# SUMBER DATA DAN INFORMASI ILMIAH

**NOORIKA RETNO WIDURI**

Disampaikan pada Pelatihan Teknis Substantif Jabfung ADI Batch 1, 6 Mei 2026

# OUTLINE

1. Latar Belakang
2. Jenis dan Sumber data Ilmiah
3. Prinsip Data
4. Metadata
5. Penelusuran data dan informasi ilmiah
6. Kriteria pemilihan data dan informasi ilmiah

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# LATAR BELAKANG

# GARBAGE IN, GARBAGE OUT

Kualitas analisis data bergantung pada kualitas data yang digunakan.

## INPUT DATA BURUK

Data tidak akurat, tidak lengkap, tidak konsisten, duplikat


## PROSES DATA

Membersihkan, memvalidasi, menggabungkan, dan mengolah data

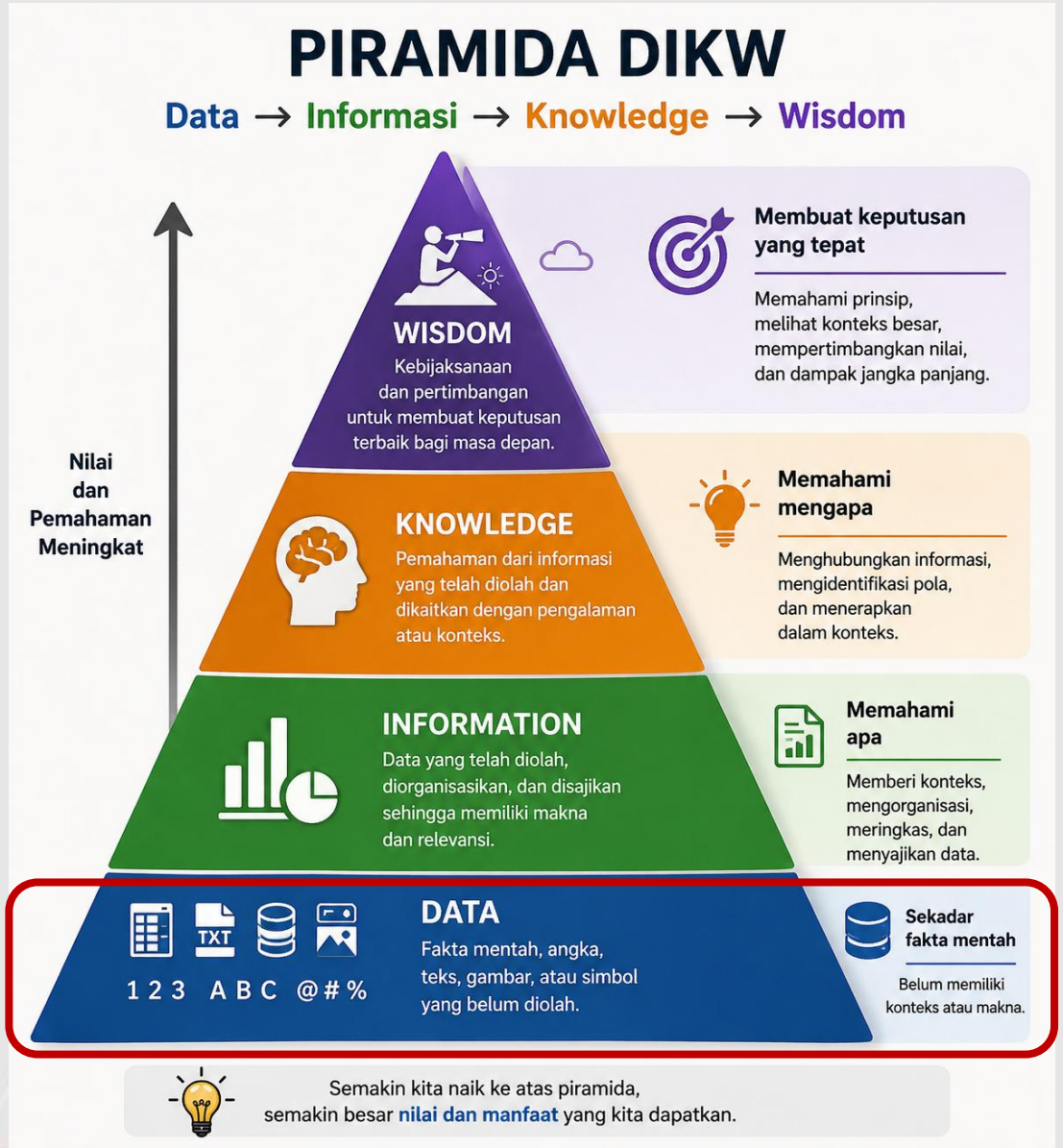

## OUTPUT BERKUALITAS

Hasil analisis akurat, relevan, dan dapat diandalkan


**KUALITAS INPUT MENENTUKAN KUALITAS OUTPUT.**

Data berkualitas → Analisis akurat → Keputusan tepat → Hasil optimal

- **KUMPULKAN DATA** yang relevan dan lengkap
- **VALIDASI DAN BERSIHKAN DATA** secara rutin
- **STANDARISASI DAN KELOLA DATA** secara konsisten
- **INTEGRASIKAN DATA** dari berbagai sumber dengan baik
- **GUNAKAN DATA BERKUALITAS UNTUK HASIL TERBAIK**






*Referensi : Sulung,Undari ; Muspawi, Mohamad. 2024. Jurnal Edu Research Indonesian Institute For Corporate Learning And Studies (IICLS)*

# JENIS & SUMBER DATA ILMIAH

## 1 Jenis Data Ilmiah

- Kuantitatif
- Kualitatif
- Primer
- Sekunder

## 2 Sumber Data Ilmiah

- Institusi pemerintah
- Repositori
- Sumber internet
- Dokumen/arsip
- Industri/swasta
- Eksperimen

