Readings


Jones, C and Jia, X. Research Concepts. (myemail.tut.edu.tw/~z9501002/file/research.ppt)

Dan berbagai sumber lain dari internet lainnya
History of Research?

• Humans have been researching since the beginning of time
  – Invention of the wheel
  – Building material
  – Weapons
  – Agriculture
  – Medicine
  – And on and on and on…

What is Research?

Research is not a vocation but a way of living
What is Research?

- **Research** is a diligent and **systematic** inquiry or investigation into a subject in order to discover or revise facts, theories, applications etc.

- **Research** is **systematic** study directed toward fuller scientific knowledge or understanding of the subjected studied. Research is classified as either basic or applied according to the objectives of the sponsoring agency (National Science Foundations, US).

*having, showing or involving a system, method or plan

What is Research?

- **Research** is a diligent and **systematic** inquiry or investigation into a subject in order to discover or revise facts, theories, applications etc.

- **Research** is **systematic** study directed toward fuller scientific knowledge or understanding of the subjected studied. Research is classified as either basic or applied according to the objectives of the sponsoring agency (National Science Foundations, US).

- The **systematic** part of this activity is what allows us to fly into space, cure diseases, feed the hungry and live fruitful lives

- Through research, we build on the discoveries of those who have investigated before us and often improve their findings
What is Research?

• Research often results in a synergy or the putting together of two or more ideas to arrive at a new or better solution  
• Academic research *could be* reading the works of several scholars about a particular topic and then forming and reporting your own opinion about the same topic

What is Research?

• The value added is that you have the luxury of reviewing the work of many researchers who may have individually worked only on one facet of a research question  
• You get the advantage of seeing the big picture  
• You get to put it all together!
What is Research?

Nature of Research

- **Systematic** – plan, identify, design, collect data, evaluate
- **Logical** – examine procedures to evaluate conclusions
- **Empirical** – decisions are based on data (observation)
- **Reductive** – general relationships are established from data
- **Replicable** – actions are recorded

What is Research?

- Research isn’t information gathering:
  - Gathering information from resources such books or magazines isn’t research.

- Research isn’t the transportation of facts:
  - Merely transporting facts from one resource to another doesn’t constitute research.
  - Paraphrasing or rearranging the work of others
  - Cutting and pasting the work of others

  - **No contribution to new knowledge** (although it might make existing knowledge more accessible).
  - There is no room for it in academia
  - Beware of PLAGIARISM
What is Plagiarism?

- Presenting as one’s own the ideas, words, or products of another
- “Kidnapping” the work of another
- Plagiarism includes use of any source to complete academic assignments without proper acknowledgement of the source

What is Research NOT?

Plagiarism is Costly: destructing scientific community

The cost of plagiarism (for students):

- A failing grade on an assignment
- A failing grade for the course
- Suspension from the university
- “Drop Out” from the university
What is Research NOT?

Plagiarism is Costly: destructing scientific community

• Plagiarism is stealing
  – Robs an author or researcher of money, respect and prestige in his or her industry for work honestly performed

• Plagiarism steals from you
  – You do not learn → so you lose
  – You do not practice research skills → so you lose out on training your mind to think and organize

Purwiyatno hariyadi, phariyadi@ipb.ac.id

Plagiarism is Costly: destructing scientific community

What is Research NOT?

Plagiarism is Costly: destructing scientific community

http://www.unm.ac.id/component/content/article/31-kabar-pendidikan/424-deteksi-plagiat-pps-unm-gaet-perusahaan-hongkong.html

Purwiyatno hariyadi, phariyadi@ipb.ac.id ITP500

What is Research NOT?

Plagiarism is Costly: destructing scientific community

Purwiyatno hariyadi, phariyadi@ipb.ac.id ITP500
What is Research NOT?

Plagiarism is Costly: **destructing scientific community**
What is Research NOT?

Recycling

Rehashing material you already know thoroughly or, submitting a paper that you have completed for another course

Research Characteristics?

1. Originates with a question or problem.
2. Requires clear articulation of a goal.
3. Follows a specific plan or procedure.
4. Often divides main problem into subproblems.
5. Guided by specific problem, question, or hypothesis.
6. Accepts certain critical assumptions.
7. Requires collection and interpretation of data.
8. Cyclical (helical) in nature.
Research Characteristics?

- Penelitian = Riset
- RISET = RESEARCH
- RISET = RE + SEARCH
- there is no guaranteed recipe for success at research
- Research = experiment

Research Characteristics?

- Research begins with a problem.
  - This problem need not be Earth-shaking.
- Identifying this problem can actually be the hardest part of research.
- In general, good research projects should:
  - Address an important question.
  - Advance knowledge.
Research Characteristics?

- The following kinds of projects usually don’t make for good research:
  - Self-enlightenment.
  - Comparing data sets.
  - Correlating data sets.
  - Problems with yes / no answers.

GOOD Research Characteristics?

1. The scope and limitations of the work to be clearly defined.
2. The process to be clearly explained so that it can be reproduced and verified by other researchers.
3. A thoroughly planned design that is as objective as possible.
GOOD Research Characteristics?

1. Highly ethical standards be applied.
2. All limitations be documented.
3. Data be adequately analyzed and explained.
4. All findings be presented unambiguously and all conclusions be justified by sufficient evidence.

WHY Research?

• Ekspresikan ide/pemikiran
• Innovasi → the practical applications of knowledge
• Berkontribusi pada misi universitas → Lulus
• Meningkatkan karir/pekerjaan
• Menjadi anggota aktif masyarakat ilmiah … peneliti

→ partisipasi pada daya saing bangsa
WHY Research?

➔ Daya Saing Bangsa ??

