UMS
UNIVERSITI MALAYSIA SABAH

PSA

FEATURED SPEAKER:

Prof. Ts. Dr. Rahinah Ibrahim
Department of Architecture,
Faculty of Design & Architecture,
Universiti Putra Malaysia

EXPLORING THINKING TOOLS FOR KNOWLEDGE CREATION PROCESS

The future is already here!

MARCH 25TH, 2021,
THURSDAY, 1430PM

Link: meet.google.com/owk-qhnb-wam
All postgraduate students and staffs are invited!

GROUNDED LEARNING

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Presentation Overview

- About Speaker
- The PhD Challenges
- The E.A.G.L.E. Story
- E.A.G.L.E. Initiatives
- Moving on to ENos
- A Knowledge Creation Journey

DISCOVERY is seeing what everybody else has seen, and thinking what nobody else has thought

- Albert Szent-Gyorgi

GROUNDED LEARNING

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Speaker Information

Prof Ts. Dr. Rahinah Ibrahim

Professor, Dept of Architecture, Faculty of Design & Architecture,
Universiti Putra Malaysia

Principal Inventor, E.A.G.L.E. Program & ENos Platform

PhD (Construction Engineering & Management), Stanford ‘05

Engineer (Construction Engineering & Management), Stanford ‘01

M.Architecture, SCI-Arc ‘90;

B.A. (Architecture), University of Washington ‘87

Rahinah Ibrahim

Speaker Information

- 7 years industry, 22 years academia
- Fellow, Leaders in Innovation Fellowship, Newton-Ungku Omar Program 2018/2019
- Recipient, National Academic Award 2013
- Recipient, Top Research Scientists Malaysia 2012 & 2018
- Ethnographer - Skill to dissect and translate cognitive behaviour based on socio-cultural and environmental context
- Graduated 16 PhD/14 MSc students over 15 years
- 22++ IPs profiled at more than 50 countries; 3 IPs commercialized
- 3 students had Stanford Professors examiners
- Alumni employed in UK, New Zealand, Australia, USA, Canada, Ireland and German.
- SCOPUS H-Index 10

UPM - AT A GLIMPSE

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UNIVERSITI PUTRA MALAYSIA

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146 DEGREE PROGRAMMES

3000 HECTARES MAIN CAMPUS + BRANCH

1640 ACADEMIC STAFF

100 STUDENT ORGANISATIONS

26,000 STUDENTS FROM 60 COUNTRIES

40% GRADUATES STUDENTS

17% INTERNATIONAL STUDENTS

16 FACULTIES

10 INSTITUTES

1 SCHOOLS

1 ACADEMY

140 NATIONAL ATHLETES

(Picture & Source: Putra Science Park, Universiti Putra Malaysia)

PhD Journey

Challenges & Trials

Challenges faced

Institutional Challenges	Institutional goals and Academic credentials are misaligned due to lack of PhD staff and motivated students
Challenges on the ground	Mismatch of students' learning perspective and supervisor's teaching perspective caused by lack of critical thinking, tacit knowledge and different learning culture
Scholastic Challenges	Western vs Eastern knowledge creation approach

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Institutional Challenges

Institutional Goals

Increase high impact publications

+

Increase research grants

+

Patented IPs

Academic Credentials

Post Graduate students to graduate on time

+

Quantity production

Resources

PhD staff

+

Motivated students

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Challenges on the Ground

Students' Perspective

Students unsure if their research is original

+

Hard to understand LR

+

Problems finalizing their Research Question

+

Hard to graduate on time

Supervisor's Perspective

Students lack PhD technical skills

+

1-2 years development period to reach scholarship

Causes

Lack of critical thinking skills

+

Different learning culture

+

Tacit knowledge realm

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Scholastic Challenges

Western vs Eastern
Knowledge Creation Approach

Theory-centric Vs. Method-centric for Non-native English Speakers

Theory. *A statement of rule regarding a phenomenon obtained through systematic and verifiable steps (Ibrahim, 2011)*

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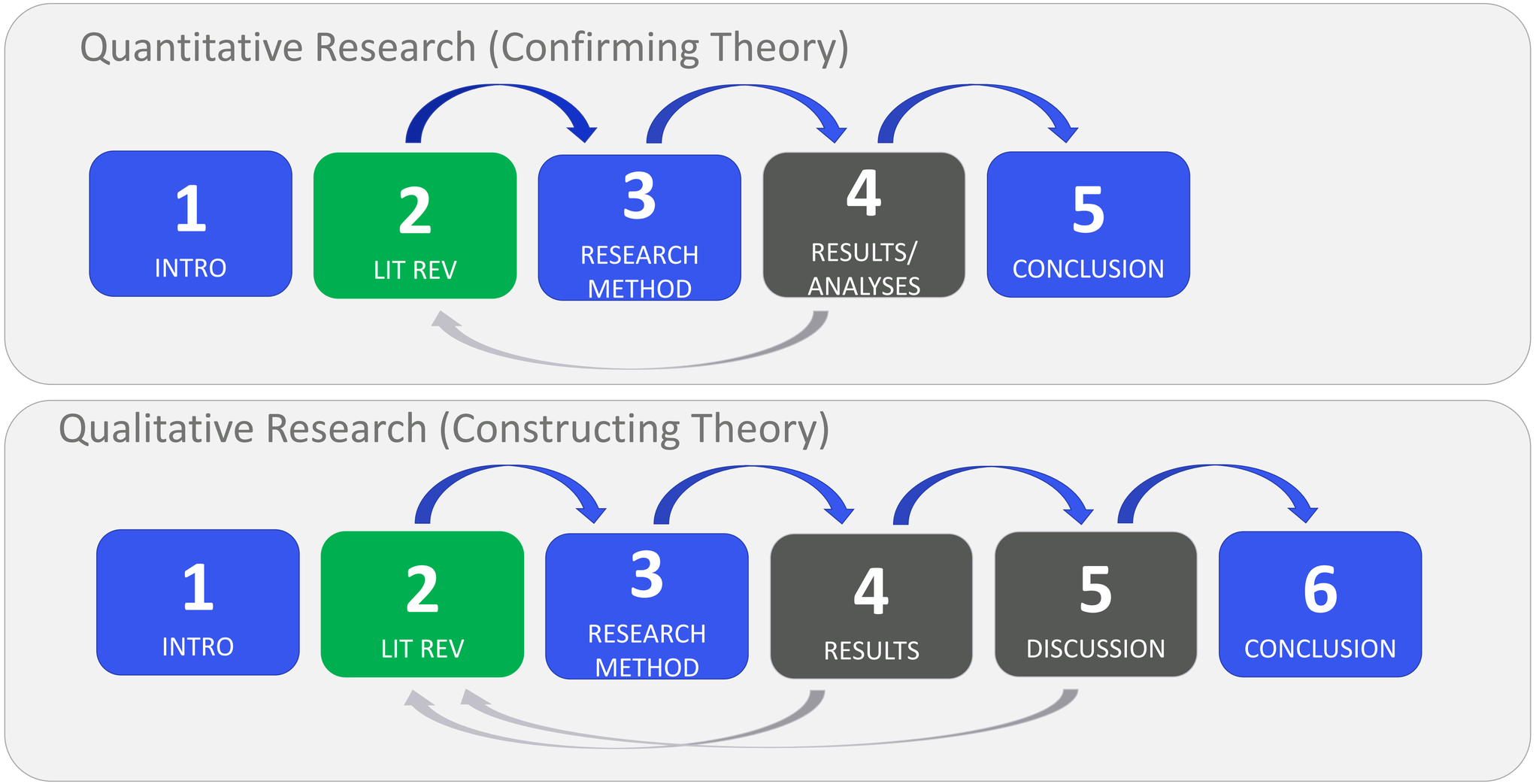
Research Challenges – "Theoretical Foundation"



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Publishing Challenge – “Theoretical Support”

HEADER

TITLE
AUTHORS INFORMATION
ABSTRACT
KEYWORDS

BODY

1. INTRODUCTION
2. LITERATURE REVIEW
   - 1.1 SUB-THEME 1
   - 1.2 SUB-THEME 2
   - 1.3 SUB-THEME 3
   - 1.4 **SUMMARY**
3. RESEARCH METHODOLOGY
4. RESULTS & ANALYSES
5. **VALIDATION** & LIMITATION
6. CONCLUSIONS

FOOTER

7. ACKNOWLEDGEMENTS
8. REFERENCES

Explain Theory

Causing:

1. Difficulty to publish.
2. Unsure how to start writing.
3. Results with no theoretical support

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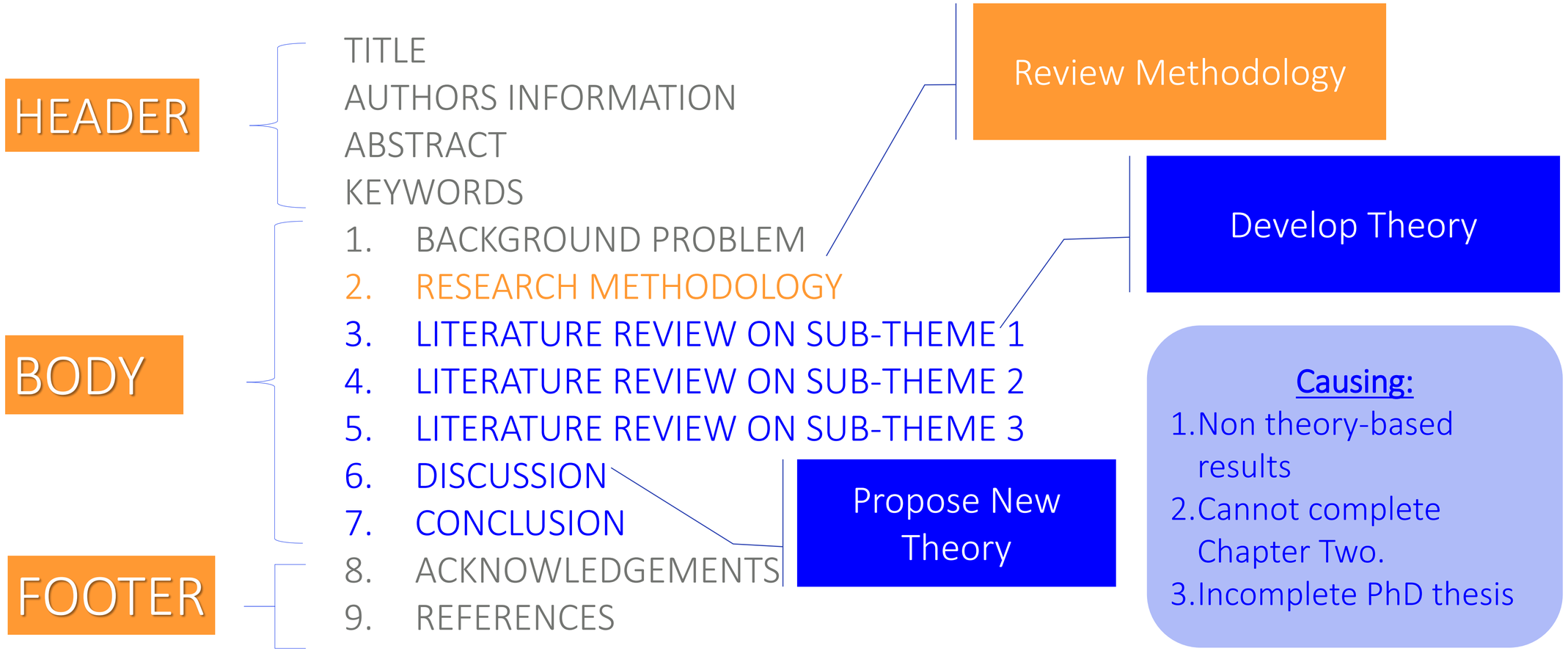
Publishing Challenge – Demonstrate Creation



