Can a Knowledge-Sharing System Survive in a Competitive Academic Environment?

A Social Experiment and Its Interim Results

The Logicae Board of Managers

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Abstract

This paper reports on a social experiment designed to test a single hypothesis: *that in a hyper-competitive academic environment, students will voluntarily share their intellectual assets if provided with the right structural infrastructure—even in the absence of any extrinsic reward.* The experiment began with a conviction that unshared knowledge is functionally indistinguishable from nonexistent knowledge, and that the competitive incentive to hoard information could be overcome by institutional design. To test this, we constructed a platform—a student-led, open-access research archive—and deployed it inside one of the most competitive science academies in the world. We then observed whether voluntary knowledge-sharing behavior would emerge, persist, and spread. This paper describes the hypothesis, the experimental design, the instrument we built to run the test, and the interim results after approximately one year of operation.

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1. The Hypothesis

Elite academic institutions are, by design, engines of intellectual competition. Admissions are scarce, grades are curved, and research output is a personal asset. In such environments, sharing what you know is a strategically irrational act. Game theory formalizes this intuition: competitive academia is a Prisoner's Dilemma in which the collectively optimal strategy (universal sharing) is undermined by the individually optimal strategy (free-riding on others' openness while hoarding your own advantage).

We began from a different premise. Our starting conviction—before any platform existed, before any organizational structure was drawn up—was a simple belief about the nature of knowledge itself:

Knowledge truly realizes its value only when it is shared.

Consider Einstein. He may have carried a hundred unpublished ideas in his mind. We do not evaluate him by those. We evaluate him by the papers he published—by what he chose to make available to others. An idea that remains internal is, from the perspective of human progress, indistinguishable from an idea that was never conceived.

This observation produced a testable hypothesis:

> *If students in a competitive environment are given a well-designed vessel for sharing—one that grants visibility, institutional legitimacy, and intellectual ownership—then the intrinsic motivation to share will overcome the competitive incentive to hoard.*

The ideology preceded the instrument. We believed this to be true. What we needed was a way to prove it.

2. Experimental Design

2.1 Choosing the Test Environment

A hypothesis about knowledge-sharing in competitive environments must be tested in the most competitive environment available. If it survives there, it can be generalized.

We selected the Korea Science Academy of KAIST (KSA)—the only science academy in South Korea administered directly by the Ministry of Science and ICT (MSIT). KSA admits a small cohort of nationally selected students who operate under extreme academic density: university-level coursework, research expectations, and an institutional culture in which intellectual superiority is the primary currency. This environment provides the strongest possible counter-incentive to voluntary sharing. In software engineering terms, this is alpha testing: validate your system under the harshest conditions first.

2.2 The Independent Variable: Structural Infrastructure

The variable we manipulated was the *presence of a structured platform for knowledge sharing.* We did not attempt to change students' beliefs or attitudes directly. Instead, we hypothesized that providing the right infrastructure would be sufficient to unlock sharing behavior that was latent but suppressed by the competitive structure.

The infrastructure we designed had four components:

(a) An open-access archive. A digital platform where student research could be published, preserved, and accessed globally. Content was licensed under CC BY-NC-SA 4.0, protecting contributors' intellectual ownership while ensuring free circulation.

(b) Institutional governance. A board of managers, contributor agreements, editorial guidelines, and a formal admission process. This framing was deliberate: contributors would perceive their work not as informal generosity but as formal publication.

(c) A public summit. An annual academic conference providing a visibility reward—a stage where shared knowledge is performed, not just deposited.

(d) A humanities counterpart. A parallel division (Simplicae) testing whether the model extends beyond STEM.

This instrument—the archive, the governance, the summit, the expansion—is what became known as **Project Logicae.**

2.3 The Dependent Variable: Voluntary Sharing Behavior

We measured four indicators: (a) the number and institutional diversity of contributors, (b) persistence of contribution over time (one-time vs. recurring), (c) organic spread to institutions beyond the founding environment, and (d) the quality of contributions—specifically, the degree to which contributors translated specialized knowledge into publicly accessible language.

2.4 Control Conditions

Critically, we offered no extrinsic rewards. No monetary compensation, no course credit, no mandatory participation quotas. All contribution was purely voluntary. This is the essential control: if sharing occurs in the absence of external incentives, it must be driven by intrinsic motivation—the very force our hypothesis predicts.

3. Theoretical Background

3.1 The Economics of Knowledge Sharing

Classical economics classifies knowledge as a non-rival good: one person's use does not diminish another's. However, in competitive academic settings, knowledge functions as a *perceived* rival good. A unique solution method known only to you is a competitive edge; sharing it eliminates that edge. Our experiment asks whether this perceived rivalry can be dissolved through structural intervention—specifically, by making the act of sharing more rewarding (in terms of visibility and legitimacy) than the act of hoarding.

3.2 The Open-Source Analogy

The open-source software movement offers the most direct structural analogy. Linux, Wikipedia, and arXiv all operate on the premise that sharing creates more long-term value than monopolization. Tesla's decision to open-source its patents rests on the same logic: if everyone is on a sinking ship, hoarding the blueprint for a bucket is irrational.

However, existing open-source systems typically operate among professionals and established researchers. Our experiment differs in two ways: it targets *students* (who have the most to lose competitively), and it imposes an additional constraint of *popularization*—requiring contributors to communicate complex ideas in accessible language.

