COS10025

Technology in an Indigenous Context Project

Literature Review

Dr. Kenneth E. Igbo

SWINBURNE UNIVERSITY OF TECHNOLOGY

Swinburne think forward

CRICOS Provider: 00111D | TOID: 3059

Acknowledgement of Country

Content

- Literature Review – The What and Why
- Searching & Locating Relevant Articles
- Reviewing Articles

Literature Review – The WHAT and the WHY!

Literature Review: The What and Why

- **Literature Review** is an account of what has been published on a topic by accredited scholars and researchers.
- It is a piece of discursive prose that sheds light on, and enlarges our knowledge about, a topic
- The purpose is to convey to your reader what knowledge and ideas that have been established on a topic, and to evaluate their strengths and weaknesses.

Literature Review: The What and Why

- **Literature Review is NOT:**
  - A descriptive list of the materials available
  - A list summarising one piece of literature after another
  - An essay

What skills can you gain with a Literature Review exercise?

- Literature Review lets you gain and demonstrate skills in:

Information seeking

- The ability to scan the literature effectively
- Using manual or computerised methods to identify a set of useful articles and publications

Critical appraisal

- The ability to apply principles of analysis to identify unbiased and valid studies

How can a Literature Review help with your project?

- To uncover related work around the topic
- To understand how other scholars approached the problem
- To identify the protocols, tools and techniques applied
- To learn how experienced researchers write a literature review

Searching & Locating Relevant Articles

STEP 1: Choosing Appropriate Sources / Databases

- IEEE, ACM (Association for Computing Machinery)
- Scopus, EBSCOhost, Web of Science, Google Scholar
- Swinburne Library

Problematic Sources:

- Wikipedia & non peer-reviewed sources
- YouTube videos and random internet sources

STEP 2: Finding Relevant Articles

- Peer reviewed articles (journals, conference proceedings)
- Trade journals & technical magazines
- Textbooks, edited books

Search Methods

- Database matching (keywords)
- Database matching (citations)
- Snowballing (references)

STEP 3: Abstracting Useful Information from Articles

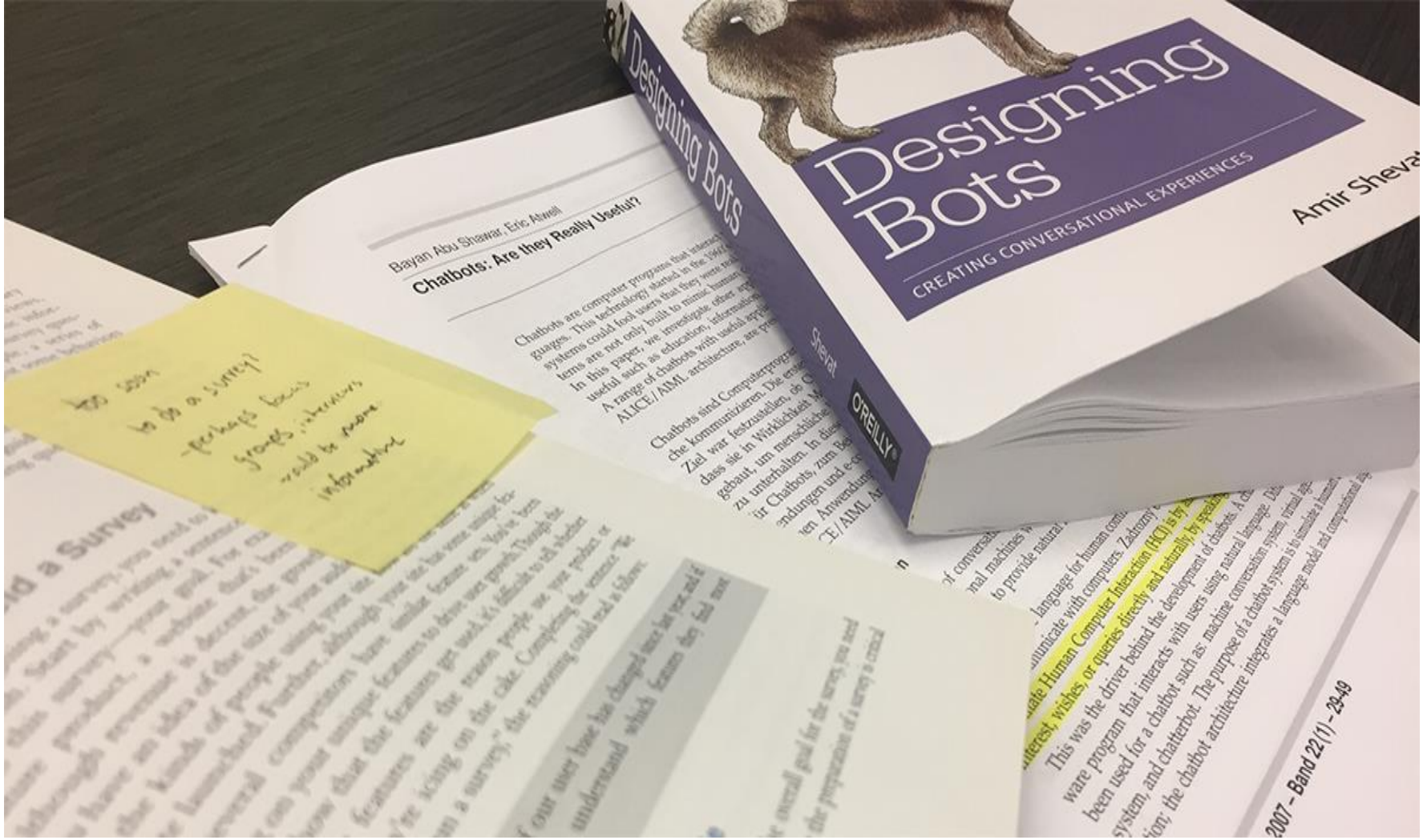
What do you look for when reviewing an article?

