ERDT

DOST-SEI

Writing the Literature Review and Effective Referencing

Delia B. Senoro, Ph.D

Grand Ballroom, Century Park Hotel

03 June 2019, Manila

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Why very few cited papers?

Filipinos, good in English???! Why very few scientific papers from Philippines!!!?

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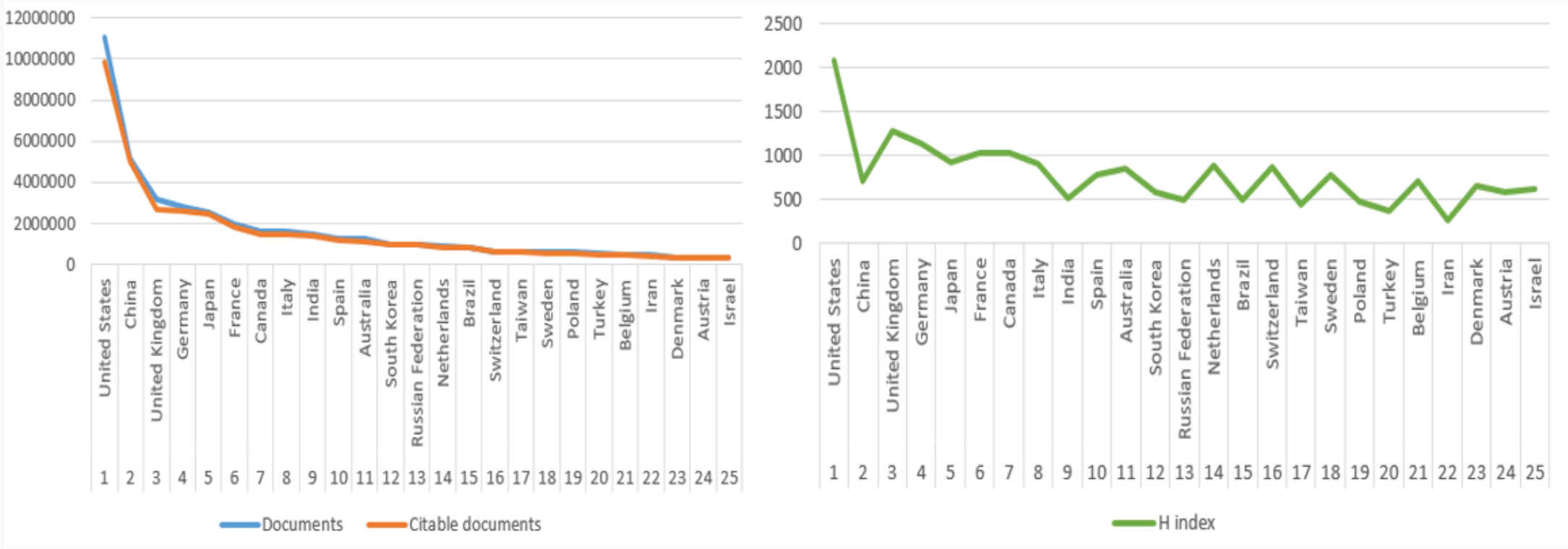
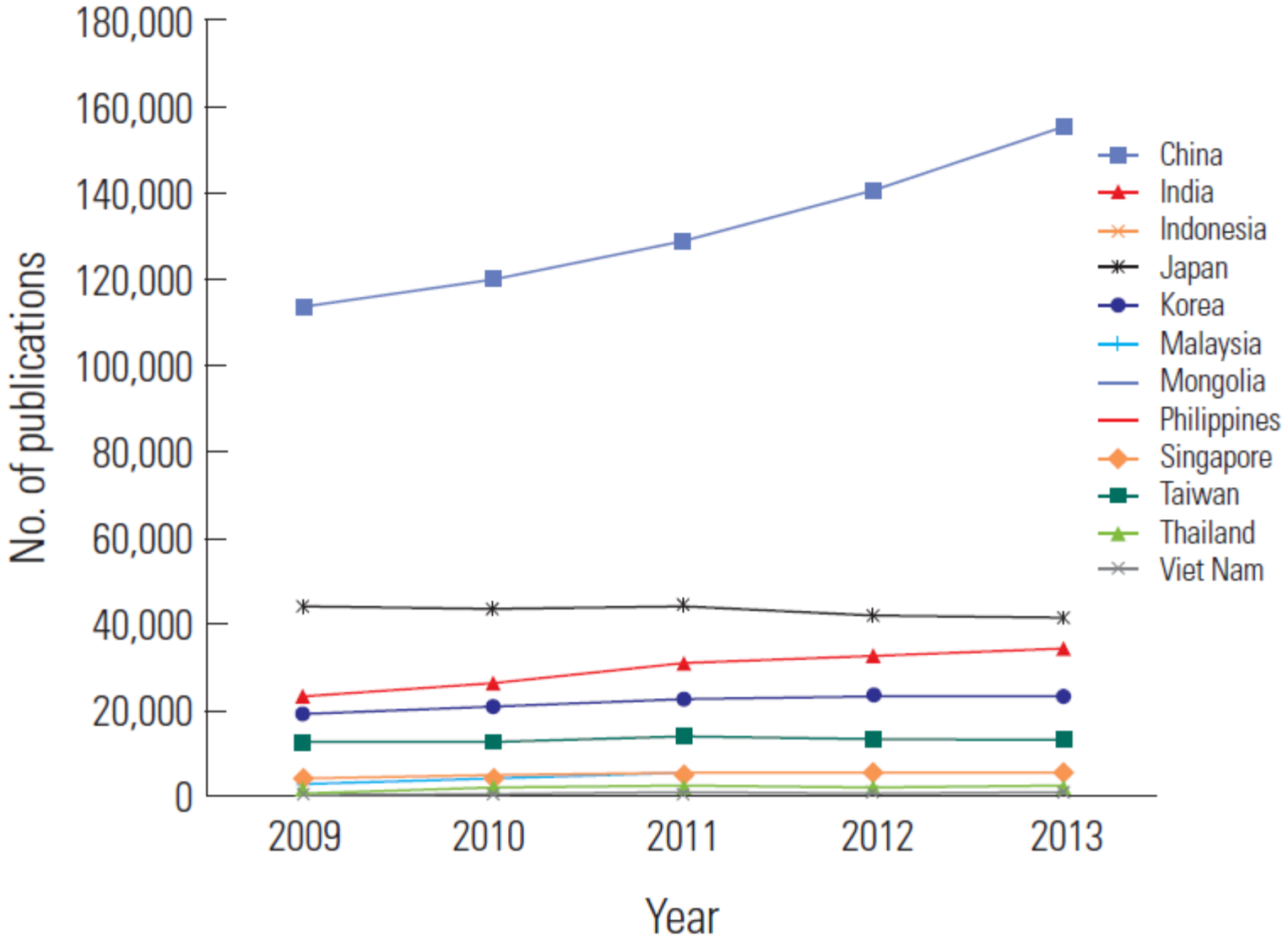
Trends in Publishing Scientific Articles