## 3 FAIR & CARE

**FAIR**
Findable, Accessible, Interoperable, Reusable

**CARE**
Collective Benefit, Authority to Control, Responsibility, Ethics

## 4 Open Science

- Akses terbuka
- Transparan
- Dapat direplikasi
- Kolaboratif & dapat digunakan ulang

Data ilmiah dari berbagai jenis dan sumber harus dikelola dengan prinsip FAIR dan CARE agar dapat dibagikan melalui *open science* secara **transparan, kolaboratif, dan bermanfaat**.

| Aspek | Kuantitatif | Kualitatif |
|---|---|---|
| **Fokus** | Angka, statistik | Kata, deskripsi |
| **Metode Pengumpulan** | Survei, eksperimen | Wawancara, observasi |
| **Analisis** | Statistik, matematis | Identifikasi tema, pola |
| **Tujuan** | Pengujian hipotesis, generalisasi | Pemahaman mendalam |
| **Pendekatan Filosofis** | Positivisme | Interpretivisme |

Scopus AI, 05052026

| Aspek | Data Primer | Data Sekunder |
|---|---|---|
| **Definisi** | Data yang dikumpulkan langsung oleh peneliti untuk tujuan spesifik penelitian. [1] [2] | Data yang sudah ada sebelumnya, dikumpulkan untuk tujuan lain, tetapi digunakan kembali untuk penelitian baru. [1] [2] [3] |
| **Sumber** | Diperoleh langsung dari responden atau objek penelitian melalui wawancara, survei, eksperimen, atau observasi. [2] [4] [5] | Diperoleh dari dokumen, publikasi, database, atau catatan yang sudah ada. [2] [3] [6] |
| **Keuntungan** | - Data lebih relevan dan spesifik untuk tujuan penelitian. [1] [2] <br> - Peneliti memiliki kontrol penuh atas proses pengumpulan data. [7] | - Lebih hemat waktu dan biaya karena data sudah tersedia. [1] [3] [8] <br> - Dapat mencakup data dalam skala besar atau historis. [6] [8] |
| **Kekurangan** | - Proses pengumpulan data memakan waktu dan biaya tinggi. [3] [7] <br> - Rentan terhadap bias jika tidak direncanakan dengan baik. [7] | - Mungkin tidak sepenuhnya relevan dengan tujuan penelitian. [6] [9] <br> - Kualitas data tergantung pada metode pengumpulan awal. [7] [9] |
| **Contoh** | - Hasil wawancara langsung dengan responden. [5] <br> - Data eksperimen yang dikumpulkan di laboratorium. [4] | - Data sensus, laporan pemerintah, atau catatan medis elektronik. [1] [6] [10] |

# KAPAN DATA UMUM MENJADI DATA ILMIAH

- Data umum → tidak secara khusus digunakan untuk riset

- Menjadi Data ilmiah → ada tujuan penelitian, sistematis, verifikasi, analisis

1. cara memperoleh
2. Memverifikasi
3. menganalisis data

# SUMBER DATA DAN INFORMASI ILMIAH


- ✓ **Data bisnis dan survei dari pemerintah menjadi sumber penting bagi penelitian sosial**
- ✓ **Survei berseri dari lembaga akademik menyediakan data berkualitas tinggi untuk analisis sosial**

BNPB:
https://dibi.bnpb.go.id/superset/dashboard/1/?standalone=0&expand_filters=0
BIG : https://srgi.big.go.id/tides
https://siga.bkkbn.go.id/tabulasi-siga

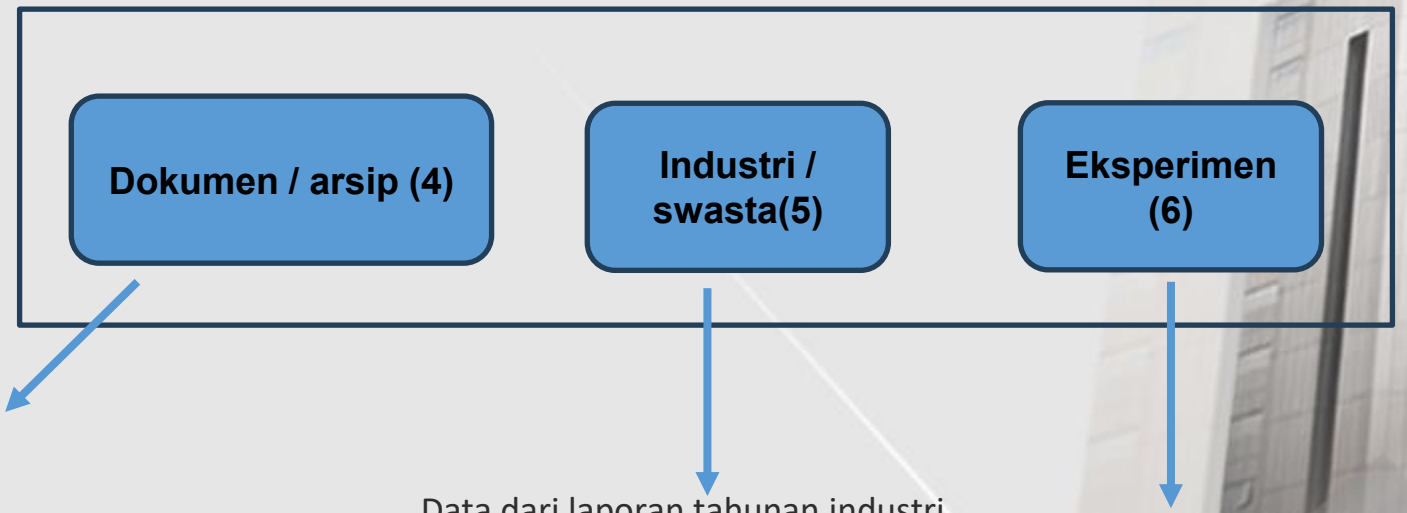
**Repositori seperti re3data.org menyediakan akses ke berbagai database penelitian sosial humaniora**

https://www.kaggle.com/datasets?tags=11105-Education
https://www.re3data.org/search
https://rin.brin.go.id/
https://datacatalog.worldbank.org/search?sort=last_updated_date%20desc