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E.A.G.L.E. Navigator

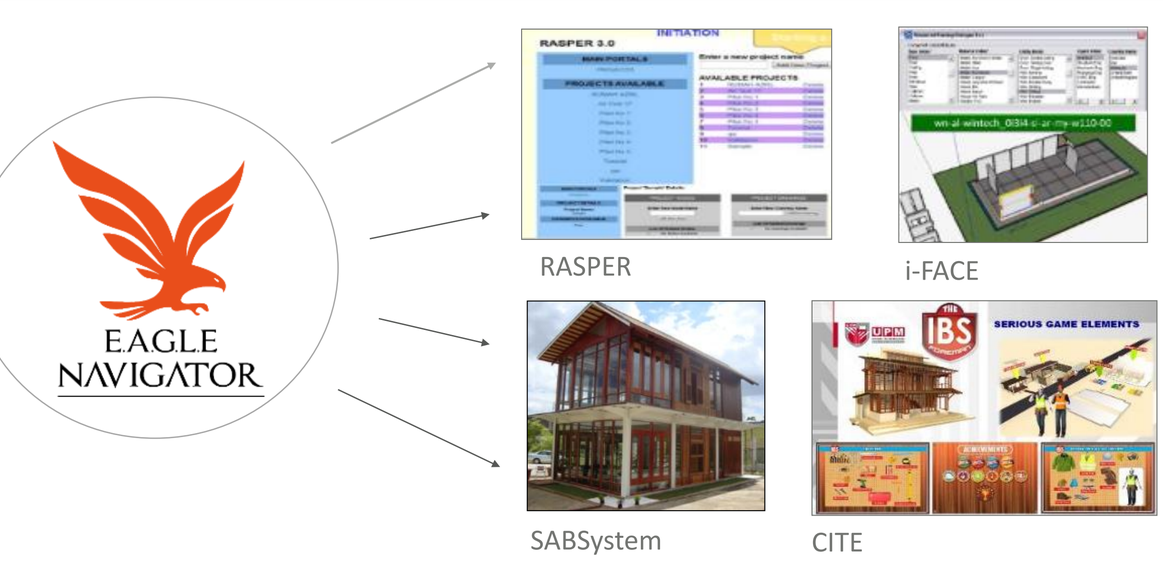
Accelerating Intellectual Excellence

The E.A.G.L.E. Story

Synthesis of Experience

3 years of what **NOT TO DO**

1 month of what **MUST DO** .



Creation of the E.A.G.L.E Programme

Process efficiency + New knowledge creation

Result : 22 IPs profiled in 50 countries

Sources: 16 PhD & 14 Master students

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The E.A.G.L.E. Navigator (EN) Solution

E.A.G.L.E
NAVIGATOR

(PI2020003024)

- Simple tools
- Fast techniques
- Less effort
- Set your own time

- A platform to manage new knowledge generation of a research project.
- Automatic documentation of the systematic ideation procedures for publication purpose.
- Tracks assessment of potential novelty.

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The E.A.G.L.E. Innovations

IPR: LY2015001810/PI2020003024

THEORY DEVELOPMENT

METHODOLOGY

Research Identification

Problem Statement
Research Question
Detailed Outcome of Research

Literature Management

Reporting Literature
Recalling main ideas

Theory Creation

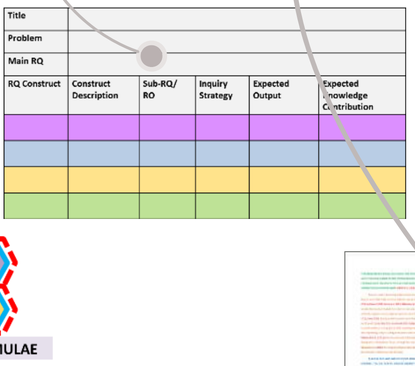
Cross analysis
Synthesizing literature
Theory creation

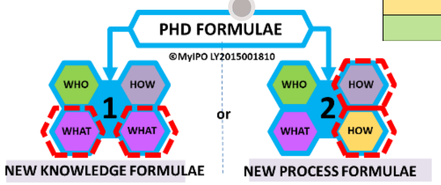
Research Methodology

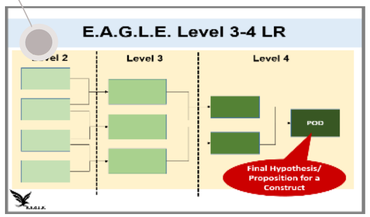
Data Collection
Data Analysis

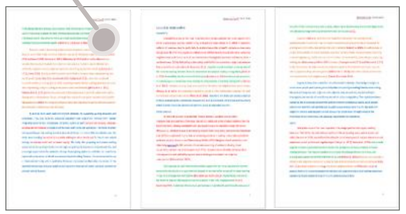
Graduation

Writing
Viva
Graduation









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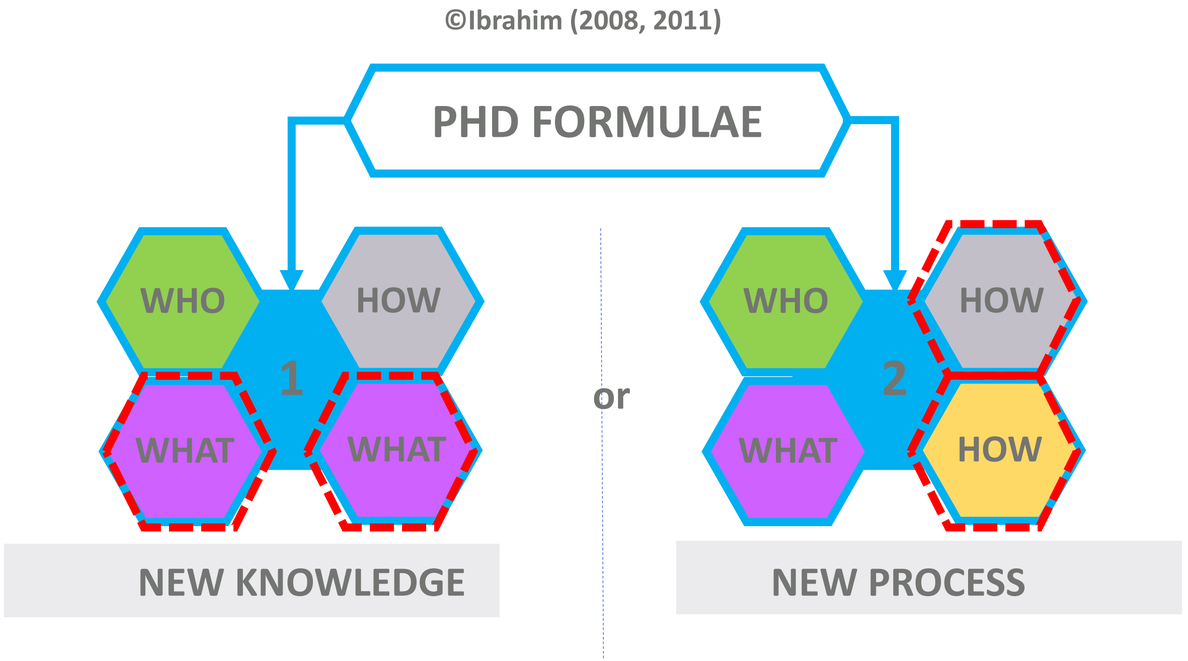
The E.A.G.L.E. Innovation #1 - RQ Construct

A formulae to determine
a PhD main
Research Question



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The E.A.G.L.E. Innovation #2 - E.A.G.L.E. Table

Title					
Problem					
Main RQ					
RQ Construct	Construct Description	Sub-RQ/ RO	Inquiry Strategy	Expected Output	Expected Knowledge Contribution

MANAGEMENT AND MONITORING OF PHD JOURNEY BY SUPERVISORS AND STUDENTS

Simplified Research Design Framework Table adapted from Ibrahim (2011)

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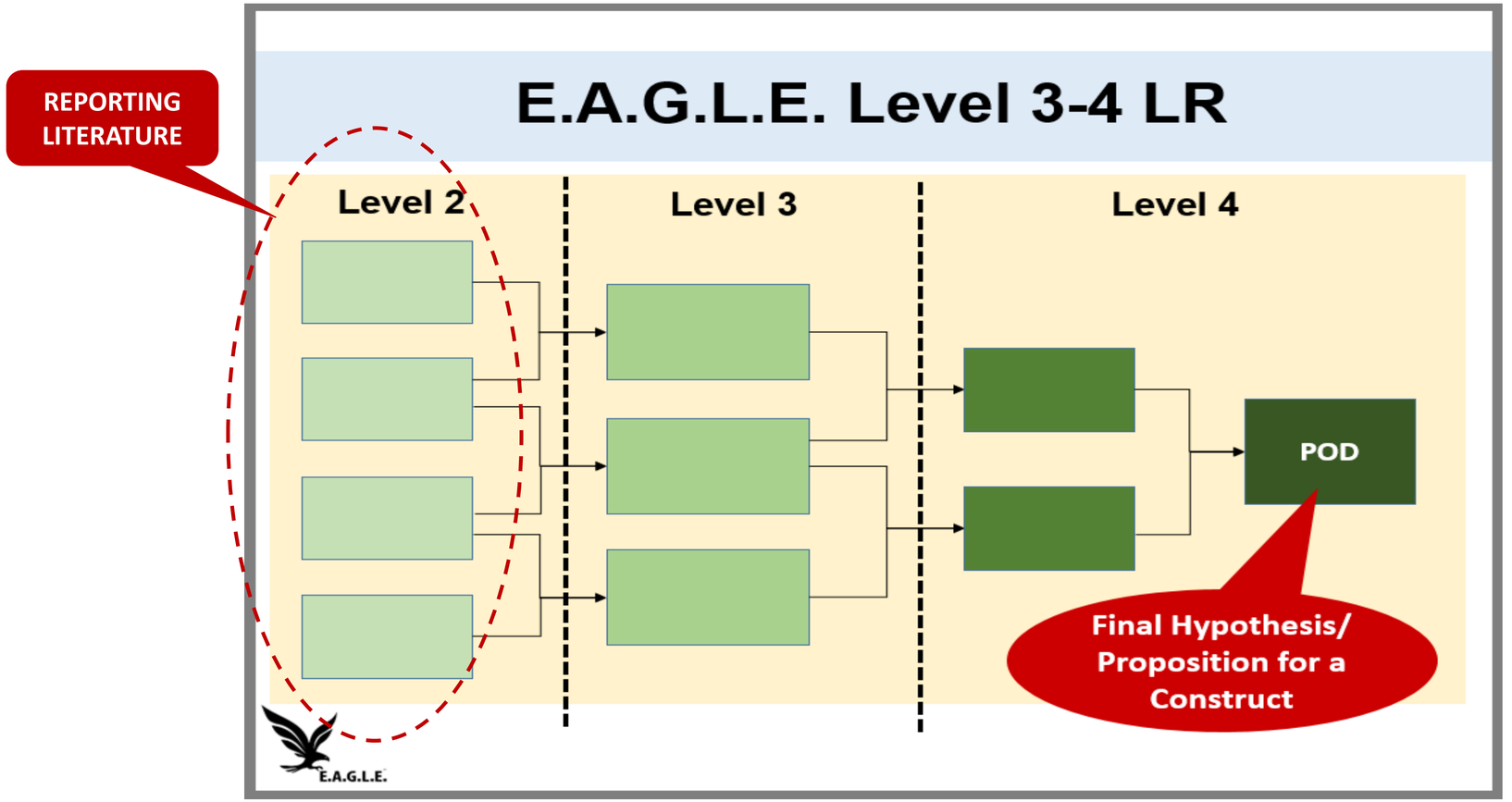
The E.A.G.L.E. Innovation #3 – POD Tree

(Source: Ibrahim & Mustafa Kamal, 2016)



Example of a POD Tree Diagram for developing a theory from literature.