Country Ranking



Source: ICSET 2018 PPT of Prof. Yu-Pin Lin of NTU, Taiwan

Number of Publications by Science Field in Asian Countries from 2009-2013
Source: Jang and Kim, 2014



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Writing scientific paper/s is NOT about having good skill in English writing!

Writing scientific paper/s is about having logical thinking and expressing your thought through logical writing – as result of GOOD QUALITY RESEARCH OUTPUT/S!

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Some significant components of doing research

Identification of Problem

- Collect Information about societal problem/s

Conduct Reviews

- **Read** scientific publications to know what have been done, **what has not been** done yet, and **what are available resources**.

Design the Research

- Create research framework/design: identify the theoretical and scientific basis

Access Grant

- Write proposal, access research grant and implement research project to produce solution to the societal problem.

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Research is knowing what others DID and what they DID NOT!

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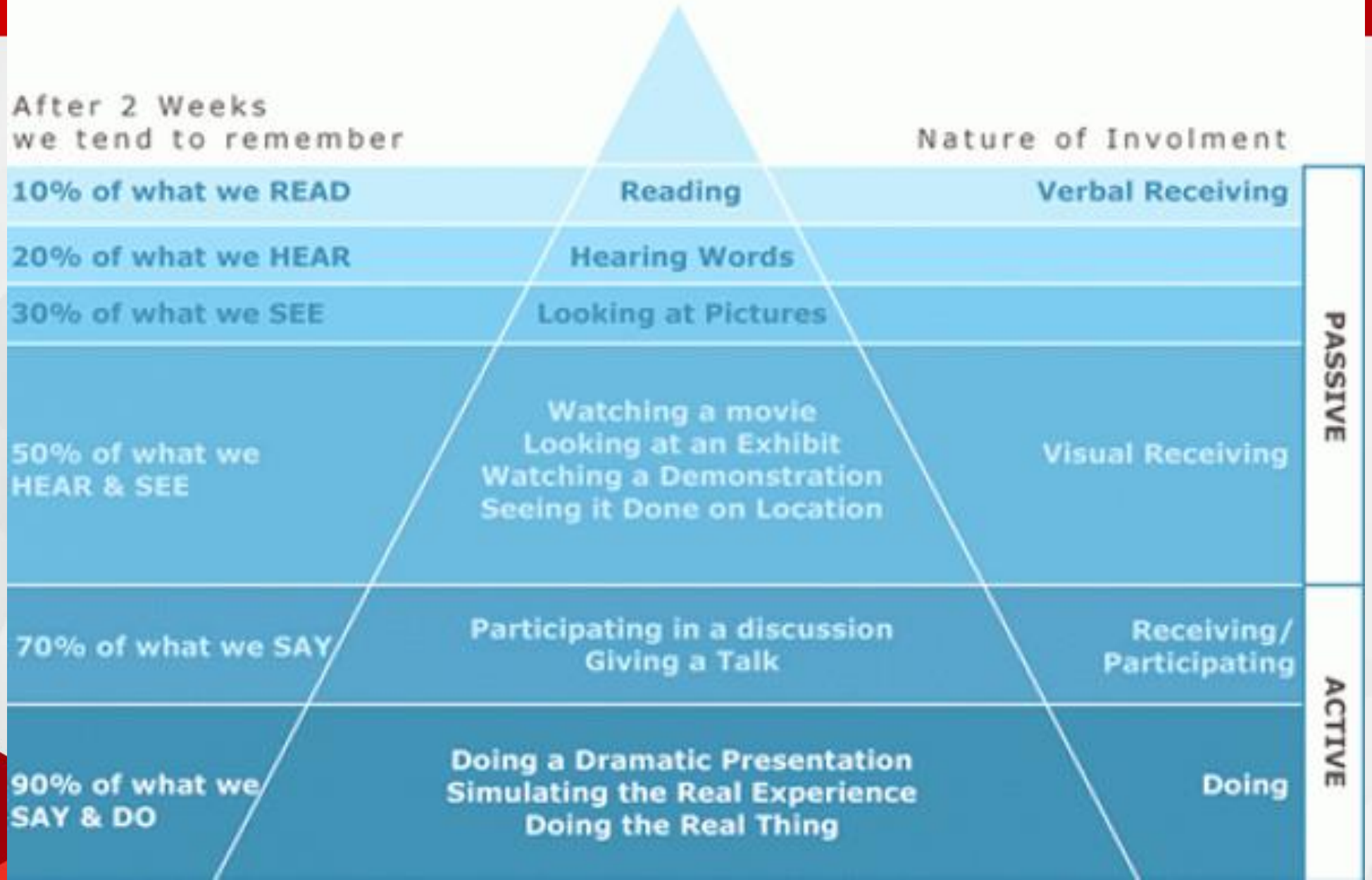
CONE OF LEARNING



Source:
Dale, Edgar. (1946, 1954, 1969)

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Pillars of Effective Literature Review Writing

- Identification of Societal Problem and Research Direction
- Theoretical and Scientific Basis
- Useful Results of Related Past Studies

Plus
DISCUSSION!

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Example: Identification of Societal Problem and Research Direction

Societal Problem	Objective	Available Resources	Research Focus
• Lack of water • Water quality concern	• To reuse municipal wastewater	• Sufficient land area • Local plants, grasses • Municipal wastewater, flood • Gravel and other media • Research Grant • Human Resources	• Constructed Wetland for Municipal Wastewater Treatment

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Example: Some Scientific and Theoretical Bases

One dimensional equation of advection – dispersion model

Eq. (1): $$\theta D\frac{\partial^2 C}{\partial x^2} - U\frac{\partial C}{\partial x} - \lambda\theta C - \lambda S\rho_d = (\theta + \rho_d\frac{\partial S}{\partial C})\frac{\partial C}{\partial t}$$

where:
C = concentration.
θ = volumetric water content.
D = hydrodynamic dispersion coefficient.
U = Darcy velocity.
S = adsorption.
ρ_d = bulk (dry) mass density of the porous medium.
t = time.
x = distance in the x direction.

Source: Dam and Feddes, 2000

The rate constant of ammonia nitrogen in surface flow constructed wetland

Eq. (2): $$k_T^{NH3} = k_{29}\,\theta_{29}^{-9}\theta^{T-20} = k_{20}\,\theta^{T-20}$$

Hydraulic characteristics of subsurface constructed wetland

Eq. (3): $$t_m = \frac{\int_0^\infty tC(t)dt}{\int_0^\infty C(t)dt} = \int_0^\infty t * f(t)dt$$

