes that connoted another meaning than what would have been relevant to IIS. This created a philosophical exercise in determining whether to use the ERIC term with an additional scope note, or to enter an identical term with a different scope note ("re-scoping") describing its relevance to IIS.

The elimination exercise produced approximately 200 terms that included entry vocabulary and ERIC terms for hierarchical reference. The thesaurus section on [vocabulary control](#) gives a more in-depth description of this process. All of these terms were assigned to one of the five facets (activities, agents, conditions, domains, and locations) that were established in the classification design section.

Sub-division, in the following manner, was then conducted, grouping by ERIC terms when appropriate:

ACTIVITIES

Practice

Goal based activities

Processed based activities

Research based activities

Methods (ERIC)

Research (ERIC)

Theories (ERIC)

AGENTS

Groups

People

CONDITIONS

Individual and group conditions

Problems

Processes & structures

Social conditions

DOMAINS

Integration and implementation sciences

Intellectual disciplines

Sectors

LOCATIONS

Making relationships (and giving terms meaning)

The list of terms in relation to their facets provided an excellent framework for establishing relationships. As terms were entered into the TheW32 thesaurus construction software, scope notes as well as establishment of the classification hierarchy (by assigning broader terms (BTs) and narrower terms (NTs)) were simultaneously entered. In some cases, it was necessary to include ERIC terms in order to provide BT terms or sibling terms for more specific IIS terms in order to retain the appropriate hierarchy. This was not intrinsically obvious when data entry started, but the need became increasingly apparent, especially under the Activities facet, as grouping patterns

were found under the established sub-divisions.

Another problem, or rather hic-cup, encountered during this step was efficient workload distribution. We thought that working simultaneously on five separate thesauri (under each facet) would be far more productive and would facilitate error checking. This in the end proved to be true, but it assumed that the five thesauri could be merged easily. After some technical challenges, a successful merge occurred without much loss other than the re-ordering of the facet headings to alphabetical order. The original intention was for the facet headings to follow an order similar to Ranganathan's PMEST: DOMAINS, AGENTS, LOCATIONS, CONDITIONS, ACTIVITIES. One other problem that incurred, by merging post data entry, was the inability to map cross facet RTs. These relationships had to be established after all the thesauri were merged.

Evaluation

The evaluation consisted of of two steps: establishing rules and guidelines through preliminary testing, and gathering and correlating the test data. In theory and practice, thesaurus evaluation is an ongoing process; language is constantly in flux, ergo: updating ones thesaurus is a necessity.

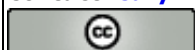
Indexing and Testing

By indexing IIS citations, it was possible to check for concepts not represented in either ERIC or the IIS thesaurus. The original plan was to index a healthy chunk of IIS citations directly into either a central IIS database or citation management program, but timing issues for the development of the central database and scope issues within the semester framework prevented the proper implementation of this step.

[Top](#)

Updated: 15 November 2005

Contact: CarynLAnderson@yahoo.com or [Kyle Nicholls](#)



SOME RIGHTS RESERVED This work is licensed under a [Creative Commons License](#) by Caryn L. Anderson.

Integration and Implementation Sciences Thesaurus

A developing vocabulary for an emerging specialization

Caryn Anderson and Kyle Nicholls

Home

I2S Thesaurus

- Structure & Style
- Guidelines for Use
- Alphabetical View
- Hierarchical View

External Resources

- ERIC Thesaurus
- UNESCO Thesaurus

Development

- Bibliography
- Procedures
- **Evaluation**

Next Steps

Evaluation Process

- [Indexing Test Procedures](#)
- [Tester Demographics](#)
- [Variables Affecting Results](#)
- [Quantitative Results](#)
- [Qualitative Results](#)
- [Thesaurus Improvement Recommendations](#)

A two-part evaluation of the IIS Thesaurus system was conducted in late April 2004 and included an indexing test and expert analysis. Due to time constraints imposed by the academic calendar, a formal and more comprehensive evaluation program has been postponed until further notice. Results from the indexing test are outlined below. Qualitative expert analysis will be completed on the 4th of May 2004 and a summary added to this section of the Evaluation Summary as soon as it is available.