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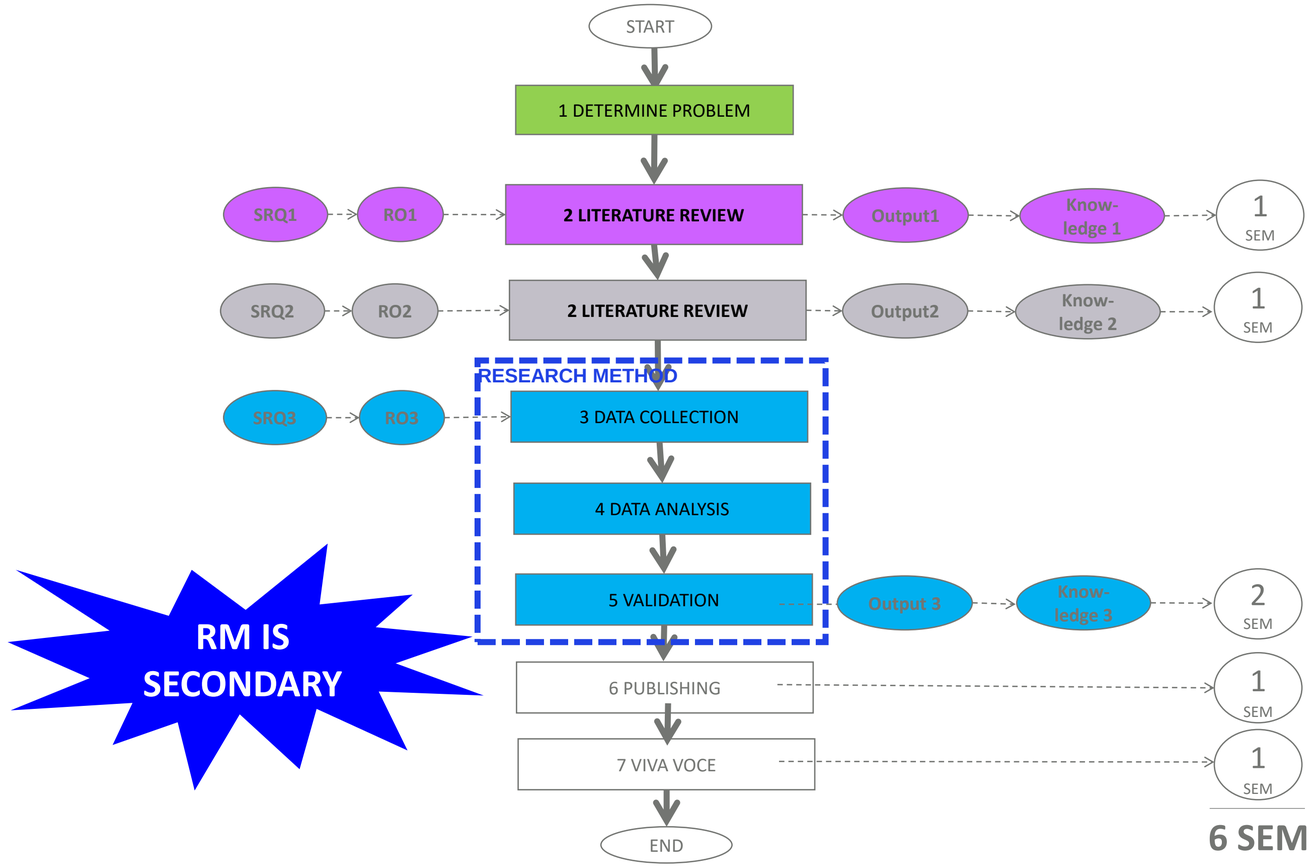
The E.A.G.L.E. Innovation #4 – Visual Checking



EAGLE RESEARCH DESIGN WORKFLOW

(Source: Ibrahim & Mustafa Kamal, 2016)

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E.A.G.L.E. Navigator

Accelerating Intellectual Excellence

Knowledge Ideation Process

Step 1 – Identify Problem or Issue

- Problem is always generic, i.e. achieving SDG targets
- Career plan since long lasting

LEADING STATEMENT:

Prototyping models are thrown away after they are used thus causing lots of solid waste in product design.

PROBLEM STATEMENT [Need + Purpose]:

There is a need for alternative biodegradable material for 3D printing technique in order to provide affordable material to industry market.

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Knowledge Ideation Process

Step 2 – Set Inquiry Complexity

Unlimited opportunities to set your journey following your heart's desire

No	Construct Definition	RQ Construct
1	"element" used in or impacted by study	**WHO**
2	"body of K" required to solve the problem	**WHAT**
3	"action"/"impact" on the "element"/"body of K" in the study	**HOW**

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Knowledge Ideation Process

Step 2 – Set Inquiry Complexity

- Use this table to decide complexity of study
- Plan the content of your study
- Can update content by revising earlier inputs

Level	WHO	WHAT	HOW	RQ OPTIONS
MASTER	1	1	1	9
PHD (OPTION 1)	1	1	2	16
PHD (OPTION 2)	1	2	1	16

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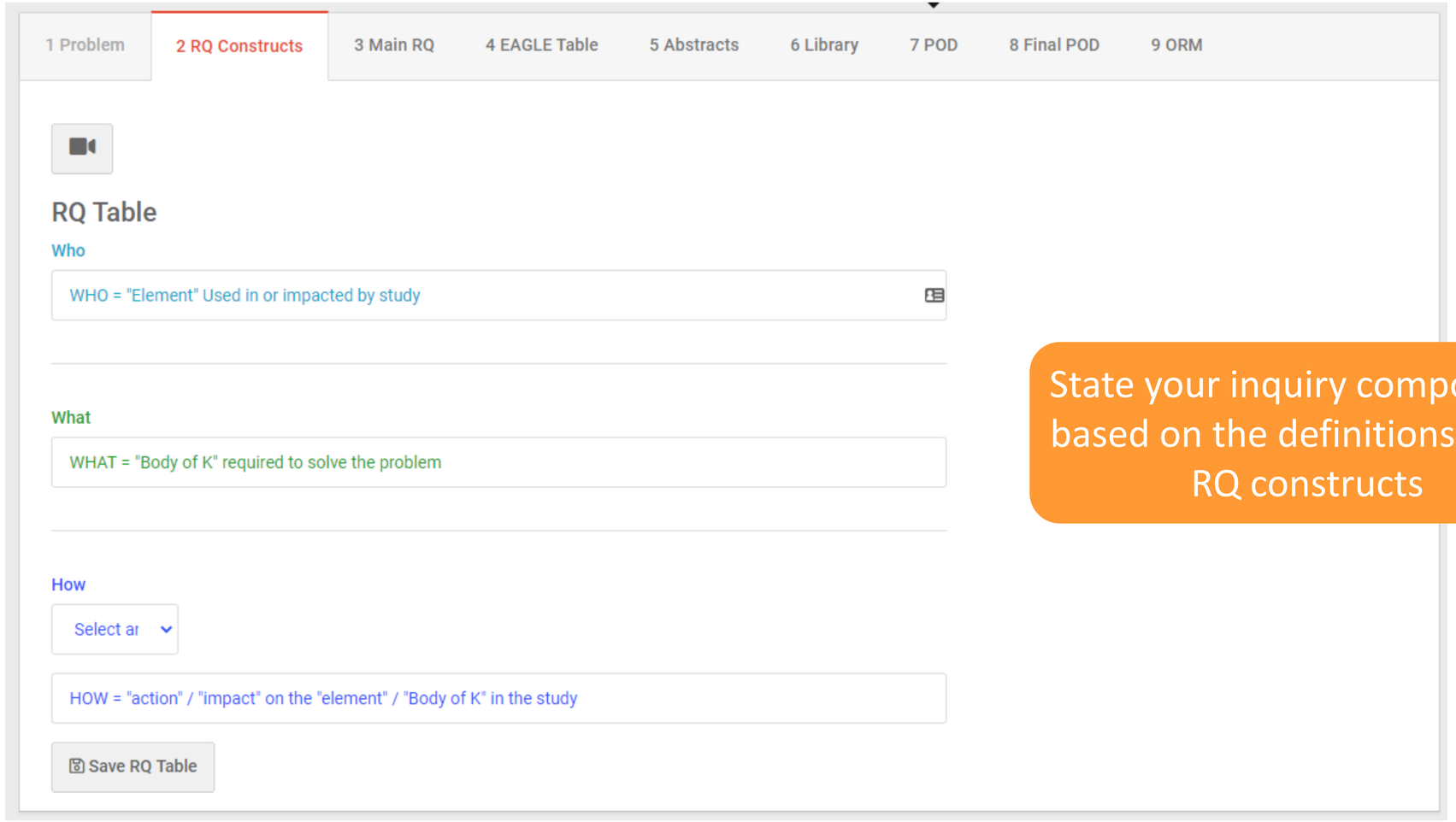
Knowledge Ideation Process

Step 2 – Set Inquiry Complexity



State your inquiry components based on the definitions of the RQ constructs

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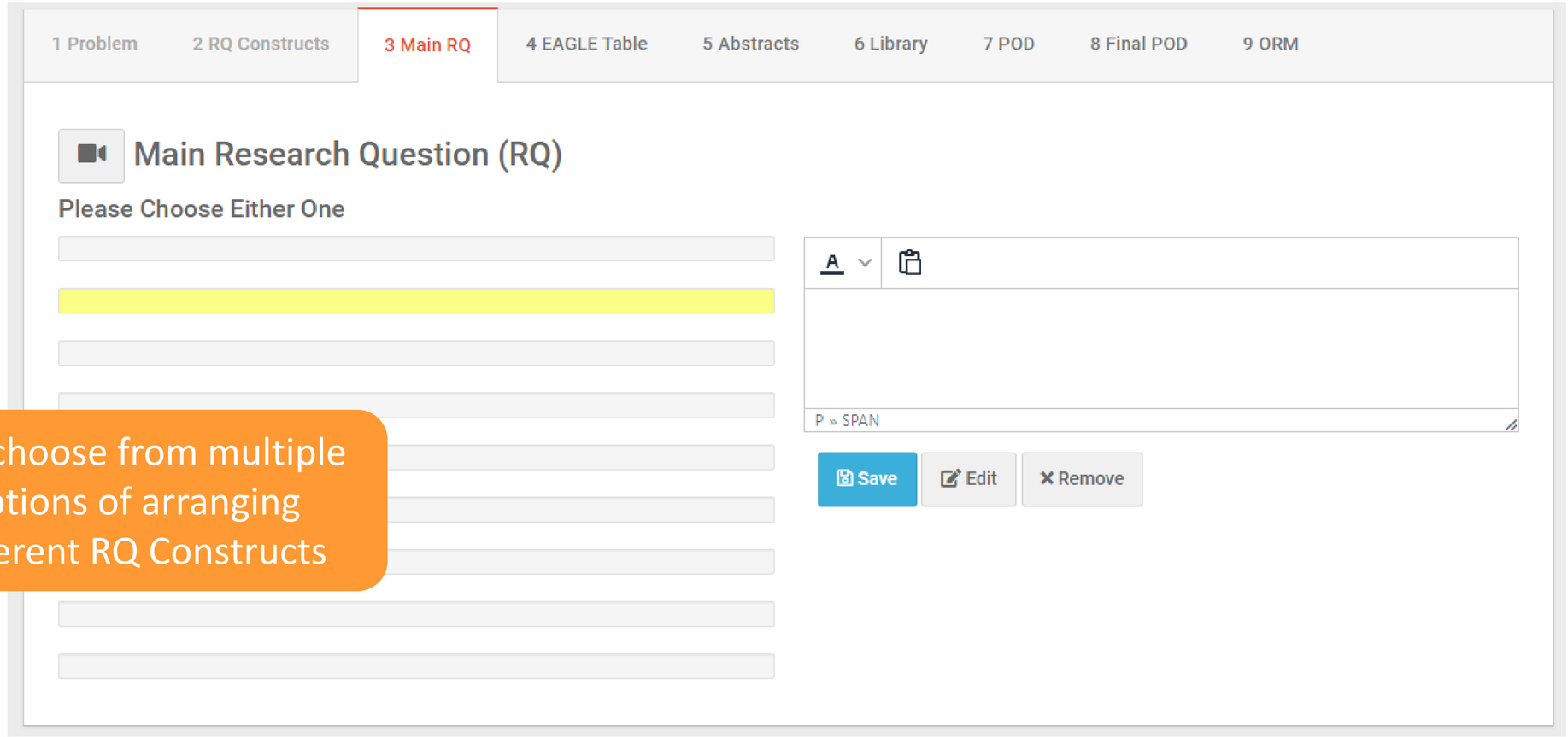
Knowledge Ideation Process

Step 3 – Create Main RQ Formulae



Can choose from multiple options of arranging different RQ Constructs

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Knowledge Ideation Process

Step 3 – Create Main RQ Formulae

Title

Balancing **intelligent natural approach** [HOW] with **indoor environment parameters** [WHAT 1] for **occupant's psychophysical wellbeing** [WHAT 2] in a **healthy building design** [WHO]

Main Research Question

How to balance **intelligent natural approach** [HOW] with **indoor environment parameters** [WHAT 1] for **occupant's psychophysical wellbeing** [WHAT 2] in a **healthy building design** [WHO]?