Eq. (4): $$f(t) = \frac{QC(t)}{\int_0^\infty QC(t)dt}$$

Biofilm Growth by Monod Kinetics Model

Computational framework equations for energy and mass balance

Example: Useful Results of Related Past Studies - Conduct Reviews

Source: Senoro, 2009

Author/s [Reference]	Location of Study	Filter Media	CW Performance
Brooks [6]	USA	Wollastonite – a calcium metasilicate mineral mined substrate	Phosphorus removal of 80-96%, observed in 9 of 11 water columns
Chen [9]	Taiwan	Vesicles ceramic bioballs with combination of small gravels	Had optional pollutant removal efficiency of COD-61%, BOD-89%, SS-81%, TP-35%, and NH3 – 56%
Cottin and Merlin, [20]	France	Formulated Clay Silicate	Showed significant results for pyrene degradation
Garcia [38]	Spain	Granitic gravel, pebbles, river sand and gravel	Smaller size of granitic gravel, and combination of river sand and gravel performed better than other media.
Jarvis and Younger [62]	United Kingdom	Plastic trickling filter media	Demonstrated rapid oxidation and accretion of ocre (mine water discharge)
Korkusuz [75]	Turkey	Blast Furnace Granulated Slag	High phosphorus removal capacity secondary and tertiary treatment
Prochascka nd Zouboulis [121]	Greece	River sand and dolomite; 10:1	Initial PO4 removal was 45% with phosphorus accumulation in the system's body of 6.5 – 18%
Seo [134]	Korea	Oyster shell and aggregates from quary	Increased of adsorption capacity by 60%
Kaasik [67] and Vohla [171]	Estonia	Calcareous wastes from oil shale ash plateau	Phosphorus removal was 52%

Reviews help scientists and researchers to understand how knowledge in a particular field evolves.