**Sumber seperti Google Scholar, Altmetric.com, dan Overton digunakan untuk mengukur dampak sosial, media, dan politik dari penelitian**

Altmetric.com
API Medsos(twitter, FB, IG, toktok dll)

# SUMBER DATA DAN INFORMASI ILMIAH



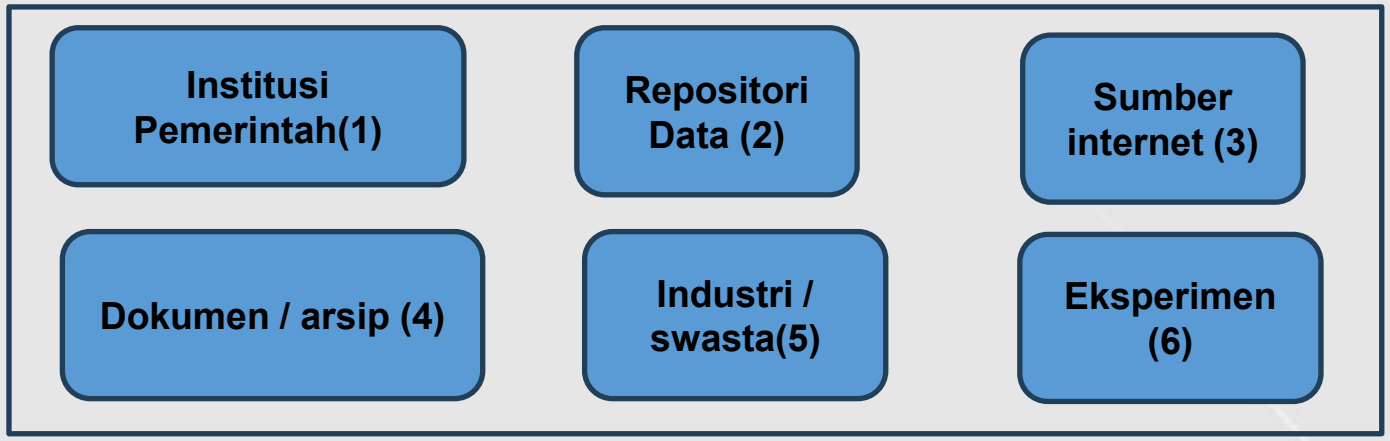

- ✓ **Dokumen tradisional dan arsip sering digunakan untuk menyimpan dan menyebarkan data kualitatif**
- ✓ **Literatur abu-abu (grey literature) seperti ephemera, laporan internal, dan data yang tidak terdokumentasi secara formal**

Data dari laporan tahunan industri
Data berbayar (Data Tempo, dll )

https://data.tempo.co/front/datacenter/
https://databoks.katadata.co.id/
https://data.tempo.co/MajalahTeks/detail/ARM20220115192970/kami-bukan-tentara-kami-ilmuwan

Data yang dikumpulkan melalui eksperimen laboratorium, simulasi, atau observasi langsung

# SUMBER DATA DAN INFORMASI ILMIAH




Strategi Penelusuran

FAIR ; CARE; TRUST

sistem

Metadata

Analisis

# INDIKATOR PRINSIP FAIR & CARE

## FAIR

**Prinsip pengelolaan data agar mudah ditemukan, diakses, dioperasikan, dan digunakan kembali.**

### 1. Findable (Dapat Ditemukan)
- Metadata standar
- Identifikasi unik
- Indeksasi

### 2. Accessible (Dapat Diakses)
- Open access
- Kebijakan data sharing

### 3. Interoperable (Dapat Dioperasikan)
- Penggunaan format standar

### 4. Reusable (Dapat Digunakan Kembali)
- Lisensi
- Kualitas metadata

## CARE

**Prinsip etika dan tata kelola data yang menghormati hak, kepentingan, dan kontrol komunitas.**

### 1. Collective Benefit
- Tujuan sosial, keberlanjutan komunitas adat

### 2. Authority to Control
- Kedaulatan data, hak pengelolaan berbasis persetujuan komunitas

### 3. Responsibility
- Akuntabilitas pengguna data, transparansi proses pengelolaan data

### 4. Ethics
- Penghormatan terhadap hak adat, keamanan dan privasi data

**FAIR** menekankan kualitas dan keterbukaan data, sedangkan
**CARE** menekankan etika, hak komunitas, dan tanggung jawab penggunaan data.

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# PRINSIP FAIR

| Discipline | Application of FAIR Principles |
|---|---|
| Life Sciences | Bioimage data management, biomedical research [1] [2]. |
| Natural Sciences | Data repositories and sharing [1] [4]. |
| Earth Sciences | NASA Earth science data [5]. |
| STEM | Teaching, learning, and research workflows [6]. |
| Agricultural Research | FAIR and CARE principles for datasets [7]. |
| Social Sciences | Data storage and reproducibility [8]. |
| Libraries | Advocacy, training, and infrastructure [9]. |
| Digital Humanities | Crowdsourced collections and ethical considerations [10]. |
| AI and Digital Twin Systems | Addressing explainability and privacy challenges [11]. |
| Semantic Web | Data integration and enrichment [12]. |

Scopus AI, 01052026

# CARE PRINSIP

| Discipline | Application of CARE Principles |
|---|---|
| Indigenous Studies | Indigenous Data Governance and community protocols [1]. |
| Library & Information Science | Research Data Management and Open Science frameworks [2]. |
| Data Science | Community-focused data science for social good [3]. |
| Health & Biomedical Sciences | Ethical health data governance and public health research [4] [5]. |
| Philosophy & Ethics | Ethics of care and alternative academic paradigms [6]. |