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Knowledge Ideation Process

Step 4 – Fill Up the E.A.G.L.E. Table

- Use this table to plan the content of your thesis/journal paper
- Can update content by revising earlier inputs

Title					
Problem					
Main RQ					
RQ Construct	Construct Description	Sub-RQ/ RO	Inquiry Strategy	Expected Output	Expected Knowledge Contribution

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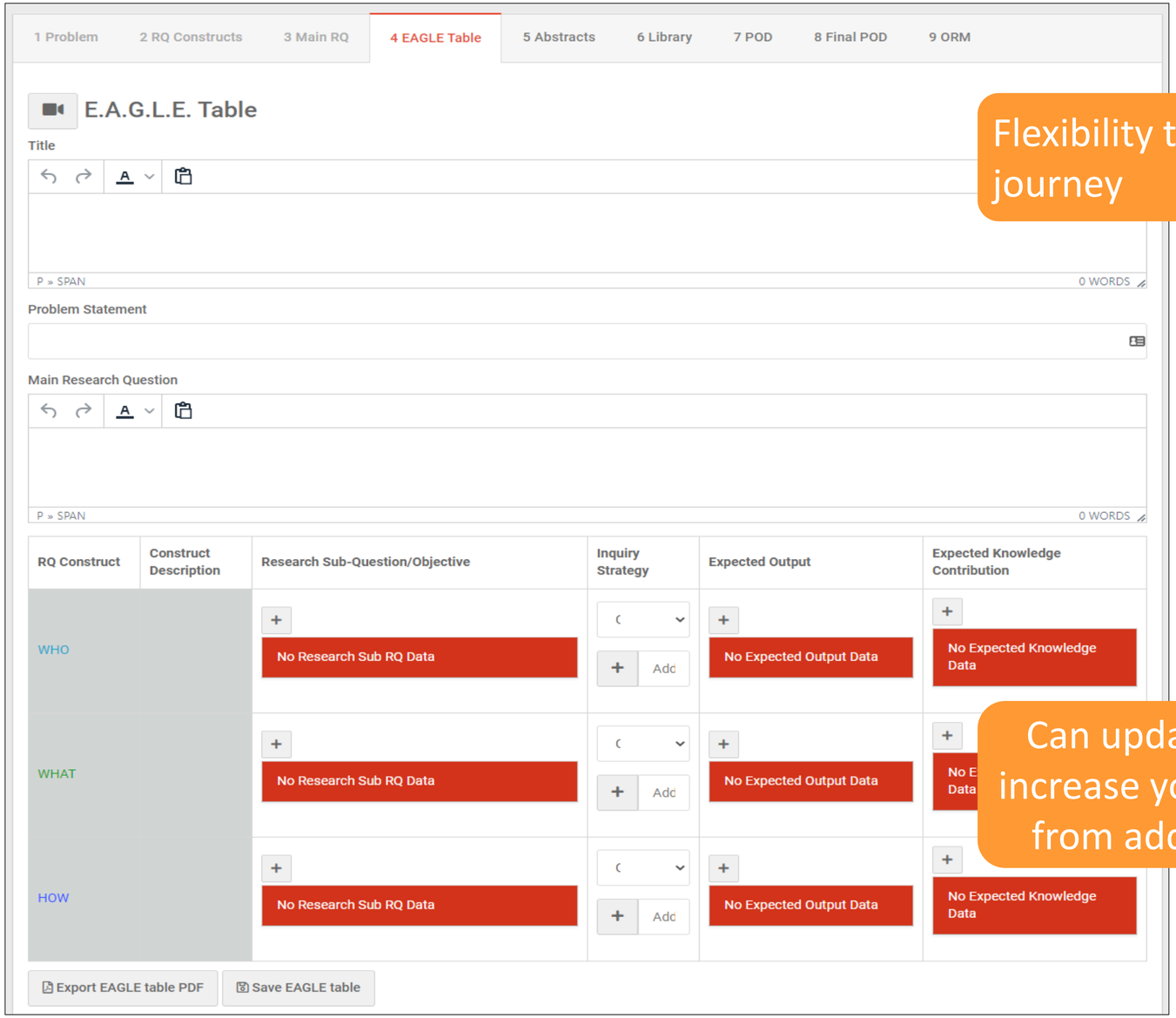
Knowledge Ideation Process



Flexibility to plan your PhD journey

Can update inputs as you increase your understanding from additional readings

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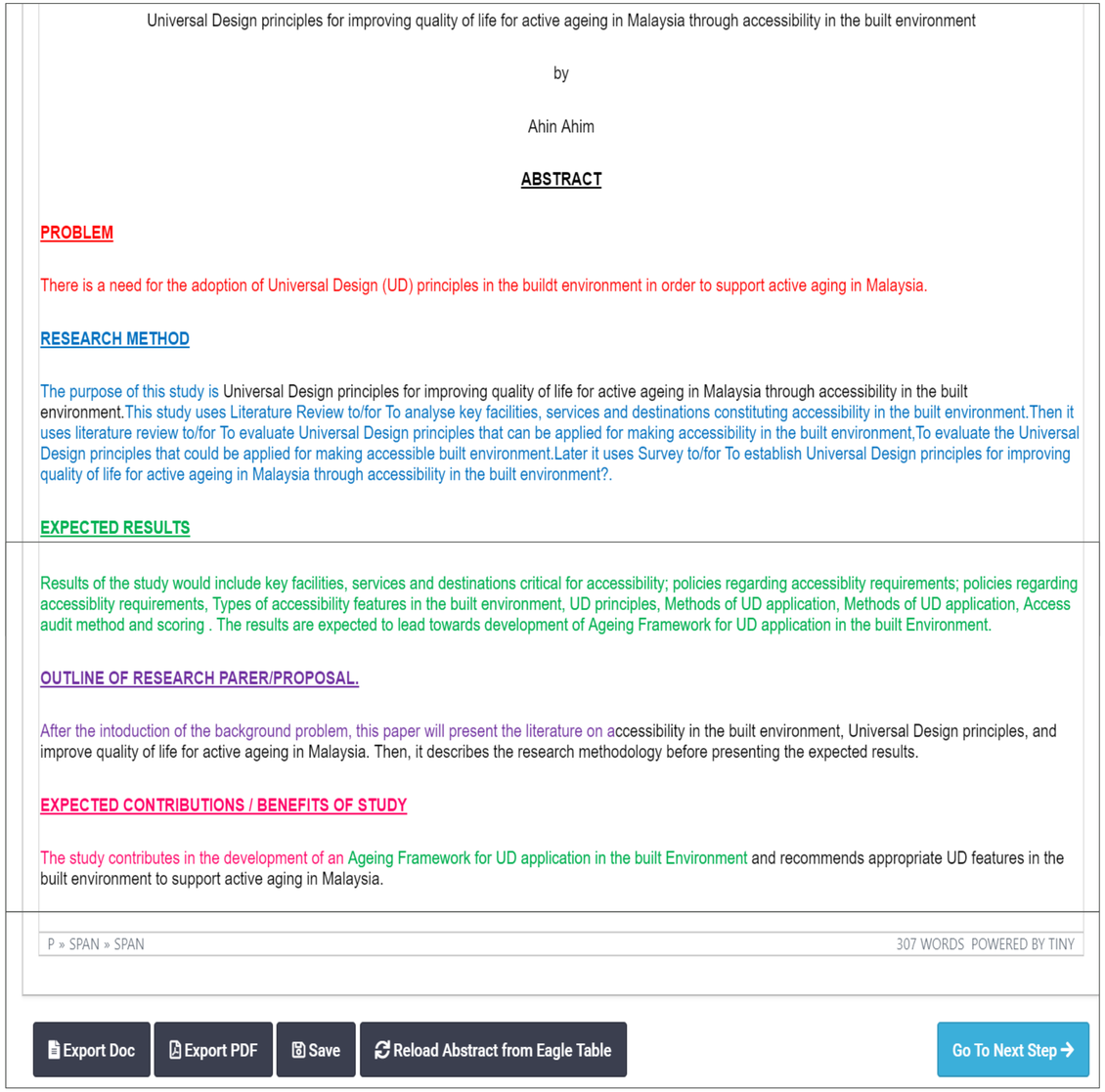
Knowledge Ideation Process

Step 5 – Automated Research Abstract

- Critical components obtained from the E.A.G.L.E. Table
- Can edit, save and export in Word or PDF
- Automatic reload if E.A.G.L.E. Table is updated



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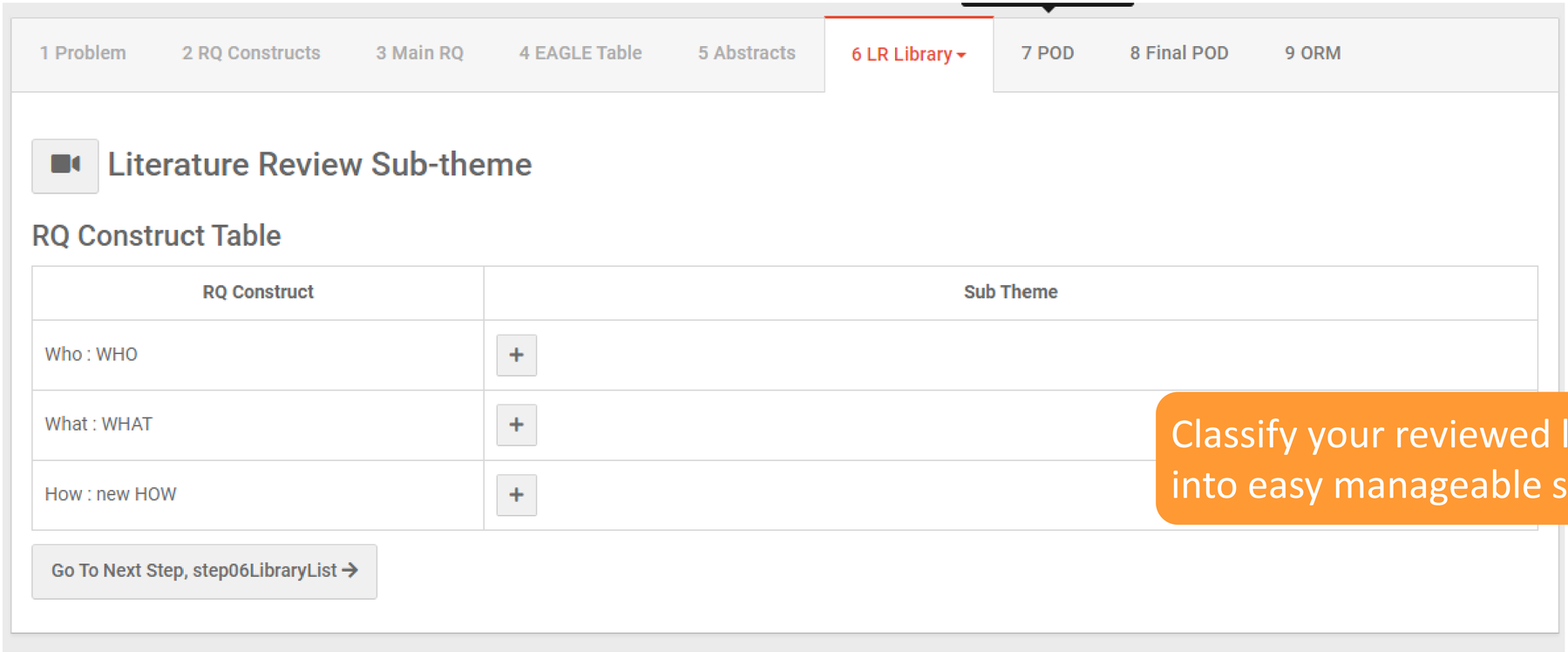
Knowledge Ideation Process

Step 6 – Building Review Library



Classify your reviewed literature into easy manageable sub topics

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Knowledge Ideation Process

Step 6 – Building Review Library

Critical Review Coverage:

What is the article about?
What is the author's POD (Point of Departure)?
How does the article support your study? ➔ STRENGTH
How does it not support your study? ➔ WEAKNESS
What else is needed to support your study? ➔ Researcher's POD

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Knowledge Ideation Process

Step 6 – Building Review Library

- Library of reviewed articles
- Progressive built up
- Store for future use

An Article Review

El-Shekeil et al (2014) highlights the influence of fiber content on the mechanical (i.e. tensile, flexural, impact, hardness and abrasion resistance) and thermal (i.e. TGA) properties of kenaf fiber reinforced thermoplastic polyurethane composites. El-Shekeil et al (2014) found 30% fiber loading exhibited the best tensile strength, while modulus increased with increase of fiber content, and strain deteriorated with increase of fiber content. Flexural strength and modulus increased with increase of fiber loading where increase of fiber loading resulted in decline in impact strength. However, El-Shekeil et al (2014) limits the use of the Kenaf bast fibre thermoplastic polyurethane (TPU) composite to larger products' manufacturing. Therefore, based on El-Shekeil et al (2014) my study intends to analyse whether the mechanical (i.e. tensile, flexural, impact, hardness and abrasion resistance) and thermal (i.e. TGA) properties of kenaf fiber reinforced thermoplastic polyurethane composites could be use for 3D RP materials.

