HKSSPC 2021 Training Workshops

Literature Review Webinar

H.Y. Edwin Chan

29 March 2021

The Competition aims at promoting the interest of youths in science and technology, developing their creativity and scientific mindset through better understanding and innovative application of science and technology, and inspiring their intellectual and career interest in science and technology, as well as bringing creative ideas for social innovation.

https://hksspc.hkfyg.org.hk/en/competition-detail/hksspc2021/

This year we will organize different online training workshops for participants to provide more assistance and support. Details of workshops are as follows:

	Workshop	Date	Time	Language	Venue
Α.	Literature Review Webinar	29 March 2021 (Mon)	4:30 pm – 6:00 pm	Cantonese	Online
В.	Experimental Design Workshop I	3 April 2021 (Sat)	10:00 am -12:00 pm	Cantonese	HKSTP / Online
C.	Design Thinking Workshop	3 April 2021 (Sat)	2:30 pm - 4:30 pm	Cantonese	HKSTP / Online
D.	Experimental Design Workshop II	5 April 2021 (Mon)	10:00 am -12:00 pm	Cantonese	HKSTP / Online
E.	Data Analysis Workshop	5 April 2021 (Mon)	2:30 pm - 4:30 pm	Cantonese	HKSTP / Online
F.	Presentation Skills Workshop	10 April 2021 (Sat)	11:00 am -12:30 pm	Cantonese	HKSTP / Online

Project teams of today's science competitions focus mainly on impact/knowledge transfer, and/or using more advanced technologies to tackle existing problems

Our scientific world

Unsolved/unidentified problems How to find them & tackle them?

Scientific problems already addressed/ human needs already be dealt with by existing methods

Literature research and scientific research proposal – the two essential components of scientific discovery

scientific literature research

XQ

www.enago.com > academy > how-to-write-a-good-sci... ▼

How To Write A Good Scientific Literature Review - Enago ...

3 Dec 2020 — A **scientific literature review** is an important part of academic research as it narrows the current knowledge in a field to examine the latest ...

www.sciencemag.org > careers > 2016/11 > how-keep-s... ▼

How to keep up with the scientific literature | Science | AAAS

30 Nov 2016 — Are you having trouble staying on top of the ever-growing body of **scientific** knowledge? These **researchers'** tips are here to help.

www.scientificliterature.org -

Scientific Literature

Welcome to **Scientific Literature**. about img. Our company has more than 50+ international **scientific** open access peer **review journals**. Our Publishing Company is ...

libraryguides.lib.iup.edu > ... > Guides by Subject or Topic

Scientific Literature and Research at IUP - LibGuides at ...

4 Sep 2020 — Searching the **scientific literature** can be challenging – thinking of the ... reevaluation of **research** that is the essence of **scholarly** publishing.

www.nature.com > career feature > article

How to write a superb literature review - Nature

4 Dec 2020 — So Nature asked editors and working scientists with well-cited reviews for their

s	scientific research proposal						x Q		
C	λ All	Images	▶ Videos	🗉 News	🛇 Maps	: More	Settings	Tools	
About 320,000,000 results (0.59 seconds)									
	an Pearla Series Pring Linna:	characteristic and the second and th		EARCH PROPOSAL	ter konst. Here and Here and Here and Here and Here and Here and	panel 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1	1920-55 f. diskeret in Tapatana d'U 1931 samananan fa Tabaharat in Kan Janama	PROFESS of all largests of a particular of a large largests. 1933 Automation and the California to Konsels Application Internal	

Science research proposal

A **research proposal** has three main points: 1) Explanation **of** proposed **research** (what will be done) 2) Methods and techniques to be employed (how it will be done) 3) Novelty and/or importance **of** the **study** (why it should be done)

www.mhc.ab.ca > academicsupport > media < PDF

SCOPE OF STUDY • To antipathon of days and THE RELATIVE POR

SEARCH DESIGN

Writing a Scientific Research Proposal A research proposal ...

About featured snippets • II Feedback

More images

literature review



'If I have seen further it is by standing on the shoulders of giants.' –Sir Isaac Newton (1643—1727), 'Letter to Robert Hooke', 5 February 1676 The shoulders-of-giants metaphor can be traced to the French philosopher Bernard of Chartres, who said that

we are like dwarfs on the shoulders of giants, so that we can see more than they, and things at a greater distance, not by virtue of any sharpness of sight on our part, or any physical distinction, but because we are carried high and raised up by their giant size.

Who are the giants?

