Research topic and problem

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What are differences between NEW and Novel?

NEW *is another form of material that may/ may not be the same as the existing material.*

NOVEL *is another type or form of material that is completely different from the existing one.*

Characteristics of a research topic (Topic aim)

1. Novelty (Mat./Prop./Proc./Appli.)
2. Easier & simpler method and techniques
3. More advanced techniques (more accurate and reliable)
4. Agreement or disagreement between theory or/and practice
5. Leading to more applications (cheaper and more versatile)

NOVELTY may be in the form of

1. Novel materials
2. Novel apparatus
3. Novel method and conditions
4. Novel results
5. Novel explanations
6. Novel conclusion
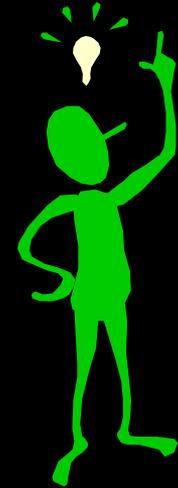
Ways for the research idea (topic) to go: (Topic preparation as aimed)

1. Describing novel materials, design, operational method and conditions.

2. Reporting experimental results that have never been found/discovered before.

3. Presenting a comparison between your own results with those obtained from other research work.

4. Comparison between experimental and theoretical

5. Following all related effects on changes of the results found.

Processes to find possible topics? (Topic procedure)

- Considering journal papers, review papers, webs and books?

- Reading papers and summarizing them. (how to read them quick?, but not to miss important parts).

- Finding highlights (selling points) and shortcomings?

- Going through papers from present to past? (tips: using references of the read papers).

- Following the same research group (s) to grasp the main ideas and deciding which ideas to follow or to compete with?

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Processes to find possible topics? (cont.)

- *Listing possibly further works for each paper.*

- *Considering the similarities and differences across different research groups.*

- *Grouping the similarities.*

- *Prioritizing the most frequent similarities for further the work.*

- *Writing the proposal. (this is the most important part, sometimes, you will know how terrible the idea until the words are in writing).*

A good research topic (Topic conclusion)

1. To create an originality.
2. To improve for a better life.
3. To erase the existing for competitiveness.
4. To correct for the right (or to repeat for re-confirmation)
5. To modify for more versatilities, useful, and wider applications (more appropriate and higher tech.)
6. To compare for establishing a next creation.
7. To analyze and explain for deeper knowledges.

How difficult you describe the problem = how hard you can solve

A good research needs a creative researcher