Connecting the Dots: Solving Today’s Problems through Content, Technology and the Library

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B.Davies@Elsevier.com

9 May 2017, Valencia
Agenda

- Identifying the Problem
- Supporting Research Through Content
- Supporting Research Through Technology
- Questions
Researchers have Identified the Problem
What is the big challenge?
Pollution – Global View of Research

*Source: SciVal Trends*
## Pollution - Global View pollution Research Output

<table>
<thead>
<tr>
<th>Rank</th>
<th>Country</th>
<th>Scholarly Output</th>
<th>Views Count</th>
<th>Field-Weighted</th>
<th>Citation Count</th>
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<tbody>
<tr>
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<td>684,265</td>
<td>1.19</td>
<td>230,123</td>
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<tr>
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<td>720,406</td>
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<td>7.</td>
<td>France</td>
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<td>8.</td>
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## Pollution - Global View pollution Research Output (By Institutions)

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<tr>
<th>Institution</th>
<th>Scholarly Output</th>
<th>Views Count</th>
<th>Field-Weighted</th>
<th>Citation Count</th>
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<td>3. Tsinghua University</td>
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Pollution Research Output – Spain

Collaboration

International Collaboration
Publications co-authored with Institutions in other countries
Spain: 45.7%

Academic-Corporate Collaboration
Publications with both academic and corporate affiliations
Spain: 0.9%

Top 15 keyphrases
Based on 5,962 publications

- water
- pollutant
- wastewater
- Soils
- Pollution
- metal
- concentration (composition)
- model
- plant
- soil
- Removal
- Wastewater treatment
- data
- effluent
- time

A A A relevance of keyphrase | declining | growing (2011–2015)
Supporting the Research Through Content
Deep Vertical Strategy focusing on the largest fastest growing research areas where Elsevier is strongest

Subjects That Are Big and Growing

- Food Science
- Fundamental Life Sciences
- Psychology
- Environmental & Earth Science
- Chemistry
- Materials Science & Engineering

Subjects Where Elsevier Has a Strong Position

- Energy
- Transport
- Chemical Engineering
- Neuroscience
- Economics
- Biomedical Research

Results as of 2016. Normalized against average.
Elsevier’s books in Scopus consistently receive more citation on average than the market as a whole

<table>
<thead>
<tr>
<th>Publisher</th>
<th>Book Count</th>
<th>Book Share</th>
<th>Citation Count</th>
<th>Average Citations per Book</th>
<th>Relative Impact</th>
<th>Top citation count of highest cited book</th>
<th>% Top 1% Cited Books</th>
<th>% Books Uncited</th>
<th>Scopus Subject</th>
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<td>Competitor A</td>
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<td>40.8%</td>
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*Comparison of books published in 2014 that are indexed in Scopus
Elsevier’s books in Scopus consistently receive more citations on average than the market as a whole

Total Elsevier 2014 Book Count in Scopus: 693

Note: Books counted in multiple subject areas when classified as such
Elsevier’s citation impact is strongest in several subjects compared to other publishers

<table>
<thead>
<tr>
<th>Subject</th>
<th>Publisher</th>
<th>Book Share</th>
<th>Citations per Book</th>
<th>Relative Impact</th>
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<tr>
<td></td>
<td>Publisher A</td>
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<td></td>
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</table>
Researchers need different content types for different steps in their workflow

Books are the knowledge repository from which we learn.
Elsevier book and journal content is complimentary to help researchers solve their problems more efficiently.

Journals

Books

Latest Research
Recent Developments
Methods
Perspectives
Protocols and Processes
Applications & Fundamentals
Definitions & Comprehensives

Relevance of information over time

Books are the knowledge repository from which we learn.
Reference Module in Earth Systems and Environmental Sciences

- **4,786** – Total articles in Reference Module as of March 2017
- **4,950** – Total currency reviews since publication
- **317** – Total updated articles since publication
- **1,109** – Total new articles since publication (includes the new reference works added)
Reference Module in Earth Systems and Environmental Sciences

528 reference articles found for “Spain”.

