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Emerging trends in academic research and development in higher education

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Abstract
Universities are being asked to produce more research, of higher integrity and with wider societal reach, while generative artificial intelligence, open science expectations, and reformed evaluation systems change how that work is done and judged. This narrative review synthesises recent literature (2023–2026 preferred) on five trends shaping academic research and development in higher education: the spread of generative AI through research workflows, open science and study registration, responsible research assessment, interdisciplinary research, and university–industry collaboration. Evidence was drawn from systematic reviews, large bibliometric and survey studies, and foundational policy agreements. The review finds that adoption is moving faster than evidence about effects. AI use among researchers has risen sharply while guidance remains thin; open science and registration are plausible remedies for research waste but face disciplinary and incentive barriers; assessment reform is widely endorsed yet left to institutional interpretation; and interdisciplinary researchers still meet career penalties. Organised publication fraud adds urgency to each debate. The paper argues that institutions should align incentives with the behaviours they request, invest in training and infrastructure, and evaluate the reforms themselves.

Keywords: Higher education, research development, generative AI, open science, research assessment, interdisciplinary research, university–industry collaboration, research integrity

Introduction

Research is one of the defining functions of the university, yet the conditions under which it is carried out have shifted considerably in recent years. Funders ask for open outputs and demonstrable impact. Publishers and institutions are racing to write rules for generative artificial intelligence. Hiring and promotion committees are being urged to look beyond journal prestige. At the same time, evidence has accumulated that the scholarly record itself is under pressure from industrialised fraud (Richardson *et al*., 2025) [6]. Together, these developments make research and development (R&D) in higher education a moving target for scholars, administrators, and policymakers.

This paper maps the most prominent emerging trends in the field and asks three questions. First, which approaches and practices are currently reshaping how academic research is conducted, organised, and evaluated? Second, what does recent evidence say about whether they work? Third, what stands in the way of implementation, and what follows for institutions? The treatment is deliberately broad rather than deep. Its aim is to give students and early-career readers a structured view of the landscape, with each trend anchored in identifiable sources.

The scope is academic R&D in universities, understood as the full cycle of designing studies, producing and sharing outputs, assessing researchers and their work, and translating findings beyond academia. Teaching-focused literature is used only where it clarifies how emerging technologies are governed.

Review Approach

This is a targeted narrative review, not a formal systematic review. Searches were run through a general web search engine in October 2026 using combinations of terms such as generative AI in research, open science barriers, preregistration, research assessment reform, interdisciplinary research careers, paper mills, and university–industry collaboration. Preference was given to peer-reviewed articles, systematic reviews, large empirical datasets, and primary policy documents published between 2023 and 2026. Two older items, the San Francisco Declaration on Research Assessment (2012) and a 2022 [3, 8] appraisal of Registered Reports, were retained because they remain reference points for current debate. Publisher-produced survey reports were included as evidence of usage patterns, with the caveat that they are not peer reviewed.

Sources were screened for relevance to higher education research, and only items whose bibliographic details could be confirmed were kept. No quantitative pooling was attempted. Because the search did not span multiple bibliographic databases under a registered protocol, relevant studies may have been missed, and the conclusions should be read as an informed synthesis rather than an exhaustive census.

Major Approaches and Practices in Contemporary Academic R&D

1. Generative AI in Research Workflows

Generative AI is the fastest-moving trend. Surveys run by the publisher Wiley show that overall use of AI tools among responding researchers rose from 57% in 2024 to 84% in 2025, and that use for research and publication tasks grew from 45% to 62% (Wiley, 2025a) [9]. Roughly 80% of respondents relied on general-purpose chatbots, compared with about 25% who used specialised research assistants, which Wiley interprets as a patchwork of improvised solutions. The earlier survey wave, covering almost 5,000 researchers, found current use to be limited and identified missing guidance as a major barrier to wider adoption (Wiley, 2025b) [9]. The two waves drew different samples, so the jump should be treated as indicative rather than exact.

Within the education literature the governance gap is explicit. A PRISMA-based review of 355 Scopus-indexed studies on generative AI in higher education reported that

agreed guidelines for its use are still absent, and noted that while some work examines the detection of AI-generated text, far less explores building such tools into curricula, assessment, and learning delivery (Ogunleye *et al*., 2024) [4]. That review concerns teaching, but the same lack of shared rules is evident in research settings, where disclosure, authorship, and verification of outputs remain unsettled.