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Reviews are used in the discussion section on how your research results compared with previous/other studies.

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Reviews convey what ideas/knowledge been established, and provide confidence to the researcher that his/her research is NEW.

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How referencing be useful and effective in scientific paper writing??!

Some Reference Management Tools/Citation Generators

Source: Enago Academy

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Differences of Some Referencing Tools

• End note	• For managing and publishing bibliographies, citations, and references;
• Mendeley	• For reference management and for collaborating and sharing your work;
• RefWorks	• For managing and organizing bibliographies;
• Zotero	• For managing and organize different sources and for sharing research

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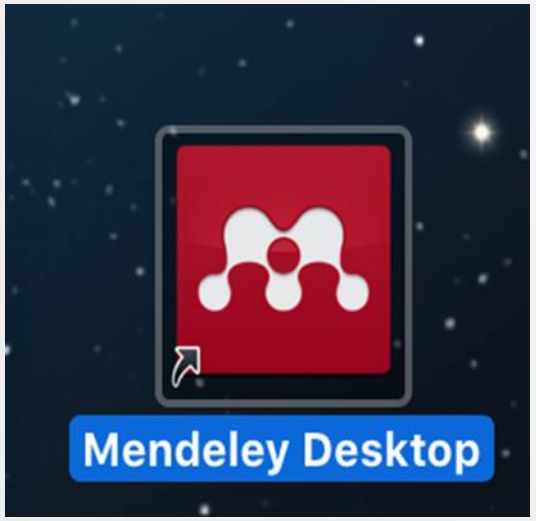
Mendeley Desktop as potential effective referencing tool



You can cite as you write!

https://www.mendeley.com/downloads

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Other Citation Generators/Referencing Tools

Source: http://library.mapua.edu.ph/Citation%20Management/Default.aspx

- BibMe;
- www.bibme.org
- Citation Machine;
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- Cite This For Me
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Digital Libraries and Search Engines

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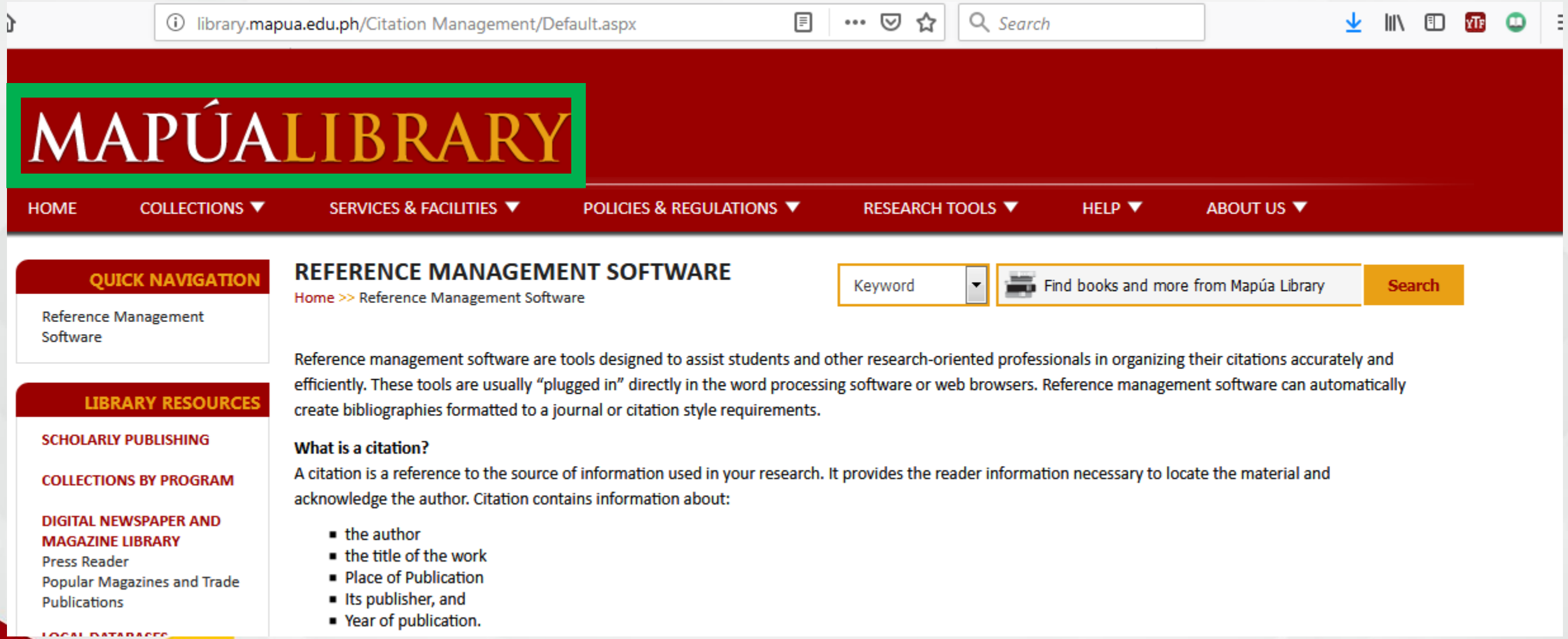
• Springer Link	• http://link.springer.com/
• Wiley Online Library	• http://onlinelibrary.wiley.com
• Science Direct	• http://www.sciencedirect.com/