Scopus AI, 01052026

# METADATA

- Metadata berfungsi untuk mendeskripsikan sumber data, struktur, status, dan semantik data
- Metadata digunakan untuk mengorganisasi kumpulan data, mempermudah pencarian, dan lokasi data di masa depan

- Metadata menjadi kunci dalam pengelolaan data digital yang semakin kompleks. Dengan standar yang baik, metadata dapat meningkatkan efisiensi pencarian, pengelolaan, dan penggunaan data
- Metadata juga berperan penting dalam mendukung integrasi data lintas sistem dan domain

# METADATA

**Judul artikel:** Metadata: A New Word for an Old Concept
**Penulis:** A. Yousefi dan S. Yousefi
**Tahun:** 2007
**Jurnal:** Library Philosophy and Practice

**Metadata Dublin Core**

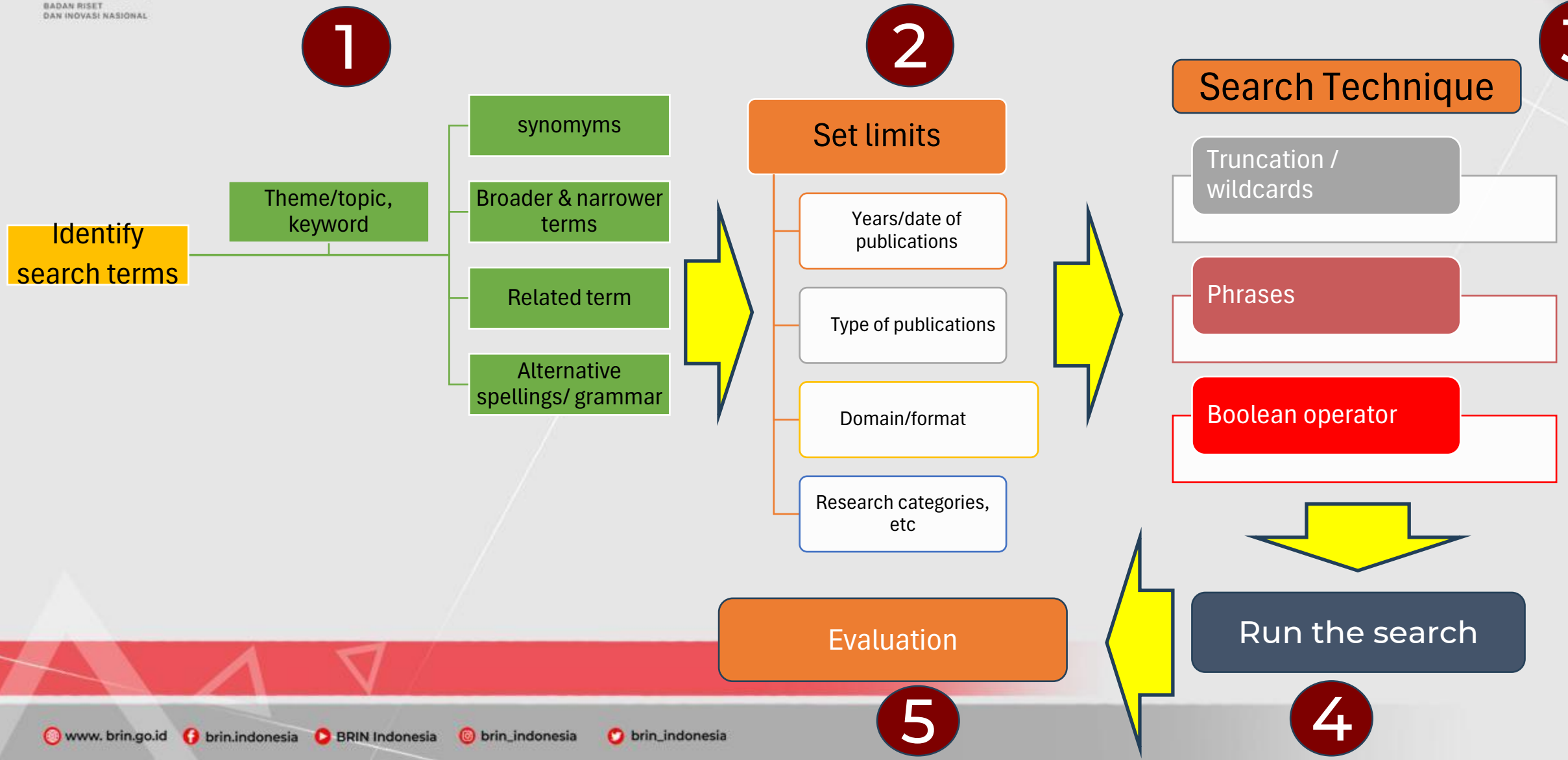
| Elemen Dublin Core | Isi Metadata |
|---|---|
| **Title** | Metadata: A New Word for an Old Concept |
| **Creator** | Yousefi, A.; Yousefi, S. |
| **Subject** | Metadata; bibliographic description; library science; information organization |
| **Description** | Artikel ini membahas konsep metadata sebagai istilah baru untuk konsep lama dalam pengelolaan dan deskripsi informasi bibliografis. |
| **Publisher** | Library Philosophy and Practice |
| **Contributor** | — |
| **Date** | 2007 |
| **Type** | Text; Journal Article |
| **Format** | Electronic article |
| **Identifier** | — |
| **Source** | Library Philosophy and Practice |
| **Language** | English |
| **Relation** | — |
| **Coverage** | — |
| **Rights** | Hak cipta mengikuti ketentuan penerbit atau jurnal |