Results from All Testers:

- 90.2% of all terms found were "good enough" or better at representing the desired concepts
- 65.4% were a "close fit," "exact" or "better/more specific" for the concept

Results from Student Indexers Only:

- 87.4% of all terms found were "good enough" or better at representing the desired concepts
- 68.4% were a "close fit," "exact" or "better/more specific" for the concept

While this quantitative analysis is not precise given a variety of variables and inconsistencies, it is enough to consider the IIS Thesaurus system a functional tool. Detailed review of both the quantitative analysis and qualitative feedback provide direct guidelines for how to improve the thesaurus.

Considering that the IIS Thesaurus tested was the very first draft of the very first thesaurus ever produced by the authors, the fact that roughly two thirds of the concepts sought by indexers were represented adequately in the thesauri is considered a great success. Details of the testing process are outlined below.

Indexing Test Procedures

A convenience sample of testers was selected from among the personal contacts of the authors and colleagues at the Graduate School of Library and Information Science of Simmons College. Testers were provided with 7 citations, which were accompanied by personal reference notes written about each book/article to aid in subject analysis (formal abstracts were not available). The testers were asked to index these citations using the IIS Thesaurus system (the Thesaurus of ERIC Descriptors and the IIS Thesaurus), rank their

satisfaction with the terms they found, and provide feedback on the process, the thesauri and the materials available on the Web to support their testing.

Testing Instructions as well as the Citations for Testing were made available via the IIS Thesaurus Web site and will remain available as part of the project site (see [Thesaurus Testing](#)). Testers were also given an Evaluation Form which provided space to list concepts, terms, rank, and comments.

Testing occurred between the 19th of April and the 1st of May 2004. Because all materials were available via the Web, testers completed their evaluations independently, at times that were convenient for them. The authors were available by e-mail and phone for questions, and provided minor assistance to some of the testers.

[Top](#)

Tester Demographics

A total of six individuals completed the indexing test process. Two individuals were MLIS students, trained in indexing. The remaining group of 6 testers included 1 PhDs, 1 JD, and 2 Masters.

Variables Affecting Results

Variables and inconsistencies which make the results data difficult to compare are outlined below. Quantitative analysis conducted under these conditions cannot be considered precise, but general trends are still identifiable.

Degree of Test Completion - Four testers provided results that included concepts, terms and ranking. One tester provided concepts alone. In this case, thesaurus terms were then retrieved by one of the authors and ranked for their ability to represent the concept listed by the tester. One tester provided only thesaurus terms with narrative descriptions of their satisfaction and problems.

Variable Skills Limitations - All the testers had variable familiarity with indexing and working with thesauri. For example, untrained indexers looked more often for very specific or proper names that a trained indexer would know would never be found. In other cases, testers selected non-preferred terms instead of the preferred terms in spite of instructions to be vigilant about this issue. Each tester also would also have had different criteria for ranking their experience, in spite of the scale description given in the testing instructions.

Structural Problems in Thesauri - The challenge of not having all terms in a single place cannot be underestimated. The test results show that there were many occasions when testers settled for a "good enough" ERIC term when in fact there was a more specific IIS term available. But, without interlinking between thesauri, locating the IIS term would have required far greater effort.

Citation Problems - The selection of citations was based on convenience, an attempt to cover the range of IIS topics, and a desire to keep the notes to a manageable length. As such, they may not have been the most effective citations for testing the thesaurus. Future formal testing will involve a more deliberate citation selection process which will include the provision of full

articles and/or formal abstracts rather than notes to aid in subject analysis.