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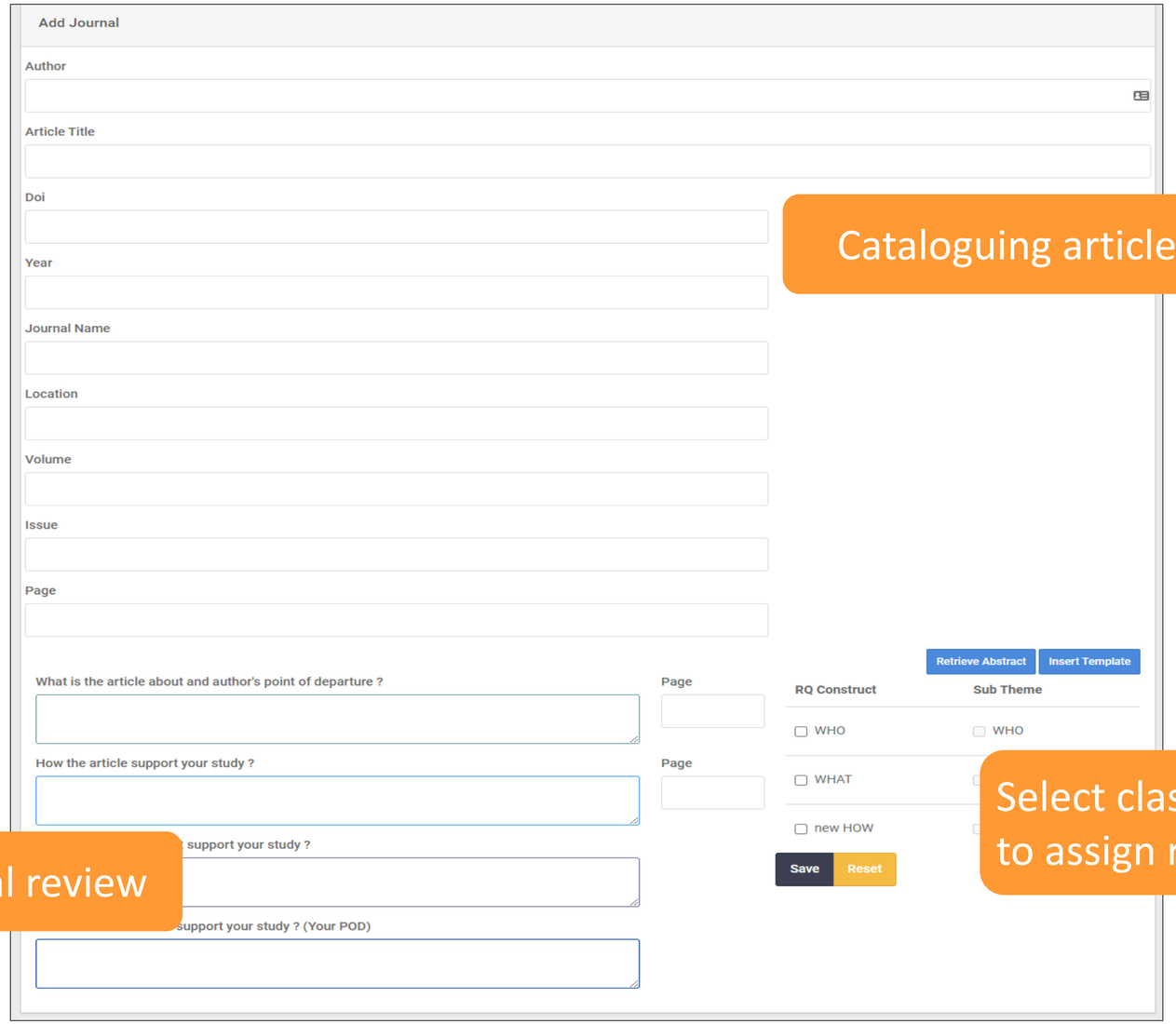
Knowledge Ideation Process

Step 6 – Building Review Library



Cataloguing articles

Select classification to assign review info

Guided critical review

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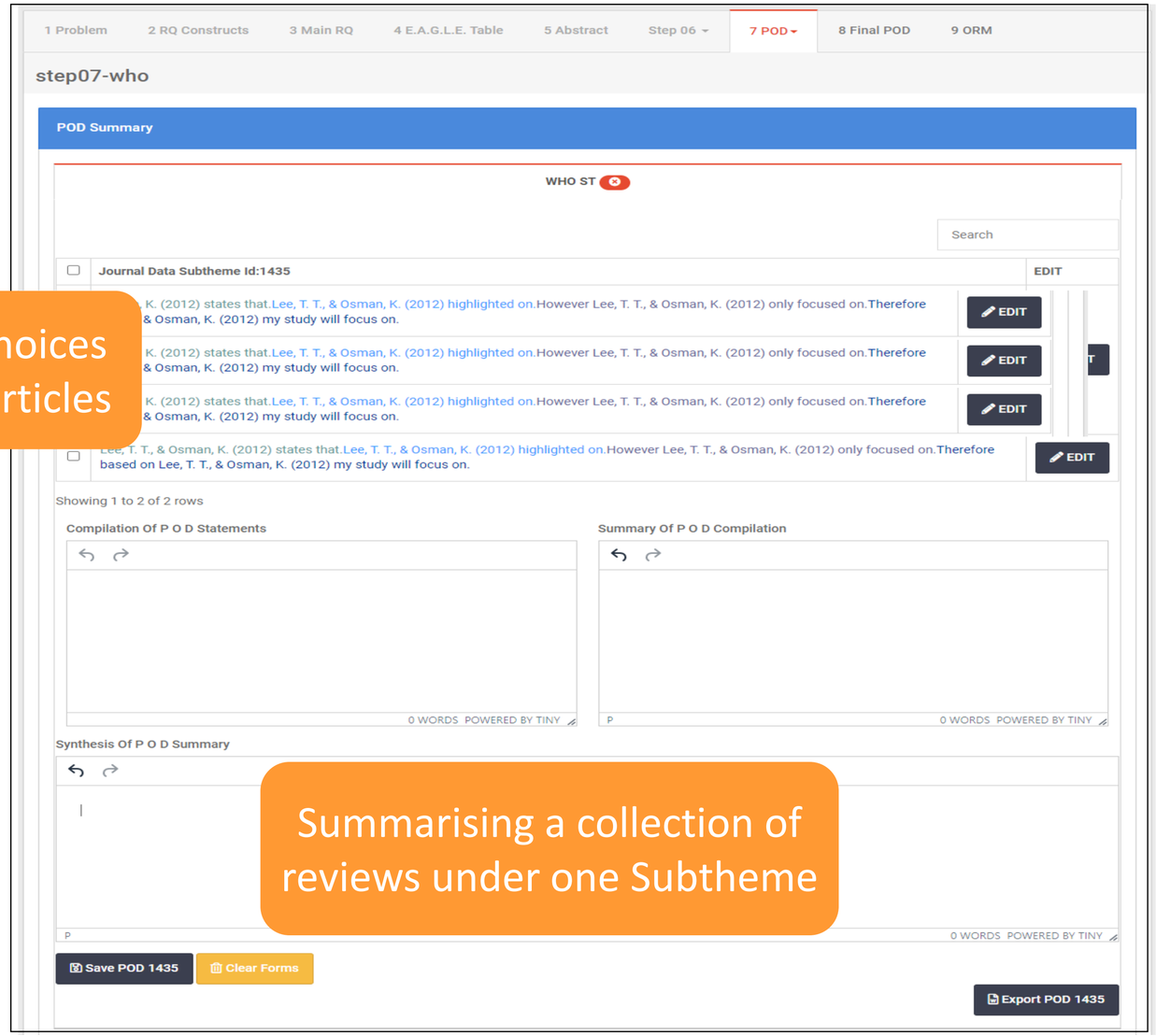
Knowledge Ideation Process

Step 7 – Points of Departure (POD)

Select your choices of reviewed articles



Summarising a collection of reviews under one Subtheme

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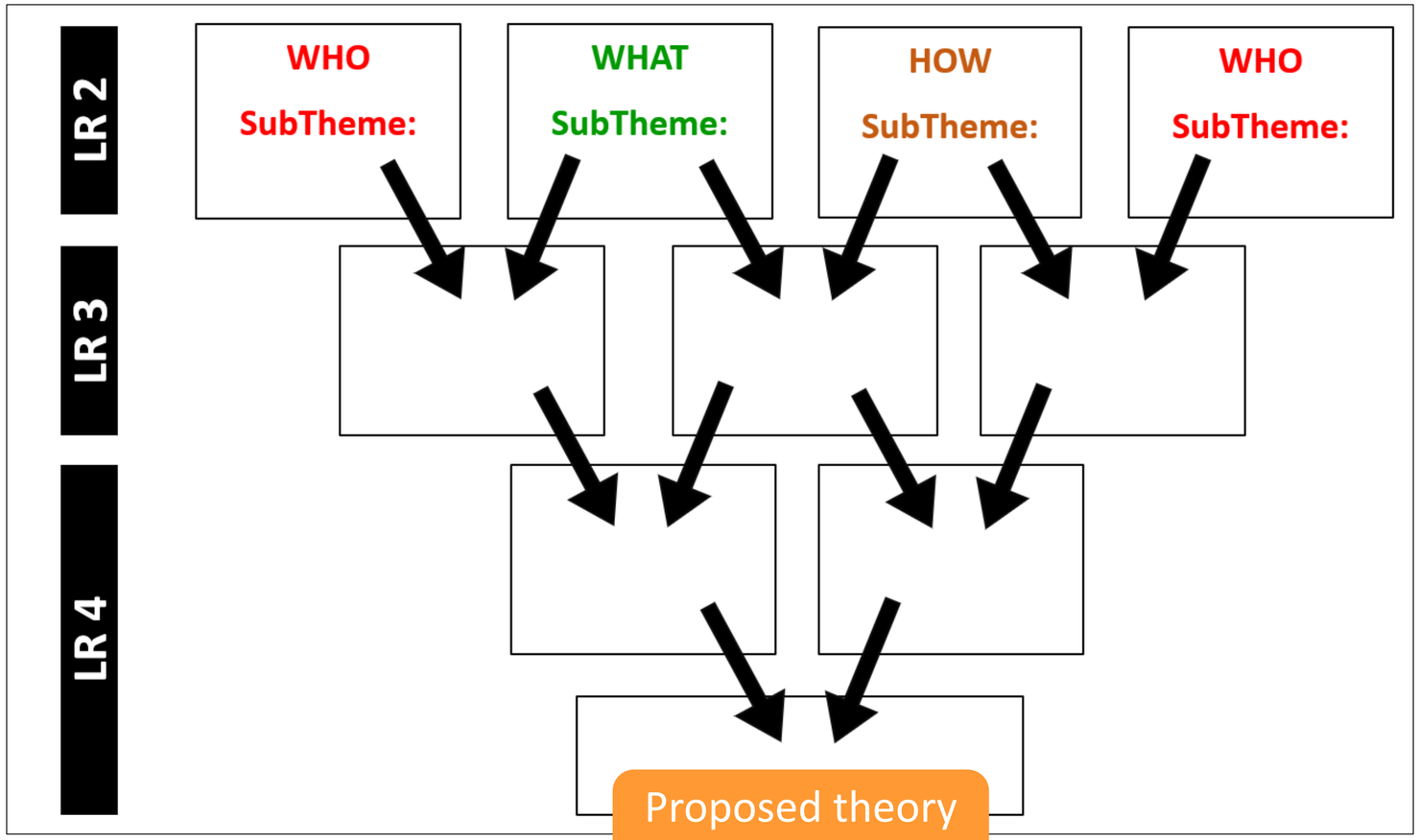
Knowledge Ideation Process

