Scientific Conduct-Intellectual Honesty, Research Integrity and Scientific Misconduct

INTELLECTUAL HONESTY

- We have a moral duty to be honest. This duty is especially important when we share ideas that can inform or persuade others.

- Intellectual Honesty combines good faith with a primary motivation toward seeking true beliefs.

INTELLECTUAL HONESTY

- Intellectual honesty is honesty in the acquisition, analysis, and transmission of ideas. A person is being intellectually honest when he or she, knowing the truth, states that truth.

- This includes all forms of scholarship, consequential conversations such as dialogue, debate, negotiations, product and service descriptions, various forms of persuasion, and public communications such as announcements, speeches, lectures, instruction, presentations, publications, declarations, briefings, news releases, policy statements, reports, religious instructions, social media posts, and journalism including not only prose and speech, but graphs, photographs, and other means of expression.

Intellectual honesty is an applied method of problem solving, characterized by an unbiased, honest attitude, which can be demonstrated in a number of different ways including:

- Ensuring support for chosen ideologies does not interfere with the pursuit of truth;
- Relevant facts and information are not purposefully omitted even when such things may contradict one's hypothesis;
- Facts are presented in an unbiased manner, and not twisted to give misleading impressions or to support one view over another;
- References, or earlier work, are acknowledged where possible, and plagiarism is avoided.

Ethics

- The word ethics is derived from the Greek word ‘ethos’ (meaning a person’s character, nature, or disposition)
- Relating to morals, treating of moral questions; morally correct, honorable… Set of principles of morals… Science of morals, moral principles, rules of conduct, whole field of moral science
- distinction between right and wrong or good and evil, in relation to actions, volitions, or character of responsible beings

Ethical problems in Social Science research

- The complexity of a single research problem can give rise to multiple questions of proper behavior
- Sensitivity to ethical issues is necessary but not sufficient for solving them
- Ethical problems are the results of conflicting values
- Ethical problems can relate to both the subject matter of the research and the conduct of the research
- An adequate understanding of an ethical problem sometimes requires a broad perspective based on the consequences of research
- Ethical problems involve both personal and professional elements
- Ethical problems can pertain to science and to research
- Judgments about proper conduct lie on a continuum ranging from the clearly unethical to the clearly ethical

Nature of Moral Judgement

- If the researcher is inviting the subject to enter into a relationship which is honest and open the researcher owes his or her subject to a similar level of honesty and openness
- If the researcher is encouraging honesty and openness of a kind which exposes the subject to risk of hurt or injury then the researcher has some obligation to protect the subject from that hurt or injury.

Nature of Ethical Reactions in Research

- Research subjects should be considered as another granting institution, granting their valuable time in return for generation of valuable scientific knowledge
- The traditional cost-benefit model that underlies ethical decision making in social research should be modified to emphasize the outcomes of both doing and not doing the research, and also the possibilities of doing the research in another manner
- A more detailed reporting of ethical procedures used should be required and expected in all published social research
- A focus on the ethical acceptability of applied research should become a critical component of a mutually reinforcing applied scientific community
- Evaluations of the ethical acceptability of social research require an awareness of the ethical climate in society and in the scientific community

Epistemology, Ethics and Educational Research

- To unsettle or question established belief
- To conjecture about possible alternatives and develop new ways of seeing things
- To describe or illuminate aspects of experience
- To search for reasons, evidence and/or argument for warrant that might support one belief rather than another
- To test beliefs and establish at least provisionally the truth of the matter under investigation

Generalizable Knowledge

- Knowledge contributes to a theoretical framework of an established body of knowledge
- Results are expected to be generalized to a larger population beyond the site of data collection or population studied
- Results are intended to be replicated in other settings

RESEARCH INTEGRITY

- Research integrity may be defined as active adherence to the ethical principles and professional standards essential for the responsible practice of research.
  - By *active adherence* we mean adoption of the principles and practices as a personal credo, not simply accepting them as impositions by rule makers.
  - By *ethical principles* we mean honesty, the golden rule, trustworthiness, and high regard for the scientific record.

“For individuals research integrity is an aspect of moral character and experience. It involves above all a commitment to intellectual honesty and personal responsibility for ones actions and to a range of practices that characterize responsible research conduct.” - *National Achievement Survey (NAS)*

These practices include….

- Honesty and fairness in proposing, performing, and reporting research;
- Accuracy and fairness in representing contributions to research proposals and reports;
- Proficiency and fairness in peer review;
- Collegiality in scientific interactions, communications and sharing of resources;

- Disclosure of conflicts of interest;
- Protection of human subjects in the conduct of research;
- Humane care of animals in the conduct of research;
- Adherence to the mutual responsibilities of mentors and trainees."