[Top](#)

Quantitative Results

All Testers - A total of 336 concepts/term pairs were provided by 6 testers for 7 citations. Of these, 278 terms were ranked by satisfaction with the ability of the term found in ERIC or IIS to represent the concept the tester had identified as central to the article they were reviewing. 182 terms (65.5%) were ranked at level 4 or 5, meaning that the tester found a term that was "a very close fit" or the "exact term" or "found something even better/more specific." 24.8% (69 terms) were deemed "good enough" and 17 terms (9.7%) were declared unsatisfactory for one reason or another.

Student Indexers - A total of 79 ranked concept/term pairs were provided by 3 testers for 7 citations. 54 terms (68.4%) were ranked at level 4 or 5, meaning that the tester found a term that was "a very close fit" or the "exact term" or "found something even better/more specific." 19.0% (15 terms) were deemed "good enough" and 12 terms (12.6%) were declared unsatisfactory for one reason or another.

[Top](#)

Qualitative Results

Feedback from Indexers - Comments from student indexers praised the overall thesaurus system and commented on the challenges of using two thesauri (not easy to discover better terms in the other thesaurus). They also made useful suggestions for improvement, including better scope notes on the key IIS terminology, and some clearer and more consistent language in the instructions. Indexers also helped to identify spelling and typographical errors.

"My sense is that I may not have gone to the lowest level when picking terms... came across a lot of direct matches in ERIC, but it seemed like there was a bit more specificity in IIS."

- *GSLIS Student*

Feedback from Untrained Testers - Comments from untrained testers revealed that the thesaurus introduction needed to be clearer so that they could more easily find explanations when they needed them (e.g. of the abbreviations, of why there were ERIC terms in the IIS thesaurus, of why the key IIS terms were so important).

"God help the professional catalogers who are really going to do this. Doing this all day would tie my brain in knots that could never be undone."

- *Untrained Tester*

[Top](#)

Thesaurus Improvement Recommendations

Adding Preferred and Non-Preferred Terminology - The concepts and terms which received lower rankings (1-2) provide a quick list of candidates to be reviewed as potential non-preferred terminology. For example, "matrix" related concepts were searched for by only one tester, and it is unlikely that a preferred term would be necessary, but a non-preferred term might be recommended to lead the user to a more general statistical analysis concept. Some terms not found at all by testers do actually exist in ERIC or IIS. This suggests that entry vocabulary on these topics is not good enough to lead the user to the proper term.

Quite a few terms in the 3 level ranking received individual comments and suggest the possible addition of non-preferred terminology or perhaps even a preferred term. For example, the term "Collaborative Research" is included in IIS as non-preferred terminology (the user is instructed to use "Cooperation (ERIC)" and "Research (ERIC)"). This test revealed, however, that almost every user listed "collaborative research" as a concept in more than one article and was only moderately satisfied with how they were able to represent it. This suggests that the term might be more important to the field of Integration and Implementation Sciences than originally thought and should be a preferred term.

Distinguishing Non-Preferred Terms - The fact that some testers used non-preferred terminology in spite of instructions to the contrary suggests that perhaps they were not actually reviewing the details of the term itself (most likely in ERIC, which provides a preliminary term list in response to a search which offers no distinction between preferred and non-preferred terms). Using a different font, style (e.g. italic), or other visual designation with the word to distinguish non-preferred terms might help prevent this problem.

Updating the Thesaurus Introduction - The questions and frustrations received by many testers indicate that the thesaurus introduction should be more extensive, clearer, and more effectively organized. Given the need to begin testing as soon as possible, the introduction made available to testers was preliminary. It was updated during the testing process and provided to some testers for review. Feedback on the updated version was positive and it has been incorporated into the IIS Thesaurus Project Web site as of 3 May 2004.

Expert Review

Dr. Gabriele Bammer, the key scholar developing Integration and Implementation Sciences, reviewed the IIS thesaurus generally and also completed the test. Overall, she found the thesaurus to be a good representation of the field as it is currently defined and organized and was very pleased with the product.