Step 7 – Points of Departure (POD)



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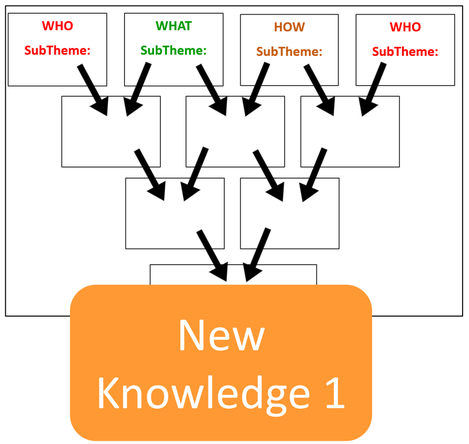
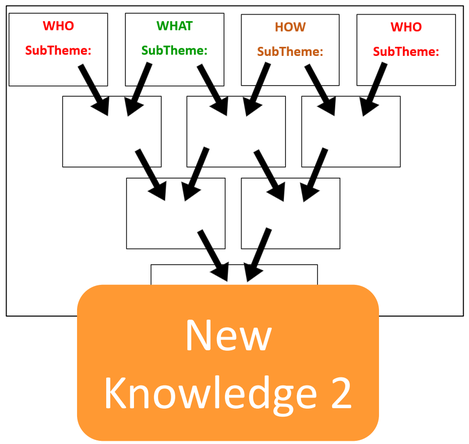
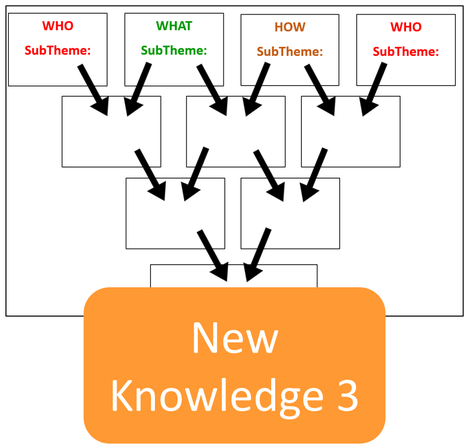
Knowledge Ideation Process

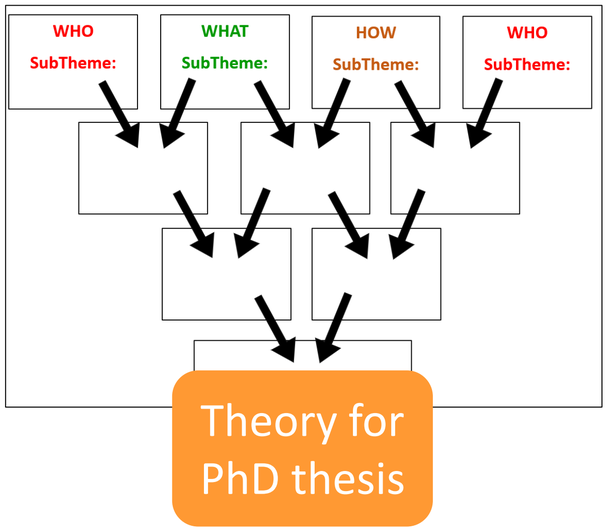
Step 8 – Final POD

- Under one Problem Statement, LR content can change to develop new perspective
- Flexibility for transdisciplinary projects
- Grounded in theory









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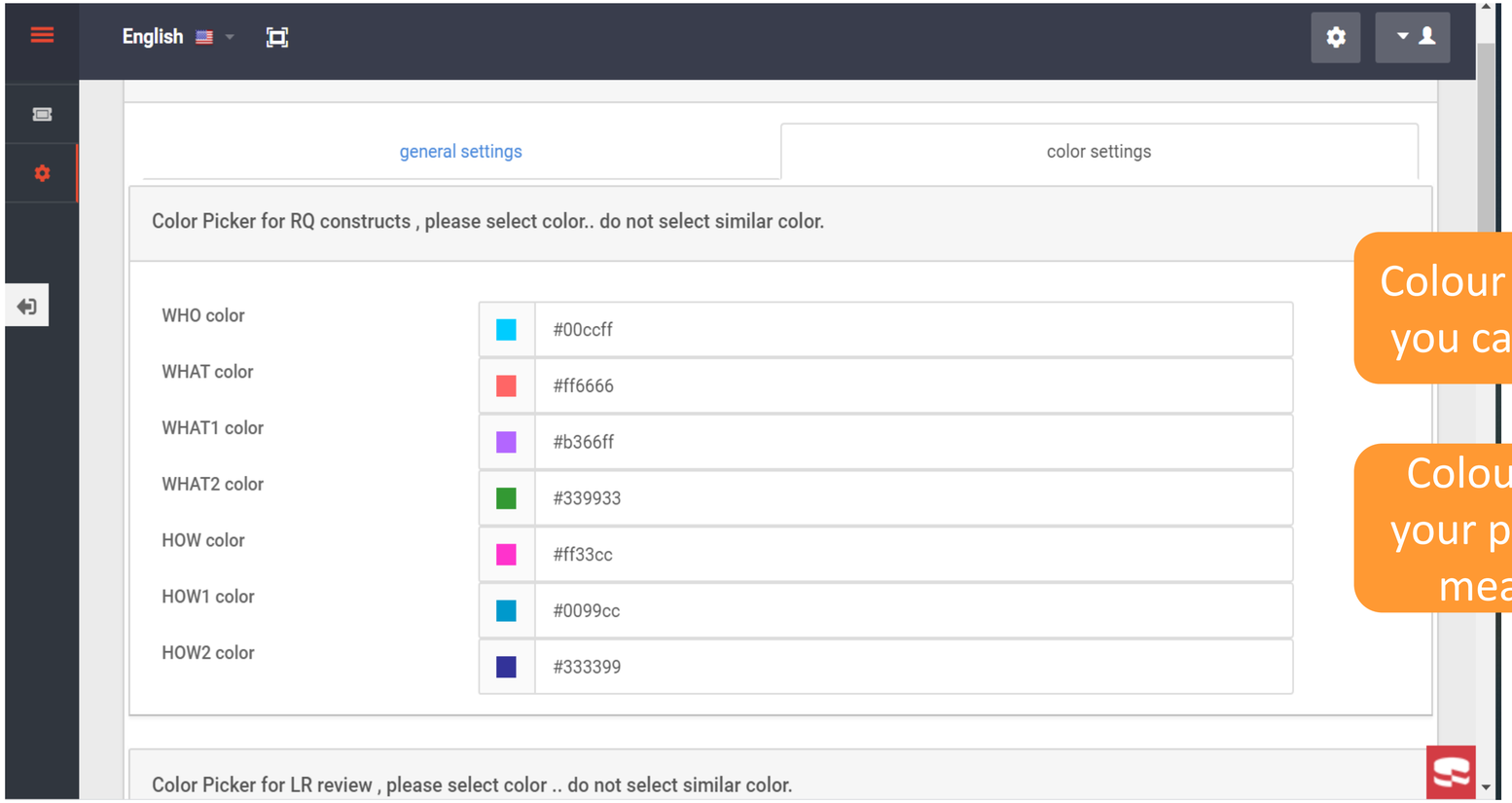
Concurrent Documentation Process



Colour code so you can “see”

Colour code your personal meaning

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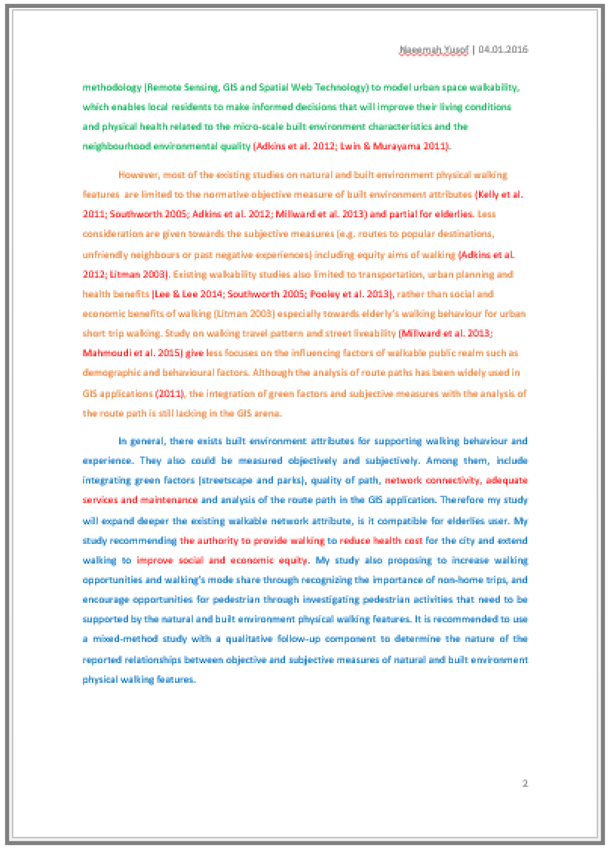
Concurrent Documentation Process

El-Shekeil et al (2014) highlights the influence of fiber content on the mechanical (i.e. tensile, flexural, impact, hardness and abrasion resistance) and thermal (i.e. TGA) properties of kenaf fiber reinforced thermoplastic polyurethane composites. El-Shekeil et al (2014) found 30% fiber loading exhibited the best tensile strength, while modulus increased with increase of fiber content, and strain deteriorated with increase of fiber content. Flexural strength and modulus increased with increase of fiber loading where increase of fiber loading resulted in decline in impact strength. **However, El-Shekeil et al (2014) limits the use of the Kenaf bast fibre thermoplastic polyurethane (TPU) composite to larger products' manufacturing.** Therefore, based on El-Shekeil et al (2014) my study intends to analyse whether the mechanical (i.e. tensile, flexural, impact, hardness and abrasion resistance) and thermal (i.e. TGA) properties of kenaf fiber reinforced thermoplastic polyurethane composites could be use for 3D RP materials.

El-Shekeil et al (2014) highlights the influence of fiber content on the mechanical (i.e. tensile, flexural, impact, hardness and abrasion resistance) and thermal (i.e. TGA) properties of kenaf fiber reinforced thermoplastic polyurethane composites. El-Shekeil et al (2014) found 30% fiber loading exhibited the best tensile strength, while modulus increased with increase of fiber content, and strain deteriorated with increase of fiber content. Flexural strength and modulus increased with increase of fiber loading where increase of fiber loading resulted in decline in impact strength. However, El-Shekeil et al (2014) limits the use of the Kenaf bast fibre thermoplastic polyurethane (TPU) composite to larger products' manufacturing. Therefore, based on El-Shekeil et al (2014) my study intends to analyse whether the mechanical (i.e. tensile, flexural, impact, hardness and abrasion resistance) and thermal (i.e. TGA) properties of kenaf fiber reinforced thermoplastic polyurethane composites could be use for 3D RP materials.