While science encourages (no, requires) vigorous defense of one's ideas and work, ultimately research integrity means examining the data with objectivity and being guided by the results rather than by preconceived notions.

Scientific Integrity and Research Ethics

- Act only in such a way that you would want your actions to become a universal law, applicable to everyone in a similar situation.
- Act in such a way that you always treat humanity (whether oneself or other), as both the means of an action, but also as an end.
- Act as though you were a law-making member (and also the king) of a hypothetical “kingdom of ends”, and therefore only in such a way that would harmonize with such a kingdom if those laws were binding on all others.

Elements of Professionalism

- Intellectual honesty
- Excellence in thinking and doing
- Collegiality and openness
- Autonomy and responsibility
- Self-regulation

Scientific Misconduct

The violation of the standard codes of scholarly conduct and ethical behavior in professional scientific research...(research that) deviates from practices commonly accepted in the discipline or in the academic and research communities generally in proposing, performing, reviewing, or reporting research and creative activities

Common types of scientific misconduct

- **Falsification** is the changing or omission of research results/data to support claims, hypotheses, other data, etc. Falsification can include the manipulation of research instrumentation, materials, or processes. Manipulation of images or representations in a manner that distorts the data or “reads too much between the lines” can also be considered falsification.
- **Fabrication** is the construction and/or addition of data, observations, or characterizations that never occurred in the gathering of data or running of experiments. Fabrication can occur when “filling out” the rest of experiment runs. Claims about results need to be made on complete data sets as normally assumed, where claims made based on incomplete or assumed results is a form of fabrication.
- **Plagiarism** is the use of someone else’s work without attribution, passing it off as one’s own. Text, figures, tables, and even ideas can be plagiarized. When a whole entity (e.g., an entire article, a figure, a table, or a dataset) is republished without attribution or permission, there may be a copyright violation as well as ethical misconduct.

Unethical Practices in Scientific Research

- Intentional negligence in the acknowledgment of previous work
- Deliberate fabrication of data we have collected
- Deliberate omission of known data that does not agree with the hypothesis
- Passing another researcher's data as one's own
- Publication of results without the consent of all of the researchers
- Failure to acknowledge all of the researchers who performed the work
- Conflict of interest
- Repeated publication of too-similar results or reviews Breach of confidentiality

Causes of Scientific Misconduct

- Conflict of interest—personal, professional, and financial
- Policies regarding human subjects, live vertebrate animal subjects in research, and safe laboratory practices
- Mentor/mentee responsibilities and relationships
- Collaborative research, including collaborations with industry
- Peer review
- Data acquisition and laboratory tools management, sharing, and ownership
- Research misconduct and policies for handling misconduct
- Responsible authorship and publication
- The scientist as a responsible member of society, contemporary ethical issues in biomedical research, and the environmental and societal impacts of scientific research.

What is Plagiarism?

Plagiarism is presenting someone else's work or ideas as your own, with or without their consent, by incorporating it into your work without full acknowledgement. All published and unpublished material, whether in manuscript, printed or electronic form, is covered under this definition. Plagiarism may be intentional or reckless, or unintentional. Under the regulations for examinations, intentional or reckless plagiarism is a disciplinary offence.

Possible Reasons for Plagiarism

- Increased pressure to publish
- Ease of copying and pasting online work
- Difficulties in writing in English or another language
- Misplaced respect for other's work
- Lack of suitable training
- Lack of awareness of the rules for acknowledgement of other's work

Forms of Plagiarism

- Verbatim (word for word) quotation without clear acknowledgement
- Cutting and pasting
- Paraphrasing
- Collusion
- Inaccurate citation
- Failure to acknowledge assistance
- Use of material written by professional agencies or other persons
- Auto-plagiarism.

Plagiarism as per Guidelines of IEEE

- Self- (or team) plagiarism without identification and acknowledgement
- Cutting and pasting of other's work without identification and acknowledgement
- Replication of methods sections without clear statement of the source
- Republication of conference papers with little added value
- Review papers which largely replicate previously published content
- Plagiarism of images/tables/formulae/data without both acknowledgement and copyright permission
- Plagiarism of ideas
- Wholesale plagiarism of previously published text
- Republication in translation without acknowledgment, permission and full citation

What to look for?

- http://www.ithenticate.com
- http://turnitin.com
- https://pubpeer.com
- http://publicationethics.org/resources/flowcharts

References

- https://rationalwiki.org/wiki/Intellectual_honesty
- https://www.researchgate.net/profile/Santosh_Yadav24/publication/341029934_Research_Ethics/links/5ea9c77f92851cb2676640c7/Research-Ethics
- https://grad.msu.edu/continuum-research-integrity-research-misconduct

Thank you!