# METADATA

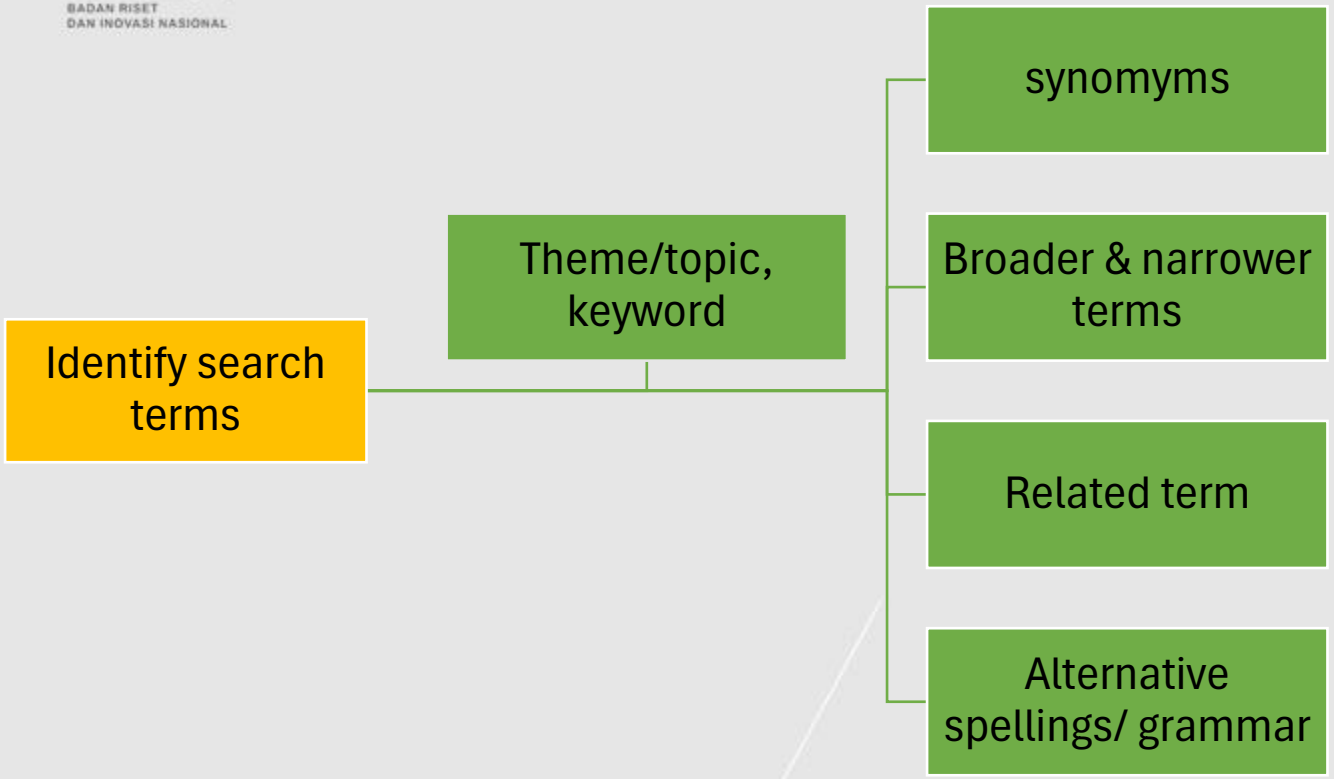
Citation Metadata

| | |
|---|---|
| **Persistent Identifier** | hdl:20.500.12690/RIN/PWW2IU |
| **Publication Date** | 2026-03-11 |
| **Title** | LOKAMATH-QA: Dataset Penalaran Soal Matematika Berbasis Bahasa Lokal Indonesia |
| **Alternative Title** | LOKAMATH-QA: A Multilingual Mathematical Reasoning Dataset for Indonesian Local Languages |
| **Author** | Nimah, Iftitahu (Pusat Riset Sains Data dan Informasi BRIN) - ORCID: 0000-0003-2350-0481<br>Yuyun (Pusat Riset Sains Data dan Informasi BRIN) - ORCID: 0000-0003-4936-1862<br>Kokoy Siti Komariah (Pusat Riset Sains Data dan Informasi BRIN) - ORCID: 0000-0003-2618-3039<br>Aria Bisri (Pusat Riset Sains Data dan Informasi BRIN) - ORCID: 0009-0002-0650-5520<br>Nurfaedah Jufri (Universitas Handayani Makassar) - ORCID: 0009-0003-3218-2072 |
| **Point of Contact** | Use email button above to contact.<br>Nimah, Iftitahu (Pusat Riset Sains Data dan Informasi BRIN) |
| **Description** | Deskripsi dalam Bahasa Indonesia: Dataset terdiri dari 500 pasangan pertanyaan, penalaran, dan jawaban dari soal matematika multi bahasa, yaitu Bahasa Indonesia, Jawa, Sunda, dan Bugis. Dataset ini merupakan pengembangan dari dataset penalaran soal matematika dalam Bahasa Inggris – MATH500 (Hendrycks et al., 2021), yang diterjemahkan dengan menggunakan OpenAI GPT-4.1 dan diperbaiki lebih lanjut oleh penutur bahasa asli. Dataset ini dikembangkan untuk menjembatani riset mengenai analisis dan evaluasi model bahasa besar multibahasa (multilingual) untuk domain pendidikan atau penalaran soal matematika, terutama untuk bahasa-bahasa bersumber daya rendah (low resource language) yang mencakup tiga (3) bahasa lokal di Indonesia: Bahasa Jawa, Sunda, dan Bugis. (2026-03-09)<br>English description: Dataset is composed of 500 question answering pairs for each target language, including the reasoning process of open source Large Language Models (LLMs) in Indonesian, Javanese, Sundanese, and Buginese language. This dataset was constructed from 500 English samples of math reasoning task Q&A -- Math500 (Hendrycks et al., 2021), by utilizing OpenAI GPT-4.1 for automatic translation from Indonesian language to target languages and further refined by native speakers of Javanese, Sundanese, and Buginese language. This dataset was constructed to bridge the research on analyzing and evaluating LLMs for low resource languages, particularly local languages in Indonesia. |
| **Subject** | Computer and Information Science |
| **Keyword** | mathematical reasoning (Wikidata) https://www.wikidata.org/wiki/Q122766417<br>low-resource languages (LCSH) https://id.loc.gov/authorities/subjects/sh2022006704.html<br>large language model (Wikidata) https://www.wikidata.org/wiki/Q115305900<br>natural language processing (LCSH) https://id.loc.gov/authorities/subjects/sh88002425.html<br>indonesian language (LCSH) https://id.loc.gov/authorities/subjects/sh85065767.html<br>javanese language (LCSH) https://id.loc.gov/authorities/classification/PL5161-PL5179.html<br>sundanese language (LCSH) https://id.loc.gov/authorities/classification/PL5451-PL5454.html<br>bugis language (LCSH) https://id.loc.gov/authorities/classification/PL5271-PL5271.95.html |
| **Related Publication** | Xiao Xiao, Iftitahu Ni'mah, YuyunWabula, Mykola Pechenizkiy, and Meng Fang. MATH-IDN: A multilingual mathematical problem solving dataset featuring local languages in indonesia. In 19th Conference of the European Chapter of the Association for |