Naseemah Yusof | 04.01.2016

methodology (Remote Sensing, GIS and Spatial Web Technology) to model urban space walkability, which enables local residents to make informed decisions that will improve their living conditions and physical health related to the micro-scale built environment characteristics and the neighbourhood environmental quality (Adkins et al. 2012; Lwin & Murayama 2011).

However, most of the existing studies on natural and built environment physical walking features are limited to the normative objective measure of built environment attributes (Kelly et al. 2011; Southworth 2005; Adkins et al. 2012; Millward et al. 2013) and partial for elderlies. Less consideration are given towards the subjective measures (e.g. routes to popular destinations, unfriendly neighbours or past negative experiences) including equity aims of walking (Adkins et al. 2012; Litman 2003). Existing walkability studies also limited to transportation, urban planning and health benefits (Lee & Lee 2014; Southworth 2005; Pooley et al. 2013), rather than social and economic benefits of walking (Litman 2003) especially towards elderly's walking behaviour for urban short trip walking. Study on walking travel pattern and street liveability (Millward et al. 2013; Mahmoudi et al. 2015) give less focuses on the influencing factors of walkable public realm such as demographic and behavioural factors. Although the analysis of route paths has been widely used in GIS applications (2011), the integration of green factors and subjective measures with the analysis of the route path is still lacking in the GIS arena.

In general, there exists built environment attributes for supporting walking behaviour and experience. They also could be measured objectively and subjectively. Among them, include integrating green factors [streetscape and parks], quality of path, network connectivity, adequate services and maintenance and analysis of the route path in the GIS application. Therefore my study will expand deeper the existing walkable network attribute, is it compatible for elderlies user. My study recommending the authority to provide walking to reduce health cost for the city and extend walking to improve social and economic equity. My study also proposing to increase walking opportunities and walking's mode share through recognizing the importance of non-home trips, and encourage opportunities for pedestrian through investigating pedestrian activities that need to be supported by the natural and built environment physical walking features. It is recommended to use a mixed-method study with a qualitative follow-up component to determine the nature of the reported relationships between objective and subjective measures of natural and built environment physical walking features.

2

Naseemah Yusof | 04.01.2016

2.2.2 Urban Design Qualities

Accessibility

Accessibility is one of the most important urban design qualities that could support city's ability to encourages exercise, healthy living, and ageing in place (Weiss et al. 2010). A systematic patterns of uneven access to parks help to explain inequalities in health outcomes across socio demographic New York City populations (Miyake et al. 2010). Intensity of social interaction within the neighbourhood parks is as a result of the combination of the legibility attributes and density within a residential areas (2014). Walkability studies widely used Walk Score calculation to objecti
foot accessibility in a place (Lwin & Murayama 2011). Inequities of park may lea
the misunderstanding between the built environment and physical activi
al. 2010). Accessibility and distribution of urban space (Miyake et al. 20
an intensity space of social interaction and help to solve problems
et al. 2014). However, existing study on accessibility limited
(Moulay et al. 2014) and evaluating accessibility based
environment and physical activity (Weiss et al. 2010). T
evidence evaluating the relationships between the bui
elderly in order to provide solutions for inactivity issues

Mixed-Land Use

Mixed-land use urban qualities that includes co
neighbourhood are positively affect social interaction, h
Koschinsky 2014). Density and legibility of a city could im
(Moulay et al. 2014) and values of surrounding property (
area. While an unplanned city has been experiencing probl
social and physical infrastructure (Bhattacharyya & Mitra 201
objectively measured by GIS methods with an index consisting o
connectivity, and land use mix (Sundquist et al. 2011). However, the
land-use patterns and walkability require some rethinking as to consider
measurement (Millward et al. 2013).

Existing study on rapid motorization provide support that the increasing level of ec
status of the city dwellers has put immense pressure on transportation system of the town resulting in high level of congestion and fatalities (Bhattacharyya & Mitra 2013). Physical factors are one of the elements that are affecting behaviour and outcome of the CWD neighbourhood (Talen & Koschinsky 2014). Pedestrian infrastructure and land use mix significantly contributed to increases in

3

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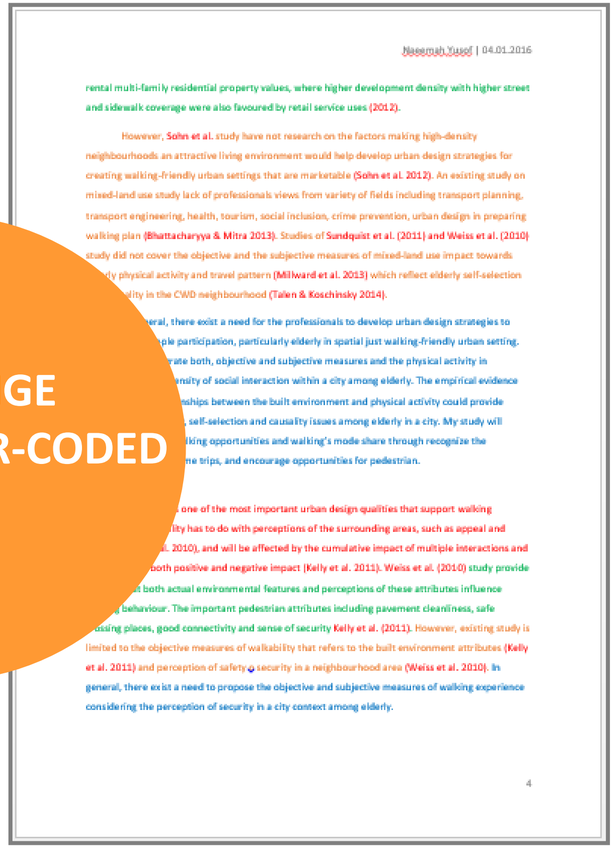

Naseemah Yusof | 04.01.2016

rental multi-family residential property values, where higher development density with higher street and sidewalk coverage were also favoured by retail service uses (2012).

However, Sohn et al. study have not research on the factors making high-density neighbourhoods an attractive living environment would help develop urban design strategies for creating walking-friendly urban settings that are marketable (Sohn et al. 2012). An existing study on mixed-land use study lack of professionals views from variety of fields including transport planning, transport engineering, health, tourism, social inclusion, crime prevention, urban design in preparing walking plan (Bhattacharyya & Mitra 2013). Studies of Sundquist et al. (2011) and Weiss et al. (2010) study did not cover the objective and the subjective measures of mixed-land use impact towards
ly physical activity and travel pattern (Millward et al. 2013) which reflect elderly self-selection
ity in the CWD neighbourhood (Talen & Koschinsky 2014).
eral, there exist a need for the professionals to develop urban design strategies to
ple participation, particularly elderly in spatial just walking-friendly urban setting,
rate both, objective and subjective measures and the physical activity in
nsity of social interaction within a city among elderly. The empirical evidence
nships between the built environment and physical activity could provide
, self-selection and causality issues among elderly in a city. My study will
king opportunities and walking's mode share through recognize the
me trips, and encourage opportunities for pedestrian.
one of the most important urban design qualities that support walking
lity has to do with perceptions of the surrounding areas, such as appeal and
. 2010), and will be affected by the cumulative impact of multiple interactions and
both positive and negative impact (Kelly et al. 2011). Weiss et al. (2010) study provide
t both actual environmental features and perceptions of these attributes influence
behaviour. The important pedestrian attributes including pavement cleanliness, safe
ssing places, good connectivity and sense of security Kelly et al. (2011). However, existing study is limited to the objective measures of walkability that refers to the built environment attributes (Kelly et al. 2011) and perception of safety security in a neighbourhood area (Weiss et al. 2010). In general, there exist a need to propose the objective and subjective measures of walking experience considering the perception of security in a city context among elderly.

4

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Potential Novelty Index in Knowledge Creation

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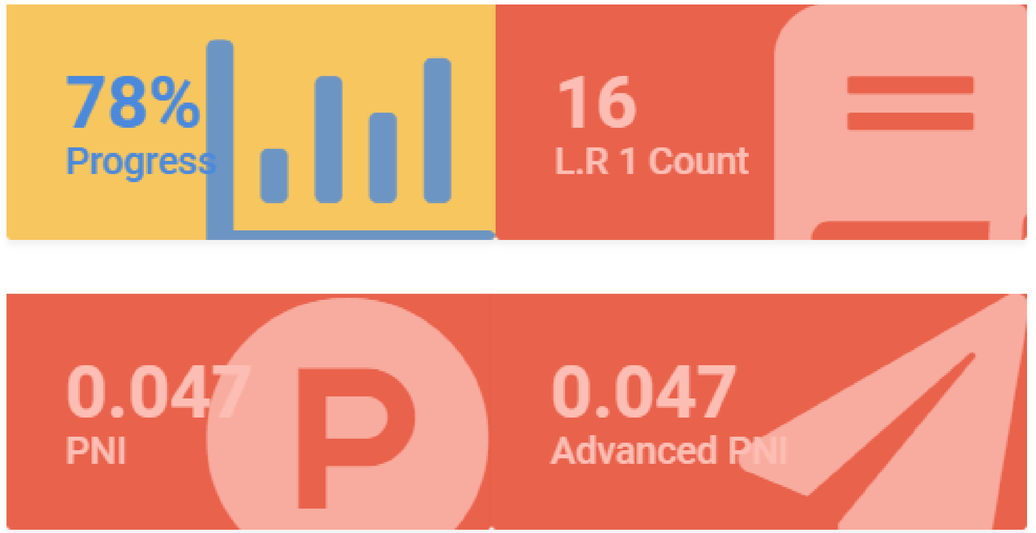
Total number of reviewed articles



Conceptual Potential Novelty Index

Advanced Potential Novelty Index

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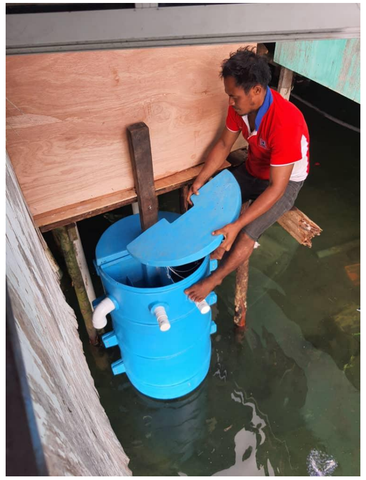