Source: Imtiaz et al., 2018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Reference management software are tools designed to assist students and other research-oriented professionals in organizing their citations accurately and efficiently. These tools are usually "plugged in" directly in the word processing software or web browsers. Reference management software can automatically create bibliographies formatted to a journal or citation style requirements.
What is a citation?
A citation is a reference to the source of information used in your research. It provides the reader information necessary to locate the material and acknowledge the author. Citation contains information about:
the author
the title of the work
Place of Publication
Its publisher, and
Year of publication.

Various Citation Style/Format

- APA [American Psychological Association]
- MLA [Modern Language Association]
- IEEE [Institute of Electrical and Electronics Engineers)
- Chicago [This is the Turabian Documentation Style]

Every journal has its own style/format requirement!

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International research network (10%)

Using data provided by Scopus, this indicator assesses the degree of international openness in terms of research collaboration for each evaluated institution. To calculate this indicator the Margalef Index, widely used in the environmental sciences, has been adapted to produce a score that gives an indication of the diversity of an institution's research collaborations with other institutions in different locations of the world.

Citations per paper (10%) and papers per faculty (5%)

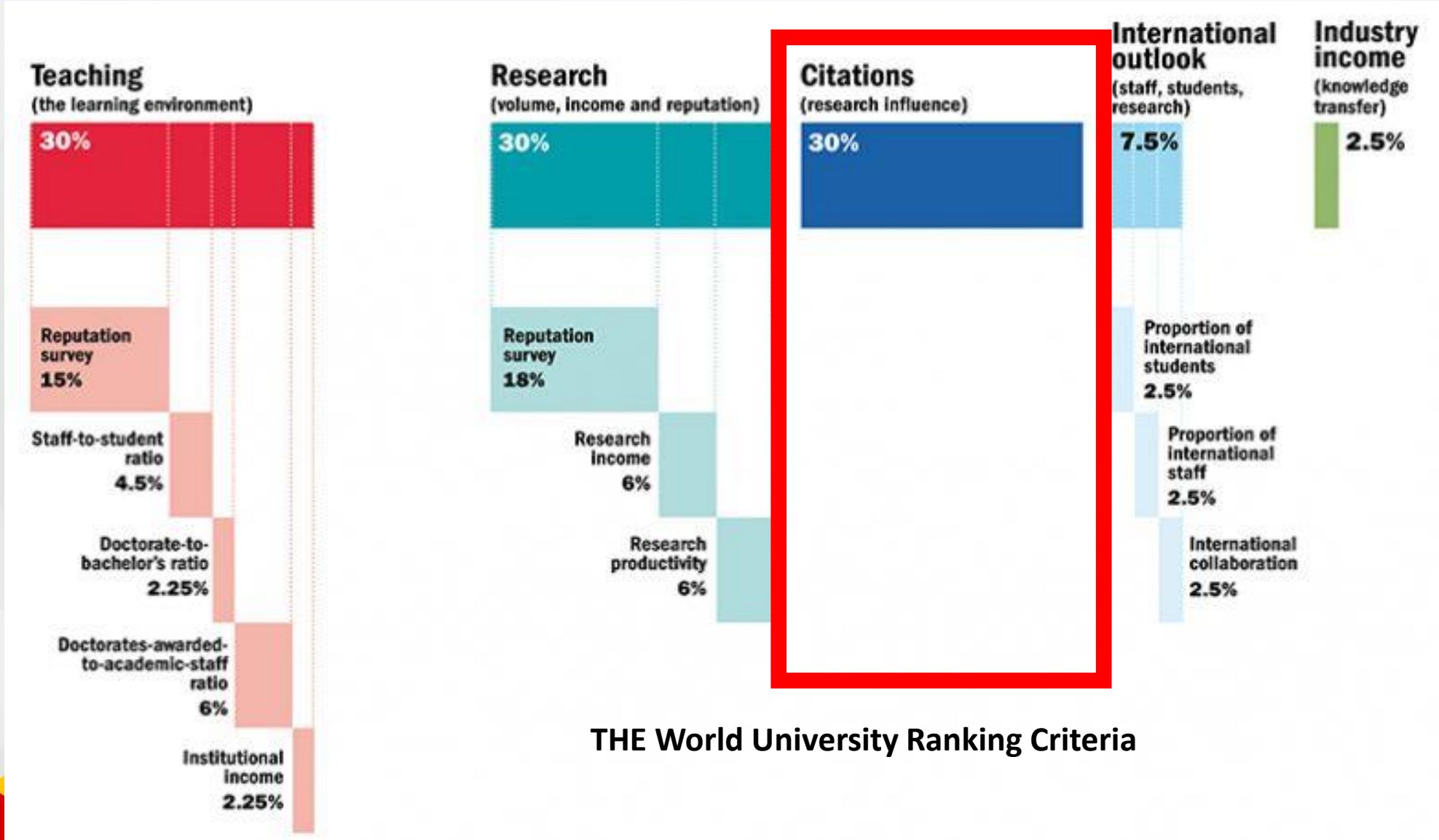
These two indicators are both assessed using data from the Scopus database of research publications and citations. The first assesses the number of citations per research paper published, aiming to give an idea of the impact each institution's research is having within the research community. The second assesses the number of research papers published per faculty member. This provides an indication of the overall research productivity of the university.

