Using and Evaluating LLMs in Academic Work

Session 6: Attribution, Assessment, and Accountable Research Partnerships

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Session 6: Attribution, Assessment, and Accountable Research Partnerships

From Diagnostics to Governance

So far we have discussed:

- Structural validation protocols (graph alignment, centrality preservation)
- Bibliometric grounding mechanisms (existence checks, canonical inclusion)

Diagnostics answer the question:

Is this output structurally and bibliographically sound?

Governance asks the further question:

How do we institutionalize these checks within accountable scholarly practice?

Methodology must translate into norms, procedures, and responsibility.

The Attribution Problem

When an LLM contributes to a manuscript:

- Who owns the intellectual structure?
- Who is responsible for conceptual distortions?
- Who bears accountability for fabricated or misused citations?
- Where does authorship begin and end?

The fluency of LLMs obscures questions of provenance and control:

- Drafting may be automated.
- Validation must remain human.

Methodological governance must clarify that accountability cannot be delegated to the tool.

Shifting the Focus

From internal process-control to outcome-evaluation of the **final scholarly artifact**.

Assessment targets:

- Structural integrity of the conceptual network
- Bibliographic grounding and canonical alignment
- Documented validation procedures
- Reproducibility of verification steps

Responsibility attaches not to how the text was drafted, but to whether it has been properly validated.

Output-centered governance sidesteps process-level introspection while preserving accountability.

Accountable Research Partnership

An accountable human–LLM partnership requires:

- Active intellectual oversight
- Explicit structural and bibliographic validation
- Transparent documentation of AI assistance
- Clear attribution of responsibility

The model may assist in:

- Drafting
- Summarization
- Identifying core concepts
- Conceptual exploration

But governance remains human.

LLMs assist; humans govern.

Three Domains of Application

This governance framework applies across academic practice:

1. **Manuscript Writing**
   - Structural validation before submission
   - Citation verification prior to publication
2. **Syllabus Design**
   - Canonical inclusion checks
   - Balanced representation of subfields
3. **Student Assessment**
   - Evaluating structural integrity of student submissions
   - Encouraging documented validation practices

Methodological governance should be portable across research and teaching contexts.

Manuscript Writing: Structural Oversight

In scholarly writing, governance becomes procedural.

- Recast the draft into a structured conceptual blueprint (knowledge graph).
- Compare structural properties with the field baseline (G_{REF}).
- Verify preservation of canonical nodes and intellectual hierarchies.
- Compute and document structural stress and divergence indices.
- Append validation summary prior to submission.

Structural oversight reshapes LLM assistance into accountable scholarly production.

Reframing Plagiarism

In the LLM era, plagiarism is not only limited to:

- Direct text reuse
- Surface-level copying

It may also include:

- Delegation of unvalidated reasoning to automated systems
- Reproduction of structurally distorted or fabricated elements
- Transmission of hallucinated citations into the scholarly record
- Repeated duplication of the same statements and assertions

The ethical issue extends beyond textual plagiarism to questions of epistemic responsibility and integrity.

Epistemic Alignment as Criterion

The quality of an LLM-drafted manuscript must be evaluated beyond lightweight stylistic fluency.

Core criteria include:

- Conceptual alignment with established disciplinary structure
- Bibliographic integrity and canonical grounding
- Temporal and genealogical coherence
- Transparent methodological validation of all arguments and claims

Epistemic alignment replaces surface fluency as the governing standard of scholarly legitimacy.

Syllabus Design as Network Structure

A syllabus is not merely a list of readings — it encodes a structured map of a discipline.

LLMs may assist to model the syllabus as:

$$G_{SYL} = (V_{readings}, E_{conceptual})$$

- Nodes: assigned readings
- Edges: conceptual, methodological, or historical relationships

We examine:

- Foundational coverage (are core works present?)
- Thematic coherence (do readings cluster meaningfully?)
- Proportional representation (are subfields balanced?)
- Intellectual progression (is there a logical sequence?)

A syllabus is a pedagogical network, not a bibliography.

Detecting LLM-assisted Syllabus Flattening

LLM-generated curricula may exhibit structural distortions:

- Over-representation of recent or highly visible sources
- Under-representation of canonical or foundational works
- Artificial merging of distinct intellectual traditions
- Excess thematic uniformity (loss of paradigm diversity)
- Iterative structural duplication and over-repetition (structurally recursive economy)

Flattening reduces:

- Historical depth
- Theoretical contrast
- Methodological diversity

A flattened syllabus weakens disciplinary formation.

Syllabus Validation Protocol

Step 1: Extract and normalize the reading list.

Step 2: Construct induced citation or conceptual network G_{SYL}.

Step 3: Compare structural properties with disciplinary baseline G_{REF}:

- Canonical inclusion
- Degree distribution
- Cluster alignment
- Temporal coverage

Step 4: Detect omissions, distortions, and over-concentration.

Pedagogical governance mirrors research governance: validation precedes adoption.

Supervision of Theses

In graduate supervision, governance becomes formative.
Advisors may require:

- Periodic structural diagnostics of draft chapters
- Bibliographic benchmarking against field baselines
- Canonical inclusion verification
- Documentation of revisions following validation checks

This framework may allow for LLM assistance, except where such use is explicitly prohibited — in all cases, it should condition such use on accountable oversight.

Oversight moves from correcting style to guaranteeing structural integrity and bibliographic accountability.

Institutional Implications

Governance must scale beyond individual practice.
Universities should:

- Provide training in structural and bibliographic validation
- Integrate governance protocols into research methodology courses
- Develop institutional guidelines for responsible LLM use
- Establish clear institutional policies determining if, and under what governance, AI assistance may be used

Institutionalization shifts oversight from personal discretion and ethical responsibility to formal and methodological academic governance.