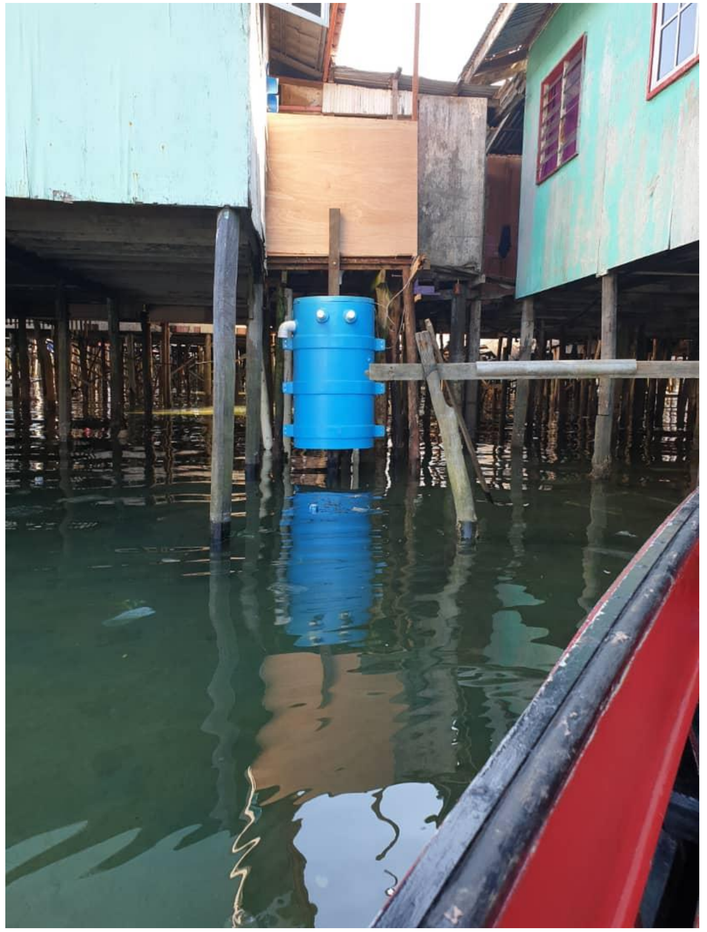

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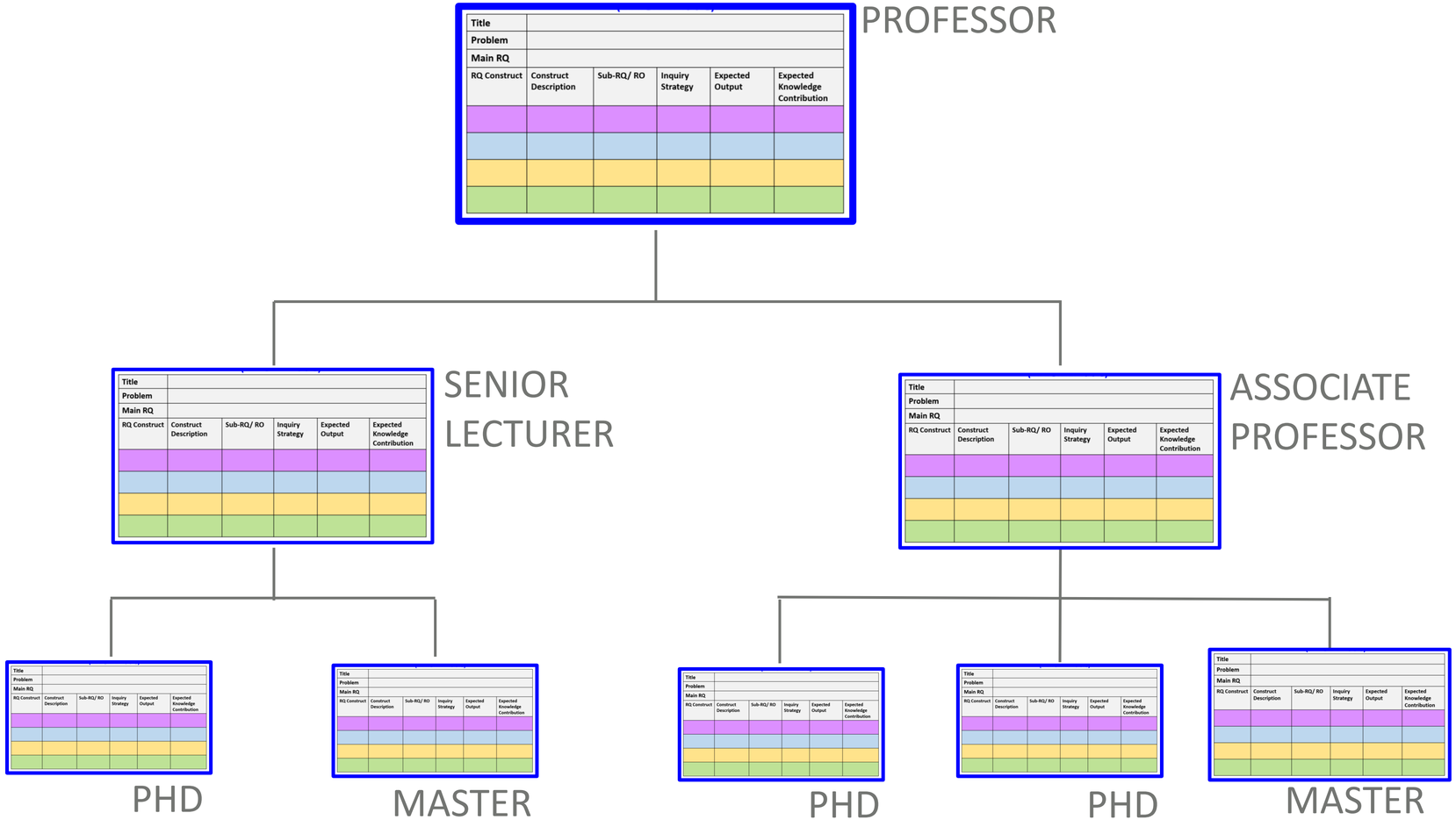
- Optimize limited staffing
- Increase research grants
- Talent development
- Institutional growth



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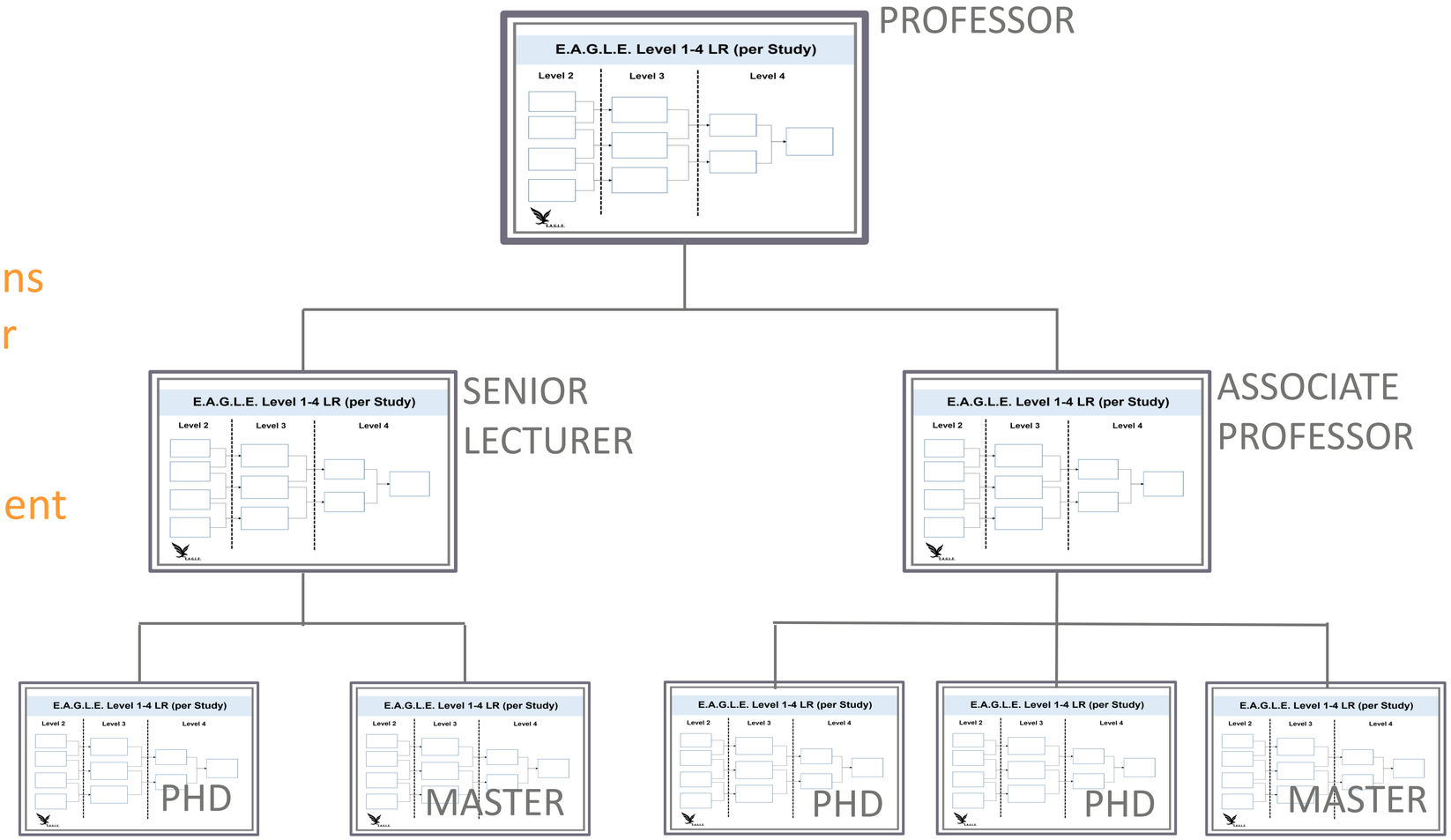
Strategic Ideation Planning (Knowledge Creation)

- Increase scientific publications
- Grounding niche areas under prominent researchers
- Talent development
- Institutional asset management



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CONCLUSION

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- Easy techniques for faster comprehension
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- Systematic retrieval for ease of mind
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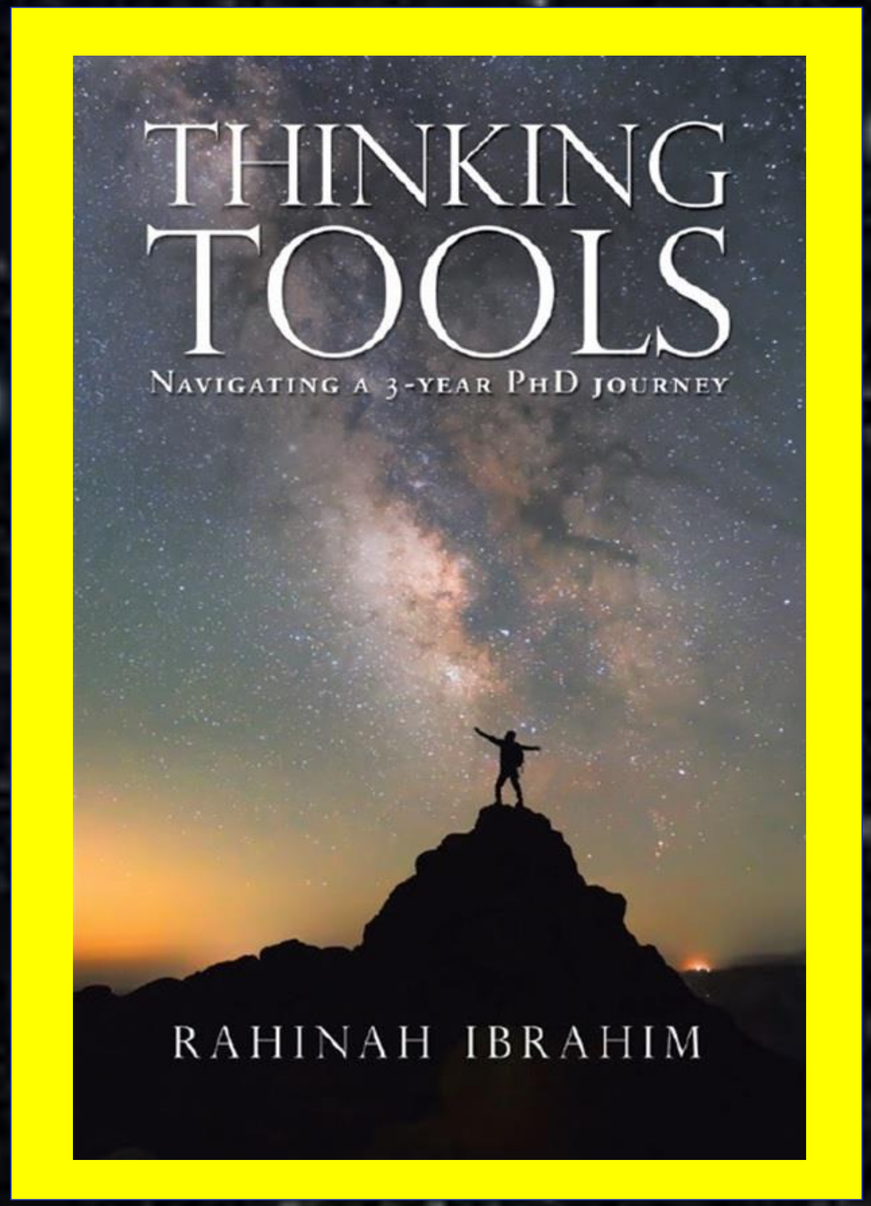

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THANK YOU

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