Staff with a PhD (5%)

A new indicator introduced to the QS University Rankings: Asia for 2016, this assesses the proportion of academic staff members qualified to PhD level. This complements the faculty/student ratio indidator, both aiming to provide proxy measures of an institution's commitment to high-quality teaching.

Proportion of international faculty (2.5%) and

Source: https://www.timeshighereducation.com/world-university-rankings/methodology-world-university-rankings-2019



THE World University Ranking Criteria

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Citations are used as inputs to measure national, regional and global university ranking (QS, THE, ARWU);

Example of Publications Focusing on Reviews

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- Writing Literature Review

Sustainable Environment Research xxx (2018) 1–9

Contents lists available at ScienceDirect

Sustainable Environment Research

journal homepage: www.journals.elsevier.com/sustainable-environment-research/

Review

A review in the current developments of genus *Dehalococcoides*, its consortia and kinetics for bioremediation options of contaminated groundwater

Donamel M. Saiyari [a, b], Hui-Ping Chuang [c], Delia B. Senoro [a], Tsair-Fuh Lin [d, e, *], Liang-Ming Whang [c, e], Yi-Ting Chiu [e], Yi-Hsuan Chen [e]

[a] *School of Civil, Environmental and Geological Engineering, Mapua Institute of Technology, Manila 1002, Philippines*
[b] *Department of Civil Engineering, Adamson University, Manila 1000, Philippines*
[c] *Sustainable Environment Research Laboratories, National Cheng Kung University, Tainan 70955, Taiwan*
[d] *Tainan Hydraulics Laboratories, National Cheng Kung University, Tainan 70955, Taiwan*
[e] *Department of Environmental Engineering, National Cheng Kung University, Tainan 70101, Taiwan*

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Journal of Hydrodynamics

2015,27(1):24-37

DOI: 10.1016/S1001-6058(15)60453-X

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Interactions between vegetation, water flow and sediment transport: A review*

WANG Chao (王超), ZHENG Sha-sha (郑莎莎), WANG Pei-fang (王沛芳), HOU Jun (侯俊)

Key Laboratory of Integrated Regulation and Resource Department on Shallow Lakes, Ministry of Education, College of Environment, Hohai University, Nanjing 210098, China, E-mail: cwang@hhu.edu.cn

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14 pages

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2014,26(4):497-511

DOI: 10.1016/S1001-6058(14)60057-3

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Effects of vegetations on the removal of contaminants in aquatic environments: A review*

WANG Chao (王超), ZHENG Sha-sha (郑莎莎), WANG Pei-fang (王沛芳), QIAN Jin (钱进)

Key Laboratory of Integrated Regulation and Resource Department on Shallow Lakes, Ministry of Education, College of Environment, Hohai University, Nanjing 210098, China, E-mail: cwang@hhu.edu.cn

mited, vegetated flow[J]. **Journal of Geophysical Research: Oceans,** 2000, 105(C12): 28547-28557.

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15 pages

111 References

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The average number of references per page

Area of Study Source: Milojevic, S. 2012	Least Average Number of References per page
1] Ecology	6
2] Math and Robotics	<1
3] Economics	>1 but < 2

Recent publications on 'ecology' have average of 9 references per page!