# STRATEGI PENELUSURAN DATA & INFORMASI ILMIAH



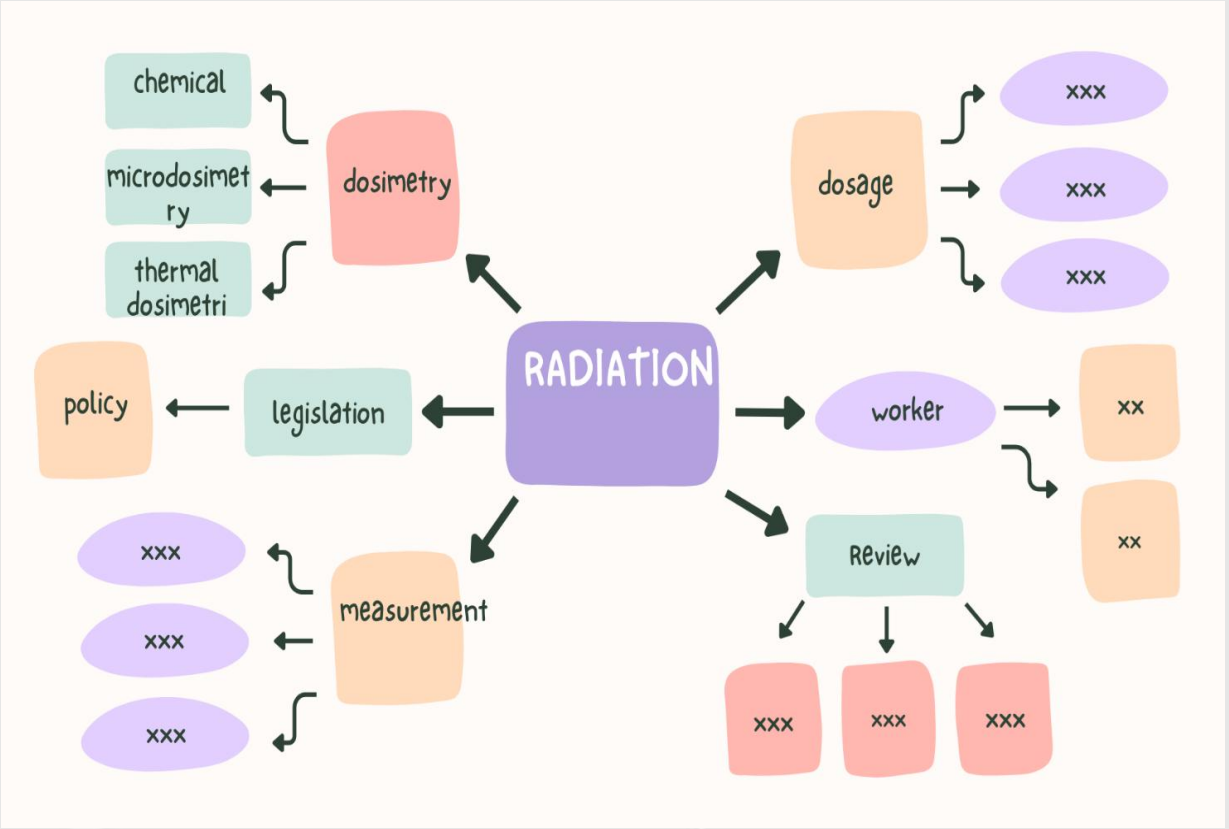
# MENGIDENTIFIKASI TOPIK PENCARIAN




Tools :

1. Mind mapping
2. https://www.loc.gov/aba/publications/FreeLCSH/freelcsh.html
3. https://eric.ed.gov/?faq-thesaurus
4. https://www.loc.gov/search?new=true&q=radiation&search_button=GO
5. https://inis.iaea.org/search/thesaurus.aspx
6. https://keywordtool.io/
7. Dictionary, etc