2. Open Science and Study Registration

Open science spans open access publishing, data and code sharing, preregistration, and open peer review. Registration practices are promoted in particular as a response to research waste. Purgar *et al*. (2024) [5] draw on estimates that 82–89% of ecological research and 85% of medical research offers limited or no value to end users because of avoidable inefficiencies. They argue that preregistration and Registered Reports, a format in which a journal reviews and accepts a study design before data are collected, can reduce that waste, and they note that the supporting evidence comes largely from medicine, where study registries have operated since 2000. A broader appraisal concluded that early evidence suggests Registered Reports are working as intended, while stressing that they do not solve irreproducibility on their own (Chambers & Tzavella, 2022) [2].

3. Responsible Research Assessment

Reform of how research is evaluated is the institutional counterpart of open science. The San Francisco Declaration on Research Assessment (DORA), drafted in 2012 [8], urged that journal-based metrics such as impact factors not be used as a stand-in for the quality of individual articles or the merit of individual scientists, and encouraged recognition of a wide range of outputs, including datasets and software (DORA, 2012). The Coalition for Advancing Research Assessment (CoARA), whose Agreement was released in 2022 [3], widens the argument from metrics to the whole evaluation system. Signatories commit to base assessment mainly on qualitative judgement with peer review at its centre, to use quantitative indicators responsibly, to recognise diverse contributions and career paths, and to avoid ranking-based assessment of research organisations (CoARA, 2022) [3]. Both documents set direction rather than prescribing mechanisms, leaving universities to decide how revised promotion criteria, narrative CVs, or panel training will work in practice.

4. Interdisciplinary and Cross-Sector Research

Two further practices extend research beyond disciplinary and institutional boundaries. Interdisciplinary research is widely promoted as necessary for complex societal problems. Berkes *et al*. (2024) [1] followed 154,021 researchers who earned biomedical PhDs between 1970 and 2013. They found that interdisciplinary work is impactful, yet those who were most interdisciplinary early in their careers tended to stop publishing sooner, and interdisciplinarity declined over time for many of them.

University–industry collaboration is the second practice. A systematic review of 75 articles, selected from 86 identified in Scopus, examined barriers through three lenses: the triple helix and entrepreneurial university, relational social capital, and technology transfer and cultural difference. It highlighted relational social capital, tax incentives, and a strategy of starting with small projects and increasing their complexity as ways to overcome obstacles (Rossoni *et al*., 2024).

5. Research Integrity as a Cross-Cutting Concern

Integrity safeguards now sit alongside these practices. Richardson *et al*. (2025) [6] analysed patterns of submission, peer review, and image duplication and described a connected network of paper mills, brokers, and compromised journals. They reported that fraudulent publications are increasing faster than the legitimate literature, and cautioned that their counts probably understate the problem because they depend on cases already detected. The authors called for a change in research incentives rather than detection alone.

Evidence on Effectiveness

The strength of evidence differs sharply across these trends. For AI, the available data describe uptake and expectations, not outcomes. Surveys document how often researchers use tools and what they anticipate, but not whether research quality, productivity, or reproducibility improves, and the figures are self-reported and come from a publisher rather than an independent study (Wiley, 2025a, 2025b) [9]. Education reviews likewise describe a fragmented body of work in need of guidelines (Ogunleye *et al*., 2024) [4].

For open science, the most developed evidence concerns registration in medicine. Extending it to other fields still relies on reasoning from analogy, and Purgar *et al*. (2024) [5] themselves call for research into why registration rates stay low in ecology. Chambers and Tzavella (2022) [2] found encouraging but not conclusive signs for Registered Reports.

For assessment reform, the sources reviewed here are mainly statements of principle (CoARA, 2022 [2]; DORA, 2012). This review located no systematic outcome data on whether reformed evaluation changes hiring, promotion, or research behaviour. That is a gap in the evidence, not proof that reform fails.

For interdisciplinary and cross-sector work, the evidence is more concrete but cuts both ways. Interdisciplinary research can be impactful, yet the careers of those who pursue it appear fragile (Berkes *et al*., 2024) [1]. Reviews of industry collaboration identify enabling conditions such as relational social capital and fiscal incentives, although they synthesise associations reported in earlier studies rather than test interventions experimentally (Rossoni *et al*., 2024).