The "standing on the shoulders of giants" metaphor is often used to acknowledge the work of others when undertaking research and, in particular, stresses the importance of literature reviews in scientific inquiry.

Why is it important to keep up with the literature, and what are the challenges?

Without keeping up with the literature, 1 can't know what other people are doing or contextualize my work. In addition, through reading the literature 1 can find potential solutions to scientific barriers 1 am facing in my own research.

Without knowing where the current gaps are, your findings will either be old hat or too out in left field to be cited right away.

feel disheartening, as you will often find that other people have already published on what you thought was a really novel or original idea.

Our job is to push the frontier of what is already known, so we need to be aware of where this frontier is.

To be able to provide novel results, you have to know what has been done before you. Plus, you want to benefit from all the ideas, data, and interpretations that have accumulated in the literature right up to that point.

How to keep up with the scientific literature ?



How do you find new papers you ought to read, and the time to read them?

carry out regular, systematic literature searches

I find it very useful to at least read through the titles and abstracts of the latest papers published in the journals, and then I decide carefully which papers I should read extensively.

Twitter is an underutilized resource in science, but it's great—if you follow the right people—for keeping your finger on the pulse of new work that is coming out.

Make use of search engines and A1: <u>https://feedly.com/</u> <u>https://pubmed.ncbi.nlm.nih.gov/</u> <u>https://scholar.google.com/schhp?hl=en</u> <u>https://www.readcube.com/home</u>

How do you go about conducting more extensive background literature searches?

1 find that, nowadays, searching for past literature is the easy part. Search engines and Google Scholar, together with other tools which allow users to follow citations, do a good job.

What I find much more challenging is how to organize the works that I read and knowledge I acquire, and how to search back through them. (GOOD IDEAS TAKE TIME TO CULTIVATE/DEVELOP, IT IS THUS IMPORTANT THAT YOU TAKE NOTES OF WHAT YOU READ IN A WAY THAT IT CAN BE RETRIEVED IN A SYSTMATIC WAY, E.G. MAKE REMARKS ON PDF FILES)

Are there any potential pitfalls that you'd like to highlight for young scientists? Do you have any further advice?

Young scientists sometimes tend to neglect the literature.

trying the different tools available and experimenting with your reading routine until you find what works for you.

Other than knowing we are standing on shoulders-of-giants, what else can we get from the literature?

Try to identify a research gap





It can be a gap between research and practice

It can also be a gap in the way of a scientific process

What is a Research Gap?

A research gap is a question or a problem that has not been answered by any of the existing studies or research within your field.

https://libanswers.snhu.edu/faq/264001

How do I find one?

It will take a lot of research and reading. You'll need to be very familiar with all the studies that have already been done.

Make a list of any questions you have about your topic and then do some research to see if those questions have already been answered satisfactorily. If they haven't, perhaps you've discovered a gap!

1.One useful trick is to look at the "suggestions for future research" or conclusion section of existing studies on your topic. Many times, the authors will identify areas where they think a research gap exists, and what studies they think need to be done in the future.

2.Read meta-analyses, literature reviews, and systematic reviews on your topic. These types of papers provide a thorough overview of the literature in your field as well as examining the trends and changes over a long period of time and summarizing previous research findings. https://libanswers.snhu.edu/faq/264001

Ask a Question (Identify a knowledge gap)

Do Background Literature Research: Rather than starting from scratch in putting together a plan for answering your question, you want to be a smart scientist using library and Internet research to help you find the best way to do things and insure that you don't repeat mistakes (success also...) from the past.

Construct a Hypothesis: A hypothesis is an educated guess about how things work: "If __[1 do this] __, then __[this]___ will happen." You must state your hypothesis in a way that you can easily measure.

Test Your Hypothesis by Doing an Experiment

Analyze Your Data and Draw a Conclusion

Communicate Your Results

The Scientific Process

literature review (identify the research gap) – proposal writing – data collection – result interpretation – presentation – receive feedbacks from peers – start over again

proposal writing

Not just to fulfil the requirement of a particular competition but an exercise to guide you through your proposed research !!!



有頭腦,有主見、有修養,具備良好 的涵養和品德,舉止談吐溫文爾雅, 處事待人懂大體

德:生活及行為的規範和規範



研良

有頭腦(knows the literature of your field well)

客觀(data speak for themselves)

團隊合作(willing to listen)

創新(have the courage to start a new line of research even nobody considers it important)

韌性和毅力 (setbacks)



研德 academic honesty, research ethics, social responsibility

研藝 techniques/reproducibility

研政(行政) editors/peer review research supervising