Knowledge as a Key Factor in Development (WB, 2002)

- The ability of a society to produce, select, adapt, commercialize, and use knowledge is critical for sustained economic growth and improved living standards.
- Knowledge has become the most important factor in economic development.
- (OECD, 1988). on the determinants of growth ➔ “underlying long-term growth rates in OECD economies depend on maintaining and expanding the knowledge base”
- World Development Report 1998/1999 concurred, stating that “today’s most technologically advanced economies are truly knowledge-based … creating millions of knowledge-related jobs in an array of disciplines that have emerged overnight”
WHY Research?

➔ Daya Saing Bangsa ??

Faktor Penentu Keunggulan Suatu Negara (Hasil evaluasi Bank Dunia (1995) terhadap 150 negara di dunia)

<table>
<thead>
<tr>
<th>Faktor</th>
<th>Peranan (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Innovation</td>
<td>45</td>
</tr>
<tr>
<td>Networking</td>
<td>25</td>
</tr>
<tr>
<td>Technology</td>
<td>20</td>
</tr>
<tr>
<td>Natural Resources</td>
<td>10</td>
</tr>
</tbody>
</table>

Program Penelitian yang baik akan melahirkan:

- SDM berkualitas
- Pengetahuan Baru
- Produk baru
- Model/Desain (termasuk software) baru
- Publikasi
- Nilai baru

PERLU:

Pemahaman yg Baik ttg Penelitian
GOOD Researchers?

→ **Integritas peneliti**: *a commitment to intellectual honesty and personal responsibility for ones action and to a range of practices that characterize the responsible conduct of research,*

→ **Intellectual honesty** in proposing, performing, and reporting research
→ **Accuracy** in representing contributions to research proposals and reports
→ **Fairness** in peer review
→ **Collegiality** in scientific interactions, including communications and sharing of resources
→ Protection of human subjects;
→ Humane care of animals in the conduct of research
→ Adherence to the **mutual responsibilities** between investigators and their research teams

RESponsible conduct of research
www.cise.columbia.edu/nsec/outreach/courses/ethics/zwolenik.ppt

Penelitian ILMU PANGAN ??

**Definition of the Field of Study**

**Food Science** is a convenient name used to describe the application of scientific principles to create and maintain a wholesome food supply

*(Dept of Food Science & Technology, UC-Davis)*
Food Science is a very applied field, one that requires in-depth knowledge in several disciplines

(Hartel, UW-Madison)

**Penelitian ILMU PANGAN ??**

Definition of the Field of Study

**Food Science** is the science of food.

**Food science** is a **multidisciplinary** field that applies disciplines such as chemistry, microbiology, engineering and nutrition to develop new food products and design new processes to improve the safety and quality of foods.

**Food scientists** use cutting-edge technology to develop new foods, add value to raw food commodities and improve the quality and safety of existing food products.
Penelitian ILMU PANGAN ??

Definition of the Field of Study

Food Science is the multidisciplinary study of food and the application of knowledge thus gained to the development of food products and processes, the preservation and storage of foods, and the assurance of food safety and quality.

Food Science is the discipline in which the engineering, biological, and physical sciences are used to study the nature of foods, the causes of deterioration, the principles underlying food processing, and the improvement of foods for the consuming public.

Food Technology is the application of food science to the selection, preservation, processing, packaging, distribution, and use of safe, nutritious, and wholesome food.

(In practice, the terms food science and food technology are often used interchangeably).
Penelitian ILMU PANGAN ??

Definition of the Field of Study

Ilmu pangan: ilmu dasar yang menggabungkan prinsip-prinsip ilmu biologi, kimia, fisika dan teknik (engineering) yang digunakan mempelajari karakteristik bahan pangan, mekanisme kerusakan dan pencegahannya, serta dasar-dasar pengolahannya.

Teknologi pangan: aplikasi ilmu pangan kedalam sistem seleksi, pengawetan, pengolahan, pengemasan, distribusi, dan pemanfaatan bahan pangan yang baik, aman, dan bergizi.

Penelitian ILMU PANGAN ??

• Ten billion by the first quarter of 22\textsuperscript{nd} Century
• Lessons of the 20\textsuperscript{th} century:
  – Science and its application can enhance our ability to produce food
  – Equally important to have the capacity to preserve the food for our use
• Population increases related to increased capacity of man to cultivate and domesticate animals
Food Science Research At The USDA-ARS:

- Conducts research on the processing technology, quality and safety of acidified and fermented vegetables (pickles, sauerkraut, peppers) and sweetpotatoes.
- We work with processors and trade organizations throughout the United States to improve the quality and availability of processed vegetable products to consumers in this country and abroad.
- We do research on the safety of acidified foods which assists FDA and state regulatory agencies in performing their responsibilities to protect the safety of the food supply.
Penelitian ILMU PANGAN ??

• Jumlah penduduk miskin (penduduk yang berada dibawah Garis Kemiskinan) di Indonesia pada bulan Maret 2007 sebesar 37,17 juta atau 16,58 persen dari populasi (BPS (2007).

• Umumnya 3 x jumlah tersebut beresiko tinggi mengalami kekurangan zat gizi mikro.

• Kekurangan zat gizi mikro akan berakibat pada :
  • Penurunan kemampuan kognitif
  • Meningkatkan kematian Ibu Melahirkan
  • Bayi yang dilahirkan rentan cacat dan penyakit
  • Produktivitas rendah

Penelitian ILMU PANGAN ??

Purwiyatno Hariyadi
hariyadi@seafast.org
• Diskusi?

• Tugas membuat essay pendek ttg:
  “Peranan Ilmu Pangan/Bioteknologi dalam Pembangunan di Indonesia”