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- Effective Referencing

Source: Saiyari et al., 2018

Table 4
The functional genes of various *D. spp.* strains for its dechlorinated compounds and end products.

Strain	Functional genes	Dechlorinated compounds	End products	References
D. mccartyi 195	*pceA*, *tceA*	PCE, TCE, *cis*-DCE, 1,1-DCE	Ethene	[30,56,73,74]
		1,2-dichloroethane	VC, Ethene	
		1,2,3,4-tetrachlorodibenzo-p-dioxin	1,2,4-trichlorodibenzo-p-dioxin, 1,3-dichlorodibenzo-p-dioxin	
		Hexachlorobenzene	1,2,3,5-tetrachlorobenzene, 1,3,5-trichlorobenzene	
		2,3,4,5,6-chlorobiphenyls (CB)	2,3,4,6-CB, 2,3,5,6-CB, 2,4,6-CB	
		2,3-DCP, 2,3,4-TCP, 2.3,6-TCP	Lower chlorinated phenols	
D. mccartyi CBDB1	*cbrA*	1,2,3-trichlorobenzene (TCB), 1,2,4-TCB, 1,2,3,4-TeCB, 1,2,3,5-TeCB and 1,2,4,5-TeCB	1,3-DCB, 1,4-DCB, and 1,3,5-TCB	[75–77]
D. mccartyi VS	*vcrA*	*cis*-DCE & VC	Ethene	[43,44,46]
D. mccartyi BAV1	*bvcA*	*cis*-DCE, trans-DCE, 1,1-DCE, VC, Vinyl bromide, 1,2-dichloroethane	Ethene	[45,46]
D. mccartyi FL2	*tceA*	TCE, *cis*-DCE & *trans*-DCE	VC & Ethene	[45,78]
D. mccartyi KB1/VC	*tceA*	TCE, *cis*-1,2 DCE & VC	Ethene	[59,63]
D. mccartyi GT	*vcrA*	TCE, *cis*-DCE, 1,1-DCE, VC	Ethene	[64]
D. mccartyi DCMB5	*cbrA*	1,2,3,4-tetrachlorodibenzo-p-dioxin	2-monochlorodizenbo-p-dioxin	[79,80]
D. mccartyi MB	*mbrA*	PCE & TCE	*trans*-DCE, *cis*-DCE	[33,34]
D. mccartyi BTF08	*pceA*, *tceA*, *vcrA*	PCE, TCE, *cis*-DCE, & VC	Ethene	[41,80]
D. mccartyi ANAS1	*tceA*	TCE, 1,1-DCE, & *cis*-DCE	VC & Ethene	[33]
D. mccartyi ANAS2	*vcrA*	TCE, *cis*-DCE, 1,1-DCE, & VC	Ethene	[56,66]
D. mccartyi 11a	*vcrA*	TCE, *trans*-DCE, *cis*-DCE, 1,1-DCE, 1,2-DCA, & VC	Ethene	[56]
D. mccartyi 11a5	*tceA*	TCE, *trans*-DCE, *cis*-DCE, & 1,1-DCE	VC & Ethene	[56]
D. mccartyi IBARAKI	*vcrA*	*cis*-DCE & VC	Ethene	[47]
D. mccartyi UCH007	*pceA*, *tceA*, *vcrA*	TCE, *cis*-1,2-DCE & VC	Ethene	[42]
D. mccartyi CG1	*pcbA1*	PCE, 234-234-CB, 234-24-chlorinated biphenyls (CB)	TCE, 24-24-CB, 24-25-CB, 235-24-CB,236-24-CB	[35]
D. mccartyi CG4	*pcbA4*	PCE, 2345-, 2346-, and 245-CB, 23456-, 2345-, 245-, and 234-CB	TCE, 24-24-CB, 24-25-CB	[35]
D. mccartyi CG5	*pcbA5*	PCE, 2345-, 234-, 235-, 236-, and 245-CB, 2345-, 2346-, and 245-CB	TCE, 24-24-CB, 24-25-CB, 25-26-CB, 235-24-CB, 236-24-CB, 245-24-	[35]
D. mccartyi JNA	*pcbA4*, *pcbA5*, *pceA*, *mbrA*	Pentachlorophenol	3,5-dichlorophenol (DCP)	[81]
		2,2,4,6-tetrachlorophenol, 2,4,5-trichlorophenol (TCP)	2,4,6-(TCP)	
		2,3-DCP	2,4-DCP, 3,4-DCP, 3-chlorophenol (CP)	
D. mccartyi GY50	NA[a]	NA[a]	NA[a]	[42,82]
D. mccartyi SG1	NA[a]	NA[a]	NA[a]	[35,42]

[a] NA – not applicable.