3.3 The Translator Model of Science Communication

Science communicators such as Derek Muller (Veritasium), Gwedo of Unreal Science (안될과학), and Kurzgesagt operate as *translators* rather than discoverers. They do not produce new knowledge; they build the road that allows existing knowledge to reach the public. Our experiment attempts to *institutionalize* this translator model—replacing the individual creator with a network of student-researchers who systematically "communicate complex scientific truths in a language everyone can understand."

3.4 The Learning-by-Teaching Effect

The Feynman Technique posits that attempting to explain a concept in plain language is the most effective method of deepening one's own understanding. If this is true, then contributors to our platform are not losing intellectual capital by sharing; they are *gaining* it. The act of translation is itself an act of learning. This creates a positive-sum dynamic that may counteract the zero-sum framing of academic competition.

4. Interim Results

4.1 Institutional Spread

The platform launched in 2025 as an internal student circle at KSA. As of April 2026, it hosts student contributors from the following institutions:

Domestic (South Korea)	**International Schools**
KSA, SSHS, DSHS, GSHS, GBSHS, KAIST, SNU	Oxford

This spread was largely organic. Near 80% of the contributors sought the platform independently, and the remaining 20% were simply introduced the platform by their participating peers. No recruitment campaigns were run at international institutions; contributors sought the platform independently. The fact that students at SNU and Oxford—institutions with their own intense competitive pressures—voluntarily contribute without extrinsic reward is preliminary evidence that intrinsic motivation for knowledge-sharing operates across institutional and cultural boundaries.

4.2 Institutional Recognition

The platform has transitioned from an informal project to a recognized research club (*연구회*) within KSA's official structure. An international expansion to Singapore is scheduled for May 2026. These developments suggest that a student-led, ideology-driven knowledge platform can generate institutional interest at the national policy level.

4.3 The Emergence of "Living Research"

A noteworthy emergent property is what the platform's board has termed "living research": the documentation not only of results but of the *process* by which ideas evolve. The community leaders' founding statement (April 5, 2026) explicitly commits to recording "the evolution of raw ideas, unexpected interdisciplinary collaborations, and the bold thinking that usually happens only behind closed laboratory doors." This represents a shift from result-oriented to process-oriented knowledge sharing—an arXiv-like preprint culture adapted for the student level.

5. Discussion

5.1 Why It Works: Tentative Explanations

We propose three mechanisms that may explain why voluntary sharing persists under competitive pressure:

The Visibility Effect. In a competitive environment, publishing your knowledge paradoxically *strengthens* your position. A contributor does not lose intellectual capital; they publicly demonstrate competence. This mirrors the open-source developer who builds a reputation through GitHub contributions—sharing becomes a form of credentialing.

The Institutional Framing Effect. By designing the platform with governance structures, licensing, and editorial standards, we transformed the psychological frame of contribution from "leaking secrets" to "publishing research." The quasi-institutional design grants authority and legitimacy to the act of sharing, making it an asset rather than a vulnerability.

The Positive-Sum Reframe. The combination of the learning-by-teaching effect and visibility rewards creates a dynamic in which sharing is no longer zero-sum. The contributor gains deeper

understanding and public recognition; the audience gains accessible knowledge. Both sides benefit, dissolving the Prisoner's Dilemma structure.

5.2 Limitations

We acknowledge the following limitations of this experiment in its current form:

Selection bias. Current contributors may represent a self-selected population already predisposed to sharing. The students who refuse to share are not observed.

Sustainability. Whether the platform survives the graduation of its founding generation remains untested. Institutional memory and leadership succession are open questions.

Quality control. As institutional diversity increases, maintaining a consistent standard of popularization—the "translation" requirement—becomes more difficult.

Quantitative data. Systematic metrics (contribution frequency, readership, retention rates) have not yet been collected. Future work should formalize data collection to enable statistical analysis.

6. Conclusion: The Experiment Continues

The ideology came first. The platform came second.

We began with a belief about the nature of knowledge: that it is a commodity that must be distributed, not a treasure that should be locked away. We then asked whether this belief could survive contact with reality—specifically, with the reality of an elite institution where every piece of knowledge is a competitive weapon.

To find out, we built a vessel. We gave it structure, governance, and a name. We placed it inside the most hostile environment we could access and observed what happened. What happened was that students shared. Not because they were required to, not because they were paid, but because—when given the right infrastructure—the impulse to share proved stronger than the incentive to hoard.

The experiment is not over. The Singapore expansion in May 2026 is the next phase: a beta test to determine whether the same hypothesis holds across cultural and national boundaries. If it does,

this project will have demonstrated something worth recording—that a system built on the premise that *unshared knowledge is nonexistent knowledge* can not only survive in competition, but grow from it.

The name was always deliberate. It is not Logicae. It is **Project** Logicae—because the proof is still in progress.

Appendix: Founding Statement of the Board of Managers (April 5, 2026)

"We believe that every great discovery begins with a small, persistent question. What started as a small student circle at the Korea Science Academy (KSA) has now grown into a global archive, transcending school walls and national borders to share intellectual curiosity with the world."

"Our goals are clear: To connect students around the globe who are passionate about research. To communicate complex scientific truths in a language everyone can understand. To document the long and rigorous journey of exploration undertaken by young researchers."

"Logicae is a platform built to prove that knowledge truly realizes its value only when it is shared."

— The Logicae Board of Managers

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