# MENGIDENTIFIKASI TOPIK PENCARIAN



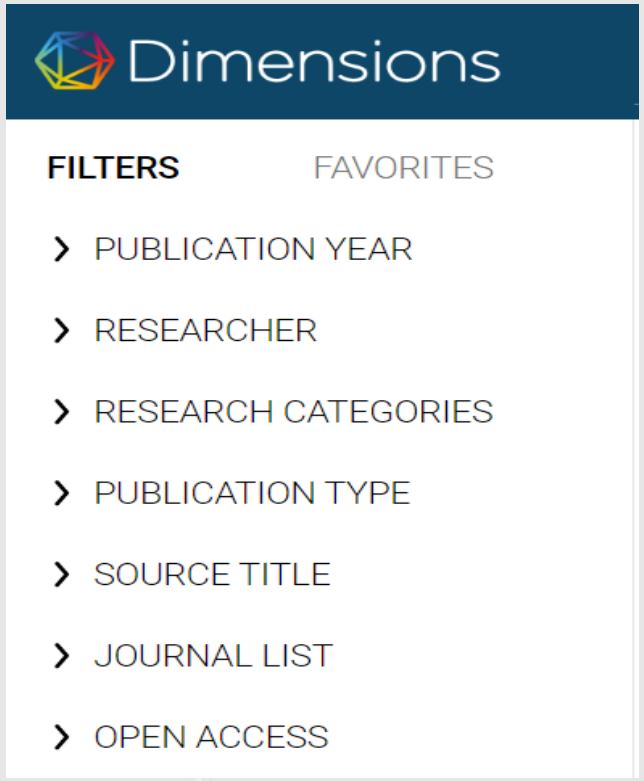

| example | |
|---|---|
| Irrelevant | Synonim<br>Inappropriate, Unrelated |
| Observe | Examine, Study, Scrutinize |
| Radiation dosimetry | BT Nuclear counters Radiation—Measurement |
| | NT Chemical dosimetry Dosimeters Microdosimetry Photographic dosimetry Thermal dosimetry Thermoluminescence dosimetry |
| Radiation | RT Radiologi |

# MENGIDENTIFIKASI TOPIK PENCARIAN

| Spelling English - US | Spelling English - UK | Spelling English - US | Spelling English - UK |
|---|---|---|---|
| -e- (ex: *anemia, diarrhea, encyclopedia*) | -oe-/-ae- (Ex : *anaemia, diarrhoea, encyclopaedia*) | -og (ex : *analog, monolog, catalog*) | -ogue (ex : *analogue, monologue, catalogue*) |
| -ense (ex: *defense, offense, license*) | -ence (ex: *defence, offence, licence*) | -ll- (ex : *enroll, fulfill, skillfull*) | -l- (ex: *enrol, fulfil, skilful*) |
| -el- (Ex: *canceled, jeweler, marvelous*) | -ell- (Ex: *cancelled, jeweller, marvellous*) | -o (ex: *color, behavior, mold*) | -ou (ex: *colour, behaviour, mould*) |
| -ize (Ex: *appetizer, familiarize, organize*) | -ise (Ex: *appetiser, familiarise, organise*) | -er (ex: *meter, fiber, center*) | -re (ex: *metre, fibre, centre*) |

# MENENTUKAN BATASAN

- Set limits
  - Years/date of publications
  - Type of publications
  - Domain/for mat
  - Research categories, etc




https://app.dimensions.ai/discover/publication


https://pubmed.ncbi.nlm.nih.gov/?term=radiation

# STRATEGI PENELUSURAN

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Search technique

- Truncation / wildcards
- Phrases
- Boolean operator

**Truncation** — a symbol added to the end of the root of a word to instruct the database to search for all forms of a word. The asterisk (*) is used in many databases for truncation.
**Wildcards** — a symbol used to represent any character. Wildcards can usually be used at the end of a word or within a word. The pound symbol (#) is used in many databases as a wildcard.

| Search term | Word occurence | Result |
|---|---|---|
| (1) behavi* | Behaviour ; behavior ; behavioral; behavior | 1,172,204 |
| (2) behavior | | 1,023,772 |
| (3) wom#n | WOMN | 4 |
| (4) wom?n | Women; woman | 529,828 |

# STRATEGI PENELUSURAN

Search technique

- Truncation / wildcards
- Phrases
- Boolean operator

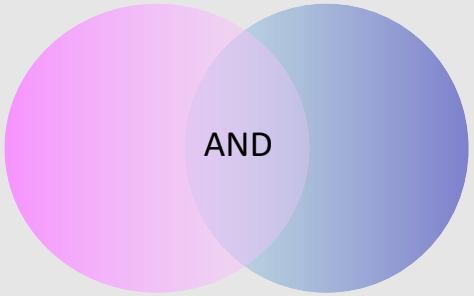
**Exact search** or **phrase search** is used to search for information containing keywords in the form of phrases using the operator **"...." (double quote)**

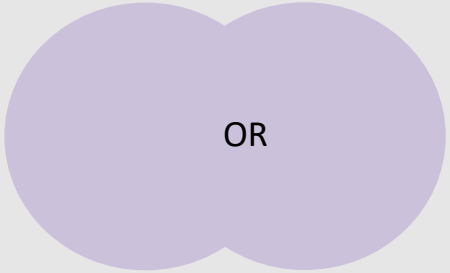
| Search Term | Result | note |
|---|---|---|
| (1) Climate change | 99,330 | System detect as 2 different term |
| (2) “Climate change” | 91,572 | |
| (3) "climate chang*" | 91,739 | Combine with truncation/wildcard |