Barriers and Challenges to Implementation

Misaligned incentives run through most of the barriers identified. Researchers are encouraged to work openly and across disciplines, yet reward systems still favour conventional, discipline-bound outputs. The career findings of Berkes *et al*. (2024) [1] show the cost of that mismatch for early-career scholars. Riedel *et al*. (2024) [7], studying researchers in mathematics, natural sciences, and cognitive sciences, found that disincentives, knowledge gaps in data and software sharing, and concerns about reuse each limited open practice, with the intensity of these barriers varying by field. They recommend targeted training, better IT infrastructure, and revised policy frameworks.

Governance gaps form a second group. No agreed rules exist for AI use in research (Ogunleye *et al*., 2024; Wiley, 2025b) [4, 9], and both DORA and CoARA leave operational design to individual institutions. Without shared standards,

practice varies widely between departments and countries, and researchers face uncertainty about what must be disclosed.

Coordination and capacity constitute a third group. Purgar *et al*. (2024) [5] conclude that registration will expand slowly without joint effort by funders, publishers, and research institutions. In university–industry work, cultural differences between partners and thin relational ties are recurring obstacles (Rossoni *et al*., 2024).

Finally, integrity threats complicate every other reform. If organised fraud can exploit editorial processes (Richardson *et al*., 2025) [6], then greater openness and faster publication can be gamed as easily as they can be used well. It is reasonable to expect that generative tools, which lower the cost of producing plausible text, may intensify this pressure, although the studies reviewed here do not measure that effect directly.

Discussion and Implications

Read together, the five trends share a pattern: practice is outrunning evidence. AI tools are being adopted at speed without settled norms, registration is advocated using evidence imported from other disciplines, and assessment reforms are signed as commitments before their consequences are measured. This is not an argument for delay. It does mean that universities adopting these approaches are in effect running policy experiments, and they should treat them as such by defining what success would look like and collecting data to check it.

A second pattern is that incentives matter more than exhortation. The career findings of Berkes *et al*. (2024) [1], the disincentives reported by Riedel *et al*. (2024) [7], and the incentive-focused remedy proposed by Richardson *et al*. (2025) [6] point to the same lever. If promotion panels continue to reward volume in prestigious journals, appeals for open data, interdisciplinary risk-taking, or careful AI disclosure will compete against the system's real signals. Assessment reform in the spirit of DORA (2012) and CoARA (2022) [2, 8] is therefore less a separate topic than the enabling condition for the others.

Several practical implications follow.

1. Institutions should write discipline-sensitive AI guidance covering permitted uses, disclosure, and verification of outputs, and pair it with training, since researchers themselves name missing guidance as an obstacle (Wiley, 2025b) [9].
2. Open science should be supported with infrastructure and staff time rather than mandates alone, with particular attention to data and software sharing, where barriers differ by field (Riedel *et al*., 2024) [7].
3. Promotion and funding criteria should explicitly credit interdisciplinary work, shared datasets and code, and collaborative partnerships, so that early-career researchers are not penalised for doing what institutions say they want.
4. University–industry partnerships may be best built incrementally, investing in trust and beginning with modest projects (Rossoni *et al*., 2024).
5. Research-integrity capacity, including editorial vigilance and dedicated integrity offices, needs strengthening in light of evidence that organised fraud is expanding (Richardson *et al*., 2025) [6].

This review has limits. It is narrative rather than systematic, it rests on a modest number of sources, it includes non-peer-reviewed industry survey material, and its evidence is weighted toward Europe, North America, and Australasia. Findings from biomedical careers or ecological registration may not transfer cleanly to the humanities, to professional fields, or to systems with different funding structures. Future work could apply a registered systematic protocol to each trend and examine regional variation, particularly in under-researched higher education systems.

Conclusion

Academic research in higher education is being reshaped by a cluster of connected changes: AI-assisted workflows, open and registered research practices, assessment reform, interdisciplinary and cross-sector collaboration, and heightened concern for integrity. The literature reviewed here indicates that each is advancing faster than the evidence that would show it works, and that the main obstacle is less technical than structural, namely reward systems that do not yet reflect what universities say they value. Institutions that align incentives, resource the supporting infrastructure, and evaluate their own reforms are best placed to turn these trends into durable gains in research quality. Students and early-career researchers can contribute by documenting methods openly, disclosing tool use, and treating the evidence behind each trend with the same scepticism they would apply to any other claim.

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