Editorial Practices

Editorial governance extends validation to publication.
Journals may request:

- Explicit disclosure of LLM assistance
- Documentation of citation existence verification
- Structural alignment summary or stress-test metrics
- Confirmation of canonical grounding

Such practices:

- Protect the scholarly record
- Reduce propagation of fabricated citations
- Reinforce reproducibility and transparency

Editorial standards shape ecosystem integrity.

Assessment in the LLM Era

Traditional question:

Did the student use an LLM?

Methodological governance question (conditional on LLM use being institutionally allowed):

How was the LLM used, and was the output validated?

The focus shifts from detection to accountability.

Assessment need not focus exclusively on auxiliary tool prohibition, but on documented epistemic responsibility.

Evaluating LLM-Assisted Work

LLM assistance does not exempt work from scholarly standards.
We assess:

- Structural coherence of the conceptual argument
- Preservation of canonical hierarchy
- Bibliographic grounding and citation validity
- Transparency of validation procedures
- Political economy of scholarship and allocation of epistemic resources

Fluency is not the criterion. **Integrity is**.

Validation Report Model

Students may employ and append to their LLM-assisted projects a structured validation report including:

- Centrality comparison with reference graph
- Canonical inclusion check
- Citation existence and metadata validation log
- Structural stress index summary
- Brief reflection on revisions made after validation

Structured validation transforms AI use into a documented methodological exercise.

Fair and Transparent Grading

Grading and evaluation should be grounded in the following criteria:

- Demonstrated epistemic integrity and responsibility
- Evidence of critical reflection, iterative revision, and accountable oversight
- Structural and bibliographic alignment and corroboration
- Clarity of reasoning and methodological documentation

Academic evaluation should measure students' demonstrated stewardship over their claims, sources, and discernment.

From Control to Governance

The framework avoids:

- Precautionary restrictions
- Crude detection tools
- Monitoring-based enforcement mechanisms

Instead, it promotes:

- Methodological accountability
- Structured validation procedures
- Transparent scholarly practice

Disciplined integration is the goal.

Normative Reorientation

LLMs are neither:

- Autonomous authors
- Purely neutral tools

They are instruments embedded within—and trained by—human epistemic systems and institutional structures, often inheriting their biases.

Their outputs inherit:

- Human responsibility
- Scholarly validation
- Institutional accountability
- Social biases

Methodological governance clarifies this normative positioning.

Responsibility Intensification

The use of LLMs does not dilute responsibility.
It necessitates:

- Verification duty
- Attribution rigor
- Structural oversight
- Bibliographic scrutiny

Automation increases the scale of potential distortion.

Therefore, methodological governance increases the duty of care.

Governance as Enabling Condition

Governance does not restrict creativity.
It enables:

- Trustworthy collaboration
- Reproducible scholarship
- Transparent intellectual contribution
- Sustainable academic ecosystems

Institutional structure protects innovation from procedural erosion.

Integration Across Workflow

A fully governed workflow:

1. LLM assistance in research scoping and drafting
2. Extraction of a conceptual graph
3. Computation of structural stress metrics
4. Revisions in light of diagnostics
5. Validation of citations programmatically
6. Documenting validation procedures

Governance is embedded across the research lifecycle — not appended at the end.

Conclusion: Core Thesis

The most serious risks are not isolated factual inaccuracies.
They are:

- Fabricated hallucinations
- Bibliographic distortions
- Attributional ambiguity
- Hierarchical flattening

The primary concern with LLM assistance is organizational, not stylistic.

From Generator to Partner

We shift away from:

Uncontrolled artificial generation

Toward:

Accountable research partnership

LLMs may assist in production, provided their use is subject to appropriate governance.

Humans govern validation.

Researcher-Centric Design

The framework:

- Is lightweight
- Is individually implementable
- Does not require AI specialization
- Preserves disciplinary expertise
- Scales across research and teaching contexts

Methodological governance strengthens — rather than replaces — scholarly judgment.

Future Development

Future directions include:

- More refined structural divergence metrics
- Automated validation dashboards
- Cross-disciplinary benchmarking
- Recommendations for:
  - Institutional governance alignment
  - Editorial policy integration

Methodological governance is a co-evolving research program alongside epistemic innovation and broader societal transformation.

Broader Epistemic Stakes

Unchecked LLM-fabricated hallucination risks:

- Distortion of academic tradition and lineage
- Propagation of false intellectual paradigms
- Inflation of artificial authority fabrics
- Erosion of cumulative knowledge formation

The issue is the soundness of epistemic infrastructure, not the amendment of stylistic imperfection.

Balanced Position

The responsible stance is neither:

- Indiscriminate AI skepticism, phobia, and alarmism
- Nor uncritical technological enthusiasm and susceptibility to hype

It is disciplined methodological governance in the service of the common good, grounded in validation and accountability.

Final Synthesis

An accountable human–LLM partnership requires:

- Structural transparency
- Bibliographic grounding
- Attribution clarity
- Documented validation
- Institutional integration
- Responsible public communication of AI risks and opportunities

Methodological governance is the enabling condition of trustworthy scholarly collaboration and sustainable innovation.

Session 6 Summary and Overall Conclusion

- This session has explored the challenges of attribution and assessment in LLM-assisted work.
- We have argued for a shift in focus from the process of text production to the verifiable properties of the final scholarly artifact.
- This allows for a more robust and meaningful assessment of LLM-assisted work.
- By embracing a model of accountable research partnership, we can harness the power of LLMs while upholding the core values of scholarly inquiry.

Questions and Discussion

Thank you!

Questions?

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