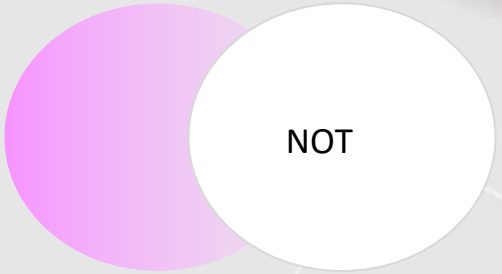
# STRATEGI PENELUSURAN

Search technique

- Truncation / wildcards
- Phrases
- Boolean operator



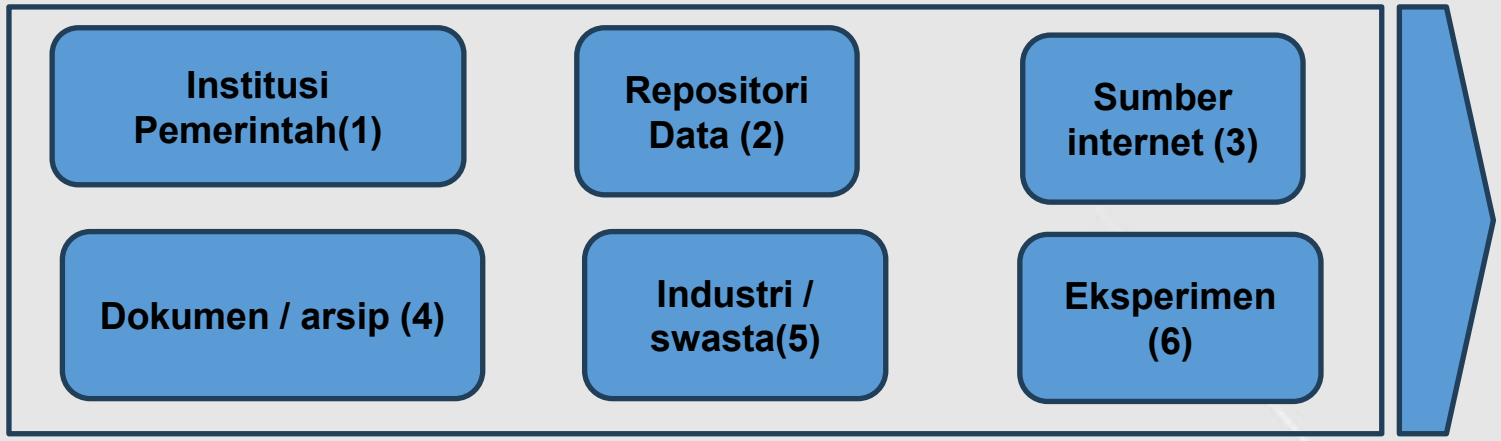

| | |
|---|---|
| AND | retrieves only the middle section (intersection) |
| OR | retrieves all (left and right side) |
| NOT | excludes, only pink section is retrieved |

# EVALUASI PEMILIHAN SUMBER DATA DAN INFORMASI

| | |
|---|---|
| kualitas | Akurasi, relevansi, keandalan, dan konsistensi data |
| relevansi | Kesesuaian dengan pertanyaan penelitian |
| aksesibilitas | Kemudahan akses teknis dan biaya |
| cakupan | Wilayah geografis, waktu, atau populasi yang sesuai |
| kemutahiran | Data terbaru untuk konteks yang dinamis |

A framework for the quality-based selection and retrieval of open data - a use case from the maritime domain
Stróżyna, M.opens author details in a new tab,Eiden, G.opens author details in a new tab,Abramowicz, W.opens author details in a new tab, (...),Węcel, K.opens author details in a new tab
***Electronic Markets***Opens journal info in a new tab 2018

# SUMBER DATA & INFORMASI ILMIAH




Strategi Penelusuran

FAIR ; CARE; TRUST

sistem ⟷ Metadata

Analisis

Output

Paper
Ringkasan Data
Policy brief, dll

# RINGKASAN DATA

Data in Brief 66 (2026) 112684

Contents lists available at ScienceDirect

Data in Brief

journal homepage: www.elsevier.com/locate/dib

Data Article

## Complete genome dataset of *Flavobacterium* sp. strain PL002 isolated from Antarctic *Porphyra* algae

Jennifer Charles Labo[a], Paris Lavin[b], Hui Yin Fan[c], Mohd Faizal Abu Bakar[d], Nur Athirah Yusof[a,*]

[a] *Biotechnology Research Institute, Universiti Malaysia Sabah, Jalan UMS, 88400 Kota Kinabalu, Sabah, Malaysia*
[b] *Departamento de Biotecnologia, Facultad de Ciencias del Mar y Recursos Biologicos, Universidad de Antofagasta, 601 Avenida Angamos, Antofagasta 1270300, Chile*
[c] *Food Security Research Laboratory, Faculty of Food Science and Nutrition, Universiti Malaysia Sabah, 88400 Kota Kinabalu, Sabah, Malaysia*
[d] *Advanced Genomics and Bioinformatics, Malaysia Genome and Vaccine Institute, National Institutes of Biotechnology Malaysia, Jalan Bangi, 43000 Kajang, Selangor, Malaysia*

https://www.sciencedirect.com/journal/data-in-brief/about/aims-and-scope

**BACA: Jurnal Dokumentasi dan Informasi** *Special Issue-Data in Brief for Repositori Ilmiah* 2024
ISSN 0125-9008 (Print); ISSN 2301-8593 (Online)
DOI: 10.55981/j.baca.2024.7785
SK Dirjen Dikti Ristek - Kemdikbudristek No. 105/E/KPT/2022 (Peringkat 2 SINTA)

## Dataset VR (*virtual reality*) laboratorium komputer BRIN 2 di Repositori Ilmiah Nasional (RIN)

**Arvy Herdianto Firmansyah[1*]; Abdurrakhman Prasetyadi[2]; Angga Arvianto Hadi[3].**

[1,2,3] Badan Riset dan Inovasi Nasional
*Korespondensi: arvyhfirmansyah@gmail.com

**Diajukan**: 25-Sep-2024; **Direview:** 21-Okt-2024; **Diterima:** 19-Nov-2024; **Direvisi:** 18-Nov-2024

***ABSTRACT***

*The rapid advancement of animation and 3D modeling technology, particularly in virtual reality (VR), has significantly transformed digital interactions. This article discusses the application of VR in computer laboratory simulations for research, experimentation, and data analysis. VR offers interactive 3D visualization, allowing users to view objects and spaces from various perspectives. The research method employed photogrammetry techniques at the BRIN Science and Technology Laboratory in Bandung to gather data. The collected data was then processed using Blender and Unity software, resulting in high-quality 3D models. The VR Lab Computer dataset from BRIN consists of 31 files, including 16 images and 15 3D object models that can be accessed through specific applications. The visualizations produced provide an accurate representation of the laboratory space, equipment, and tools available. The findings of this research indicate the significant potential of VR in education and research, as well as benefits for individuals with physical or geographical limitations. Thus, VR not only enhances the learning experience but also improves the efficiency of repeating experiments.*

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