1. Range of problems investigated
2. Methods followed / techniques applied
3. Designs / protocols / tools / equipment discussed
4. Findings / project outcomes
5. Writing style – how they communicated their research
6. Related articles

Literature Analysis & Synthesis Table

A. Analysis of individual articles

Author(s): Year of Publication: Title: Name of Journal/Book/Proceeding: Page numbers:	
Phenomenon/context:	
Aims/Objectives/Questions/hypotheses:	
Methodology/Methods/Techniques: (data generation, data analysis, reporting, discussion)	
Findings/Results:	
Key arguments/Challenges/Conclusions:	
Recommendations:	
Others (e.g. Literature to follow up on):	



Reviewing Articles

Reviewing Articles

Three-stage 'Affinity Process' for reviewing articles:

1. Abstraction – identifying important ideas and techniques
2. Synthesis – comparing ideas / techniques across articles
3. Discussion – creating a narrative around findings

Abstraction – The Affinity Process (Stage 1)

A. Analysis of individual articles

Author(s): Year of Publication: Title: Name of Journal/Book/Proceeding: Page numbers:	Coupon Corrosion Test, Salt Chemistry and Post Mortem Analysis (from Final Test and Evaluation Results from the Solar Two Project) Sandia Labs release
Phenomenon/context:	
Aims/Objectives/Questions/hypotheses:	Comparison of facility material with coupon corrosion tests from test chambers in salt loop
Methodology/Methods/Techniques: (data generation, data analysis, reporting, discussion)	Corrosion dip test 3 different types of alloys tested: carbon steels, stainless steels and molybdenum alloys Main alloys of interest: SS304, 316 & 347, and A36 2 year exposure time (> 30,000 hours) for the storage tanks, ~1500 for the reciever.
Findings/Results:	
Key arguments/Challenges/Conclusions:	**Contains information on the design of the coupons and test tree** Materials performed as expected, except the molybdenum alloys, which corrosion more than expected. SS304, 316 and 347 all performed well over the lifetime of the plant, no intergranular attack seen. Alloy silicone content has a large effect on corrosion rates when chloride impurities are present (see Goods) Corrosion was by uniform surface oxidisation.
Recommendations:	As long as carbon and stainless steels are kept within their temperature bounds, then corrosion does not really limit part life. Any SS alloy exposed to water requires at least 9% chromium in order to resist aqueous SCC from dissolved chloride in the water. This usually means 347SS.
Others (e.g. Literature to follow up on):	

Abstraction – The Affinity Process (Stage 1)