Source: Chan et al., (2019)

Dimension of Health Vulnerability	Indicator	Conceptual Relevance to Health Vulnerability
Vulnerable age [a]	1. Population ages 0–14 and population ages 65 and above (% of total)	Extreme age groups (children and elderly) are known to be more vulnerable to health risks and less likely to be resilient when a disaster strikes. This is an important component in the "dependency ratio". They are more likely to accumulate post-disaster health and service needs.
Premature mortality [b]	2. Under-five mortality rate (probability of dying by age five per 1000 live births)	Leading indicator of health in the United Nation (UN)'s Sustainable Development Goals (SDGs). It is closely linked to maternal health.
Preventable mortality [b]	3. Maternal mortality ratio (per 100,000 live births)	Leading indicator of health in the UN's Sustainable Development Goals (SDGs). In addition to preventable deaths, this indicator reflects the capacity of health systems to effectively prevent and address the complications occurring during pregnancy and childbirth.
Vaccination gap for measles [b]	4. Measles-containing-vaccine first-dose (MCV1) immunization coverage gap among one-year-olds (%)	Standard Expanded Program on Immunization (EPI) for common preventable Childhood Communicable Diseases for children <one year old. Coverage may be used to monitor immunization services as well as guide disease eradication and elimination efforts, and are a good indicator of health system performance. MCV1: Measles is one of the most contagious and mortality-causing diseases in displaced camps. DTP3: Tetanus is common preventable infection associated with injury/wound.
Vaccination gap for diphtheria, tetanus, and pertussis [b]	5. Diphtheria tetanus toxoid and pertussis (DTP3) immunization coverage gap among 1-year-olds (%)	
Chronic diseases status [b]	6. Raised blood pressure (SBP ≥140 OR DBP ≥90), age-standardized (%)	A proxy indicator for chronic non-communicable disease. Hypertension and heart disease are some of the leading causes of mortality and morbidity globally. Disease status and potential activity limitations among adults can impair one's ability to prepare, respond, or recover from a disaster.
Infectious disease [b]	7. Incidence of tuberculosis (per 100,000 population per year)	Tuberculosis (TB) is the second leading infectious cause of death, and one of the most burden-inflicting diseases in the world. SDGs include ending the TB epidemic by 2030. The incidence of tuberculosis gives an indication of the burden of TB in a population.
Coping capacity [b]	8. Hospital beds (per 10,000 population)	Health systems resources indicate the level of access to care and the provision of quality medical care, which are highly correlated with live-saving and health status.
	9. Physicians' density (per 1000 population)	

Source: [a] Data collected from the World Bank; [b] Data collected from the World Health Organization. DBP: diastolic blood pressure; SBP: systolic blood pressure.

Source: Chao et al., 2014

Table 2 Metal removal efficiency (%) of vegetations in aquatic environments

Location[Ref.]	Vegetation	Removal efficiency (%)				
		Cd	Cr	Pb	Cu	Zn
Argentina[53]	*Typha domingensis*		65.00			
Canada[54]	*Myriophylhum*				73.10	99.90
	Ludwigina palustris				92.90	99.90
China[55]	*Reineckea carnea*	95.20	79.90	82.00	97.90	
	Acorus gramineus	95.20	91.80	91.00	98.50	
	Iris pseudacorus	96.10	95.80	93.40	99.10	
	Lythrum salicaria	92.20	81.30	87.00	98.70	
China[2]	*Potamogeton pectinatus*	96.00		79.00	74.00	66.00
	Potamogeton malaianus	88.00		78.00	65.00	67.00
India[56]	*Canna indica*				81.50	93.00
	Cyperus alternifolius		68.40		72.70	93.17
	Typha angustifolia		66.20		68.30	99.30
India[26]	*Pistia stratoites*	78.00	81.00		96.00	90.00
	Spirodela polyrrhiza	63.00	83.00		91.00	90.00
	Eichhornia crassipes	81.00	85.00		95.00	92.00
Iran[57]	*Azolla filiculoides*	57.00		61.00		74.00
Pakistan[58]	*Phragmites australis*	91.94	80.00	50.00	48.28	
Spain[59]	*Juncus effusus*		92.00	84.10	88.30	84.50
Taiwan Island[60]	*Typha latifolia*				83.00	92.00

"**Geographical co-location** particularly **increases the citation likelihood** between two papers when knowledge relatedness between articles is low, suggesting that interdisciplinary research benefits most from co-location." – Wuestman et al, 2019

CITATION of scientific papers publication increases!

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Impacts of Effective Referencing

- The **quality of research outputs** is measured by the number of citation (utilization of research outputs);

- Citation is acknowledging the researchers' original work and its cognitive content;

- Not citing one's work is like robbing the intellectual property of the real owner.

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Thank you for the opportunity!

dbsenoro@mapua.edu.ph

Office of International Linkages for Research and Development

2/F Yuchengco Innovation Center

Mapua University

658 Muralla St., Intramuros, Manila

MAPÚA UNIVERSITY