- **Spain: Natural Hazards in the Country** *(Introductory)*
  *Reference Module in Earth Systems and Environmental Sciences, 2013*
  M.A. Torres-Vera
  - Abstract
  - PDF (3377 K)

- **Evolution of Hydropower in Spain** *(Advanced)*
  A. Gil, F. Bueno
  - Abstract
  - PDF (13466 K)

- **Feed-in Tariffs and Other Support Mechanisms for Solar PV Promotion** *(Advanced)*
  *Reference Module in Earth Systems and Environmental Sciences, 2013, Current as of 9 July 2015*
  B.K. Sovacool, A. Gilbert
  - Abstract
  - PDF (4595 K)

- Mediterranean Mariculture
  *Reference Module in Earth Systems and Environmental Sciences, 2015*
  G. Barnabé, G. Dewavrin
  - Abstract
  - PDF (4068 K)
Supporting Research Through Technology
eBook content is a critical complement to journal content

Books and journal articles provide different types of content, but for this reason they are fundamentally interlinked: researchers/students need both to build their knowledge around a topic.

- Facilitating new paths for investigation
- Comprehensive
- Learning tool
- Wide angle
- New topic or recapping old areas

- Specialised knowledge
- Narrow focus
- Extreme depth
- Latest research / new results
- Applying techniques

Source: Communispace survey of 150 users (students to senior researchers) conducted for S&T Books in October 2014
Book content solves problems that journal content does not address

44% look for articles outside their immediate field at least weekly.

How often do you search for articles outside your immediate field of study?  N=352

- 27% Several times a week
- 24% Around once a week
- 11% Around once or twice a month
- 10% Once every 2-3 months
- 6% Once every 6 months
- 3% Less often/never
- 2% It depends on what I’m working on at the time

47% look for collaborators outside their immediate field at least once a year.

Approximately, how often do you look for collaborators from outside your immediate field of study?  N=352

- 28% At least once every 6 months
- 21% Once a year
- 18% Once every 2-3 years
- 9% Less often/never
- 3% It varies

Elsevier Researcher panel, March 2015
User Behavior: eBook content is a critical complement to journal content, providing unique benefits to drive research and education forward

eBook and journal content are used interchangeably in interdisciplinary research – typical use cases

“I want to understand the article” – providing a researcher the foundational content required to understand the terms in a journal article

“It is a challenge to quickly get a foundation of relevant, authoritative, knowledge on subjects that are new to me”

“I need to find related foundational information to support interdisciplinary research”
User Behaviour: Data shows that users use books and journals together and move between disciplines

Data source: ScienceDirect usage data in 2015
To make their work flow researchers need answers to questions

- **Definitions**
  - Identify new research topic
  - Explore subject in depth

- **Fundamentals**
  - Write a grant, get funded

- **Methods and Processes**
  - Design/Run experiments
  - Test Solutions/Publish

---

Stay up to date in field

**Interdisciplinary work**

“It is a challenge to quickly get a foundation of relevant, authoritative knowledge on subjects that are new to me.”

“I need to get up to speed on a new topic in order to understand the article I’m reading.”

“Understanding techniques and processes is required to understand and reuse the results or methods in a paper.”
Case Study: Dr. Kyuson Yun

A Cancer Researcher with PhD in Biology from the California Institute of Technology.

Her current project is to understand mechanisms that regulate stem cell self-renewal and transformation in brain tumors. Her ultimate goal is to discover new therapies that eradicate brain cancer stem cells (CSCs).

She wants to publish her research in high impact journals to raise her academic profile and that of her institution, and to help patients with brain tumors.

She straddles the fields of cancer biology and developmental biology, studying stem cells, neurodegenerative and neuromuscular diseases, developmental disorders, and cancer genetics and genomics.
Dr. Yun’s Research Challenge

“I need an authoritative, complete review of cancer stem cells, by authors I can trust, as well as organ-specific identifications and their characteristic mechanisms.”

“I need to understand the links between cancer stem cell biology, brain biology, and drug design to effectively design a new therapy.”

“There is too much literature to cover! We have a weekly ‘journal club’ discussion in which lab members report on recent scientific papers on cancer stem cells and other relevant fields. This helps me stay up-to-date, but what I really need are overview sources, distillations and summaries that will save us time.”