A. Analysis of individual articles

Author(s): Year of Publication: Title: Name of Journal/Book/Proceeding: Page numbers:	Corrosion Behaviour of Eutectic Molten Salt solution on Stainless Steel 316L
Phenomenon/context:	
Aims/Objectives/Questions/hypotheses:	Corrosion rates on SS 316L of 15 different combinations of $NaCl$, KNO_3, $LiNO_3$ & $NaNO_3$
Methodology/Methods/Techniques: (data generation, data analysis, reporting, discussion)	Corrosion dip test 24 hour total time Room temperature Nitrogen blanket
Findings/Results:	Different salt mixtures had significantly different corrosion rates Mixtures with highest chloride ratios had worse corrosion Intergranular corrosion was the method of material attack
Key arguments/Challenges/Conclusions:	**Has a literature review**
Recommendations:	Chloride salts are bad for corrosion $NaNO_3$ & KNO_3 are better, resulting in less general and pitting corrosion
Others (e.g. Literature to follow up on):	

Abstraction – The Affinity Process (Stage 1)

A. Analysis of individual articles

Author(s): Year of Publication: Title: Name of Journal/Book/Proceeding: Page numbers:	Comparison of Corrosion Performance of Grade 316 and Grade 347H Stainless Steels in Molten Nitrate Salt
Phenomenon/context:	
Aims/Objectives/Questions/hypotheses:	Corrosion rates in 60/40 nitrate salt vs 316 and 347H stainless steel
Methodology/Methods/Techniques: (data generation, data analysis, reporting, discussion)	Corrosion dip test with atmospheric air sparging Test at 600deg Sample tree in filled test vessel inside a lab furnace 3000 hour total experiment time, salt and sample tests each 1000 hours No oxygen blanket Rates determined by descaled weight loss and linear data fitting
Findings/Results:	3000 hour metal loss: $4.4 - 4.8\,\mu m$ Extrapolated annual loss: $8.4 - 8.8\,\mu m$ No intergranular attack, even with sensitized structure and chloride impurities (0.1 wt%) present
Key arguments/Challenges/Conclusions:	
Recommendations:	Both stainless steel alloys performed well under testing conditions No benefit in choosing stabilized stainless steel vs non-stabilized stainless steel
Others (e.g. Literature to follow up on):	Follow up on references 1 to 4

STAGE 2 - Synthesis

1. Group related information / ideas together
2. Search for themes, agreements and disagreements.
3. Decide how the themes will be organised
4. Make a note of questions to explore further

Synthesis – The Affinity Process (Stage 2)

B. Synthesis of articles (Focus on Methodology – Corrosion dip test)

Themes emerging	Paper 1 (Use reference)	Paper 2	Paper 3	Notes
Problem investigated	Tested **corrosion rates** Materials tested: - 60/40 nitrate salt vs - **316 stainless steel** - 347H stainless steel	Tested **corrosion rates** of **SS 316L** of 15 different combinations	Corrosion test performed in test chamber in salt loop Materials: **SS304, 316 & 347 and A36** Molybdenum alloys	- All performed corrosion dip test - Materials tested vary, but all tested SS 316 - Focus of investigated vary - Which type of test would be most appropriate for my project?
Temperature	600C	Room temperature (20 – 22C)	Not specified	- Why is there such variation in temp? - How does the focus of investigation shape the temp range? - What temp range is appropriate for my application?
Exposure time	3000hrs (total experiment time) 1000hrs (for each sample group)	24hr (total experiment time)	2-year exposure time (>30,000hrs) for storage tanks, ~1500hrs for the receiver	- Variation in exposure time - What is the link between the process followed and the exposure time? - What exposure time is appropriate for my application?
Use of gas blanket	No oxygen blanket	Nitrogen blanket used	Not specified	- Why is gas blanket needed? - Is gas blanket required for my project? - Which gas is most appropriate if a gas blanket is required for my project?