"I am just delighted with what you have achieved and with the vision you have set for what is possible and desirable. You have done a highly commendable task of accurately reflecting what Integration and Implementation Sciences is about."

- Dr. Gabriele Bammer

The primary purpose of a thesaurus usually is to serve as a controlled vocabulary for indexing resources within a specific field of study or application. Integration and Implementation Sciences,

however, is a very new field. It is difficult to build a thesaurus when the important concepts of the field itself are still being hammered out. Even so, Dr. Bammer's test of the thesaurus indicated that the IIS thesaurus system was highly successful in representing key concepts from seven different citations (95.3% of terms found were ranked "good enough" or better by Dr. Bammer).

There are other puposes of thesauri, however, that are particularly relevant for growing fields like Integration and Implementation Sciences. Two of the four uses identified by Booth (see the [Annotated Bibliography](#)) demonstrate the value of a thesaurus as a source for subject familiarization and to provide meaning and authenticity checks. It is in this context that Dr. Bammer discussed the great value of this first draft of the IIS Thesaurus. Bammer found the thesaurus provided an essential framework for further discussions with colleagues. These discussions will help to clarify the field by cementing definitions and relationships between key concepts.

"One of the many benefits of the thesaurus development exercise is that it has helped me clarify my thinking about Integration and Implementation Sciences, and your very accurate work has made me acutely aware of the short-comings of existing descriptions."

- *Dr. Gabriele Bammer*

After discussion of the quantitative results of Dr. Bammer's testing and the language of the thesaurus, the following sections offer a brief summary of Dr. Bammer's thoughts about how to proceed with the IIS Thesaurus. These reflections are included in order to provide readers with insight into both how a new disciplinary specialization develops, and the great value of thesaurus construction beyond the production of an indexing tool.

Quantitative

A total of 87 concepts/term pairs were identified by Dr. Bammer for 7 citations. Of these, 78 terms were ranked by satisfaction with the ability of the term found in ERIC or IIS to represent the concept Dr. Bammer had identified as central to the article she was reviewing.

- 95.3% of terms found were ranked "good enough" or better at representing the desired concepts (74 terms)
- 85.9% were a "close fit," or "better/more specific" for the concept (67 terms)

Language

Much to the joy and chagrin of the authors, Dr. Bammer has relieved the IIS Thesaurus of its mandate to use British English. While it is unfortunate that the authors did not inquire directly about this issue sooner, this edict will make reconciling the IIS Thesaurus with ERIC much easier in subsequent stages.

Classification

Dr. Bammer indicated that the current structure of the thesaurus (as evident in the TREE display) does adequately represent the current state of the field as evidenced in available literature and other resources (i.e. the [IIS Web site](#)). The act of viewing the structure in this way, however, revealed to her that perhaps there were better ways for the field to be organized. The current structure does not

make the relationships between key elements and functions as clear as they ought to be (e.g. the contributions of the key research areas, the unique theory and methods of IIS itself, the conditions under which IIS theory and methods are developed and applied, the necessary tools for these processes).

She agreed that as further clarification of terminology occurs, a more effective structure of classification and organization will undoubtedly emerge.

Value in clarifying thinking for the field

Dr. Bammer discussed the ongoing challenges she has encountered when discussing meaning and definitions with various colleagues. She is particularly averse to the creation of new terms for every new concept, but without them it becomes exceptionally important to be clear about the use and context of existing terms. The IIS thesaurus has provided her with a focal point to more effectively guide those discussions, and she plans to include terminological review among the upcoming tasks for the field.

"I am also very pleased to have a framework in which to conduct debates about terminology. As the field grows, agreed definitions of terms and concepts are crucial, but such debates can often be self-referential and sterile. Having a real world use context to guide those debates is of immeasurable value."