“I need to be aware of the existing FDA-approved anti-angiogenesis agents in enough detail to consider improvements and alternates, and ultimately publish results of my own experiments.”
Dr. Yun’s Workflow

Research

Test Solution

Design/Run Experiment

Analyse Results
Dr. Yun’s Workflow

- The fundamentals of cancer stem cell biology
- Organ specific understanding of cancer (brain)
- Accepted therapeutic approaches
- Full knowledge of the latest research

Research

Test Solution

- Test her Results,
- Determine if her experimental drug is ready for Clinical Trials
- Improve Drug Efficacy
- Improve Drug Safety

Test Solution

Design Experiment

- Methods / Laboratory Techniques
- Accepted Protocols & FDA Guidelines
- Reference Data

Analyze Results

- Determine success of therapeutic drug
- Interpret and organize data
Dr. Yun’s Workflow – she’s using books AND journals at each stage

Explore subject in depth
Foundational Advcd Reviews
Latest Research Applications
Case Studies

Design experiments
Methods
Protocols
Procedures
Reference Data

Analyze results
Foundational Advcd
Latest Research
Methods
Applications

Create & test solution
Methods
Protocols
Procedures
Reference Data

Publish Results
Future Implications

Build knowledge, track related areas, and stay up to date in field

Interdisciplinary work: straddles cancer biology, developmental biology, and stem cell biology

“I need to be aware of the existing FDA-approved anti-angiogenesis agents in enough detail to consider improvements and alternates, and ultimately publish results of my own experiments.”

“I need an authoritative, complete review of cancer stem cells, but people I can trust, including organ-specific identifications and their characteristic mechanisms.”

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Content use cases
Workflow stage
Problem Statements

Dr. Yun’s Workflow – she’s using books AND journals at each stage

Explore subject in depth
Foundational Advcd Reviews
Latest Research Applications
Case Studies

Design experiments
Methods
Protocols
Procedures
Reference Data

Analyze results
Foundational Advcd
Latest Research
Methods
Applications

Create & test solution
Methods
Protocols
Procedures
Reference Data

Publish Results
Future Implications

Build knowledge, track related areas, and stay up to date in field

Interdisciplinary work: straddles cancer biology, developmental biology, and stem cell biology

“I need to be aware of the existing FDA-approved anti-angiogenesis agents in enough detail to consider improvements and alternates, and ultimately publish results of my own experiments.”

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Dr. Yun’s Workflow – she’s using books AND journals at each stage

Alternative View – User Centric – a continuum of content

Books are the knowledge repository from which we learn.
"I need to understand the links between cancer stem cell biology, brain biology, and drug design."

Dr. Yun’s Interdisciplinary Journey

Dr. Yun’s Research

Cancer Biology

Brain Biology

Pharmacology

Stem Cell Biology

Neuro Journals

Cancer Journals

Drug Design/Clinical Trial Journals

Stem Cell Journals
Current content platforms do not easily support co usage, putting the burden on the researcher to hunt around for solutions.
Topic Page Solution

Key Features:
1. Overall clear definition
2. Related terms (to topic pages)
3. Learn more on topic
   - 10 longer definitions
   - Related/ relevant reading

Live in Neuroscience, Biomedical Sciences and Life Sciences late May 2017
Quick Definition

Cell membrane
The cell membrane is a selectively permeable biological membrane found inside the cell wall and surrounding the cytoplasm.

- A short definition to quickly orient the user to the subject
- Enables users to understand and interpret scientific literature
2 Related Terms

• Users can learn more through interdisciplinary links

- Ideal for those who want to explore further

Related terms

- Macrophages, Amygdala, Basolateral amygdala, EGF, Amino Acids, BFGF, F4/80, Peptidase, Receptor agonist, EGFR
• Provides a comprehensive overview
Pyramidal tracts

The pyramidal tract exits the cortex, and after passing the pyramids of the medulla, the majority of these fibers cross to the opposite side and descend in the corticospinal tract through the spinal cord (Figure 3). Some of the fibers that do not cross over in the medulla travel ipsilaterally down the cord and cross to the opposite side in the neck or upper thoracic region.

From: Reference Module in Biomedical Research, 2014
ScienceDirect Topics improve efficiency for researchers

ScienceDirect Topics are indexed through SEO, allowing researchers and students to link directly to the authoritative content directly from the search engines.
Article Output vs eBooks Usage

More insightful data
Agenda

- Identifying the Problem
- Supporting Research Through Content
- Supporting Research Through Technology
Questions?

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