Discussion – The Affinity Process (Stage 3)

B. Synthesis of articles (Focus on Methodology – Corrosion dip test)

Themes emerging	Paper 1 (Use reference)	Paper 2	Paper 3	Notes
Problem investigated	Tested **corrosion rates** Materials tested: - 60/40 nitrate salt vs - **316 stainless steel** - 347H stainless steel	Tested **corrosion rates** of **SS 316L** of 15 different combinations	Corrosion test performed in tes chamber in salt loop Materials: **SS304, 316 & 347 and A36** Molybdenum alloys	- All performed corrosion dip test - Materials tested vary, but all tested SS 316 - Focus of investigated vary - Which type of test would be most appropriate for my project?
Temperature	600C	Room temperature (20 – 22C)	Not specified	- Why is there such variation in temp? - How does the focus of investigation shape the temp range? - What temp range is appropriate for my application?
Exposure time	3000hrs (total experiment time) 1000hrs (for each sample group)	24hr (total experiment time)	2-year exposure time (>30,000hrs) for storage tanks, ~1500hrs for the receiver	- Variation in exposure time - What is the link between the process followed and the exposure time? - What exposure time is appropriate for my application?
Use of gas blanket	No oxygen blanket	Nitrogen blanket used	Not specified	- Why is gas blanket needed? - Is gas blanket required for my project? - Which gas is most appropriate if a gas blanket is required for my project?

Synthesis – The Affinity Process (Stage 2)

Interviewer: Describe how you respond to disruptive events?
= Acquiring requisite knowledge for dealing with an event = Escalating problems to where expertise resides = Addressing a problem and communicating decisions
Respondent (OPC-01): It depends on what the event is really; there is always a particular department I can seek advice from. Like if it's a security issue, I'll contact the airline security straight away. If it is something that relates to the aircraft, I'll do a conference call with maintenance watch and the duty captain. If it's something that I feel we don't have a procedure for, I'll deal with the issue first and then do a follow up later on with an email to a manager or whoever highlighting the fact that we don't have a procedure or something in our manual that covers that event.
Respondent (OPC-04): Usually, information regarding some form of issue comes into the ops control area and we basically start to handle it from there. Once we know what the issue is, we'll escalate it to the necessary areas. If it is a maintenance issue, we will talk to our maintenance controller, and let him know. We will then liaise with the engineer in the relevant port or he will speak directly on the HF or the set-phone to the pilot with the issue. Once we've ascertained the issue and we know it's going to cause us some problems, we will then speak with crewing to check the crew hours, to make sure they are not breaching any of their hours. Once all of that has come together in [the operations control centre]; once we've ascertained all those issues, we (the ops controllers) will then go back to the ports and advise them of our plan. The port will then implement the plan.
Respondent (DM-01): When somebody rings us or tells us that there's an issue, we've got this [a trigger list] as guidance for our [Crisis Management] triggers. So we have a look at that, and if we feel that it needs to be escalated, then we will do a [Crisis Management] meeting. The meeting is basically ringing these people up here [names on the board], getting them on a conference call, telling them what the event is, and we take it from there. But, if we feel that something [is a] normal day-to-day stuff (event), we will handle [it], like cancellations and whatever, and we SMS out. So there are numerous people on this list that we SMS out to, so everybody knows what's going on. We've got parameters around that; a good thing is, I may SMS something because I don't think it needs to be escalated, I'll SMS that because it is under our requirement to do that, that [also] goes to senior management, etc. So if they felt that I should have escalated further, then they can contact me. I mean, I suppose that's a backup way there.
Respondent (DM-06): If I got a call, or the ops controller got a call, or the maintenance got a call, to advise that there was a smell in the cabin, or a haze or fume of any description, I will immediately call a [Crisis Management] meeting. I will get the details and that'll all be discussed. It'll be checked [to see] has it had a prior...., has this occurred before, had there been any issue with this aircraft, and all sort of things will all be looked into. And then, providing if it was all ticked off, the [Crisis Management] team would then liaise with engineering before that aircraft can fly again.

Synthesis – The Affinity Process (Stage 2)