One example where the IIS thesaurus has stimulated action involves the concepts of transfer, translation and transformation. The study and application of these concepts comprises a 7th key research area missing from the thesaurus. The thesaurus remains accurate based on what was presented on the IIS Web site at the time the thesaurus was constructed, but as these concepts have grown more important, the currently weak treatment in the IIS thesaurus has motivated Dr. Bammer to clarify definitions and roles for these areas so that they may be included at their full weight in the next draft.

Multi-thesauri system and Next Steps

The single greatest challenge for immediate use of the thesaurus for review and discussion by IIS scholars is the fact that it is distributed among three thesauri (ERIC, IIS and UNESCO). While this distribution is functional (if annoying) for indexers, it is completely inadequate for those attempting to review the terminology of the entire discipline as a whole.

Dr. Bammer considered the cumbersome task of trying to import or enter all relevant ERIC terms into the IIS Thesaurus, and suggested that perhaps it would be easier to embark on a campaign to get ERIC to include the IIS terms from this thesaurus. The authors advised her that the process of proposing new terms to a thesaurus as established as ERIC was not feasible. The next suggestion was to break the thesaurus into component disciplinary parts, so that the work to further develop a single IIS thesaurus (by incorporating ERIC terms and possibly others) would be more likely to receive funding.

For example, IIS draws on the scholarship of different research areas to varying degrees. While virtually all of the study of Participatory Methods is relevant to IIS, only part of Complexity Science is relevant. It was suggested that the development of a Participatory Methods glossary/thesaurus might be useful to that field (and therefore fundable by mediation, facilitation or other public

participation organizations) and would ultimately provide a fully inclusive chunk of the IIS Thesaurus.

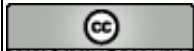
Any parties interested in sponsoring such a project are encouraged to contact either [Dr. Gabriele Bammer](#) or [Caryn Anderson](#).

Overall the IIS Thesaurus was considered by Dr. Bammer to be a great success, if more for its motivational use than for immediate indexing. The authors are deeply grateful to Dr. Bammer for her time and feedback.

[Top](#)

Updated: 15 November 2005

Contact: CarynLAnderson@yahoo.com or [Kyle Nicholls](#)



SOME RIGHTS RESERVED This work is licensed under a [Creative Commons License](#) by Caryn L. Anderson.

Integration and Implementation Sciences Thesaurus

A developing vocabulary for an emerging specialization

Caryn Anderson and Kyle Nicholls

Home

I2S Thesaurus

- Structure & Style
- Guidelines for Use
- Alphabetical View
- Hierarchical View

External Resources

- ERIC Thesaurus
- UNESCO Thesaurus

Development

- Bibliography
- Procedures
- Evaluation

Next Steps

Next Steps

- Implement recommended strategies if advised by expert.
- Check domain glossaries – Review glossaries for complexity science, systems theory, participatory methods, inter- and trans-disciplinarity, diverse epistemologies, and knowledge management. Add relevant terms to IIS as deemed necessary.
- Consolidate thesauri - Work with ERIC to get thesaurus in electronic form to import into IIS thesaurus so all terms are in one place, or enter all relevant ERIC terms manually.
- Reconcile Languages – A decision was made that the IIS Thesaurus ought to be written in International (British) English as the majority of users (and the key scholar) will be characterized as international. The Thesaurus of ERIC Descriptors is a product of the American government and, as such, is in American English. The IIS Thesaurus does its best to use British English, but cannot when terms have been borrowed from ERIC. As such, the language is somewhat motley at the moment. Once the relevant terms from ERIC have been imported into the ISS Thesaurus, they can be modified to reflect the appropriate spellings.
- Actual Indexing of IIS resources – Indexing of citations, individuals, organizations and other resources within a central IIS database, or in distributed programs as necessary (e.g. separate citation management software).

Updated: 15 November 2005

Contact: CarynLAnderson@yahoo.com or [Kyle Nicholls](#)



SOME RIGHTS RESERVED This work is licensed under a [Creative Commons License](#) by Caryn L. Anderson.