Interviewer: Describe how you respond to disruptive events?	
= Acquiring requisite knowledge for dealing with an event = Escalating problems to where expertise resides = Addressing a problem and communicating decisions	
Acquiring requisite knowledge for dealing with an event:	
There is always a particular department I can seek advice from. Like if it's a security issue, I'll contact the airline security straight away. [OPC-01]	**Seeking expert advice**
We've got this [a trigger list] as guidance for our [Crisis Management] triggers. [DM-01]	**Using pre-defined protocol**
Escalating problems to where expertise resides:	
I'll do a conference call with maintenance watch and the duty captain. [OPC-01]	**Engaging specific functions**
Once we know what the issue is, we'll escalate it to the necessary areas. If it is a maintenance issue, we will talk to our maintenance controller, and let him know. We will then liaise with the engineer in the relevant port or he will speak directly on the HF or the set-phone to the pilot with the issue. Once we've ascertained the issue and we know it's going to cause us some problems, we will then speak with crewing to check the crew hours, to make sure they are not breaching any of their hours. [OPC-04]	**Engaging specific functions**
So we have a look at that, and if we feel that it needs to be escalated, then we will do a [Crisis Management] meeting. The meeting is basically ringing these people up here [names on the board], getting them on a conference call, telling them what the event is, and we take it from there. [DM-01]	**Engaging a committee with broader skill-set**
I will immediately call a [Crisis Management] meeting. I will get the details.. [DM-06]	**Engaging a committee with broader skill-set**
Addressing a problem and communicating decisions:	
I'll deal with the issue first and then do a follow up later on with an email to a manager or whoever highlighting the fact that we don't have a procedure or something in our manual that covers that event. [OPC-01]	**Address the problem before sending out an FYI**
Once all of that has come together in [the operations control centre]; once we've ascertained all those issues, we (the ops controllers) will then go back to the ports and advise them of our plan. The port will then implement the plan. [OPC-04]	**Work out plans and then advice affected units to implement**
But, if we feel that something [is a] normal day-to-day stuff (event), we will handle [it], like cancellations and whatever, and we SMS out. So there are numerous people on this list that we SMS out to, so everybody knows what's going on. We've got parameters around that; a good thing is, I may SMS something because I don't think it needs to be escalated, I'll SMS that because it is under our requirement to do that, that [also] goes to senior management, etc. So if they felt that I should have escalated further, then they can contact me. I mean, I suppose that's a backup way there. [DM-01]	**Address the problem before sending out an FYI**
That'll all be discussed. It'll be checked [to see] has it had a prior…., has this occurred before, had there been any issue with this aircraft, and all sort of things will all be looked into. And then, providing if it was all ticked off, the [Crisis Management] team would then liaise with engineering before that aircraft can fly again. [DM-06]	**Involve higher authority in solving the problem**

The Affinity Process

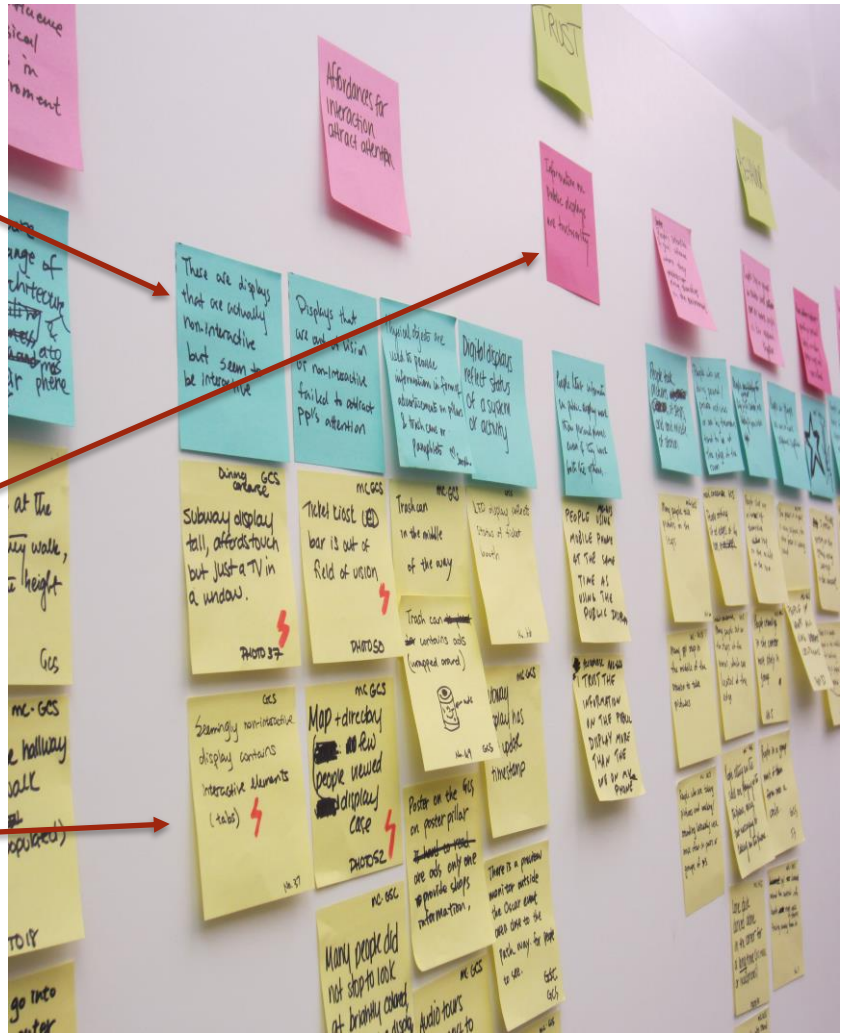
Interviewer: Describe how you respond to disruptive events?

= Acquiring requisite knowledge for dealing with an event

= Escalating problems to where expertise resides

= Addressing a problem and communicating decisions

Acquiring requisite knowledge for dealing with an event:	
There is always a particular department I can seek advice from. Like if it's a security issue, I'll contact the airline security straight away. [OPC-01]	**Seeking expert advice**
We've got this [a trigger list] as guidance for our [Crisis Management] triggers. [DM-01]	**Using pre-defined protocol**
Escalating problems to where expertise resides:	
I'll do a conference call with maintenance watch and the duty captain. [OPC-01]	**Engaging specific functions**
Once we know what the issue is, we'll escalate it to the necessary areas. If it is a maintenance issue, we will talk to our maintenance controller, and let him know. We will then liaise with the engineer in the relevant port or he will speak directly on the HF or the set-phone to the pilot with the issue. Once we've ascertained the issue and we know it's going to cause us some problems, we will then speak with crewing to check the crew hours, to make sure they are not breaching any of their hours. [OPC-04]	**Engaging specific functions**
So we have a look at that, and if we feel that it needs to be escalated, then we will do a [Crisis Management] meeting. The meeting is basically ringing these people up here [names on the board], getting them on a conference call, telling them what the event is, and we take it from there. [DM-01]	**Engaging a committee with broader skill-set**
I will immediately call a [Crisis Management] meeting. I will get the details... [DM-06]	**Engaging a committee with broader skill-set**
Addressing a problem and communicating decisions:	
I'll deal with the issue first and then do a follow up later on with an email to a manager or whoever highlighting the fact that we don't have a procedure or something in our manual that covers that event. [OPC-01]	**Address the problem before sending out an FYI**
Once all of that has come together in [the operations control centre]; once we've ascertained all those issues, we (the ops controllers) will then go back to the ports and advise them of our plan. The port will then implement the plan. [OPC-04]	**Work out plans and then advice affected units to implement**
But, if we feel that something [is a] normal day-to-day stuff (event), we will handle [it], like cancellations and whatever, and we SMS out. So there are numerous people on this list that we SMS out to, so everybody knows what's going on. We've got parameters around that; a good thing is, I may SMS something because I don't think it needs to be escalated, I'll SMS that because it is under our requirement to do that, that [also] goes to senior management, etc. So if they felt that I should have escalated further, then they can contact me. I mean, I suppose that's a backup way there. [DM-01]	**Address the problem before sending out an FYI**
That'll all be discussed. It'll be checked [to see] has it had a prior....., has this occurred before, had there been any issue with this aircraft, and all sort of things will all be looked into. And then, providing if it was all ticked off, the [Crisis Management] team would then liaise with engineering before that aircraft can fly again. [DM-06]	**Involve higher authority in solving the problem**



Summary

What a Good Literature Review Must Do!

- Be organised around and be related directly to the topic
- Be a synthesised discussion of the science behind the project
- Must identify learning issues to investigate in your project
- Should lead to concrete ideas, protocols, techniques, and tools that can be applied to your project

References & Further Reading

- Taylor, D and Procter, M. (2012), The Literature Review: A few tips on conducting it, www.advice.writing.utoronto.ca.

COS10025

Technology in an Indigenous Context Project

Seminar (Week 03)

SWINBURNE UNIVERSITY OF TECHNOLOGY

Swinburne think forward