

Minerva: The Intentional University

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Minerva University is a pioneering educational institution established in 2012 with the goal of redefining liberal arts education for the twenty-first century. Addressing widespread concerns about the effectiveness of traditional higher education, Minerva adopts first principles thinking in its pedagogy, emphasizing practical knowledge, active learning, and global exposure. The curriculum is constructed around two distinct types of learning objectives, Habits of Mind and Foundational Concepts, which ensures that students develop critical leadership and problem-solving skills. Leveraging advanced technology and a science-based understanding of learning, the university supports a diverse and international student body through a global rotation model. Students live and work in up to seven different cities around the world. Minerva's outcomes, including high graduation rates and alumni success, attest to its effectiveness and suggest that its innovative approaches can serve as a model for educational reform.

Minerva University's origins date back to 2012, when the founders took a fresh perspective and considered what a liberal arts education for the twenty-first century should provide. At that time, deep concerns about the quality and effectiveness of higher education had been raised, including in surveys of employers who found college graduates unprepared for work; low completion rates at all but the most prestigious universities, coupled with heavy student debt; and increased rates of access to higher education without success for underserved students. The value of a college education was being questioned at the same time that more access to it was being provided. For-profit open-access colleges were seeing massive growth, which raised questions about how to protect consumers without stifling innovation.

At this dynamic moment, Minerva set out to reinvent the aspects of undergraduate university education that no longer fit the times and needs of society. Minerva is something new in higher education, not just because it was a Silicon Valley-based start-up initially funded with venture capital financing, but also because it was designed according to first principles (that is, specific foundational propositions and assumptions). At the time, Minerva's founders realized that most traditional universities were not acknowledging or responding to the educational demands of an increasingly complex world. The founders saw the need for

individuals who have the knowledge and intellectual skills to solve complex problems and make good decisions, who are global and interdisciplinary in approach and perspective, and who are from diverse cultural and socioeconomic backgrounds. Minerva provides a model of a different way to create and operate a university with low costs, access to qualified students, a student-centered approach, goal-driven methods, and outstanding results for alumni as measured by learning and postgraduate outcomes. Advances in our understanding of how students learn – and in the use of technology to improve, assess, and deepen learning – were also key components of the design.

Minerva's initial model emphasized reinventing the curriculum to focus on "practical knowledge," basing pedagogy on the science of learning, educating students from across the world and sending them on a global rotation program, fostering impactful student experiences outside of class, and implementing a new faculty and staff model. Minerva Project, the for-profit entity that was funding this work, partnered with the Keck Graduate Institute (KGI) to establish the "Minerva Schools at KGI." Under this agreement, Minerva's educational program was offered by KGI and overseen by its president and board as one of three schools within the graduate institute. KGI is a private non-profit entity that offers graduate programs in the life and health sciences and is one of the seven Claremont Colleges in California. This "incubation" partnership enabled the Minerva Schools to start as an accredited program, a prerequisite to attracting the kind of well-qualified students, faculty, and staff needed for a new, innovative, and rigorous educational experience.

In 2019, the non-profit and tax-exempt Minerva Institute took over the funding of the educational programs and began preparing for the Minerva Schools to gain accreditation separate from KGI. In June 2021, Minerva University was accredited by the Western Association of Schools and Colleges Senior College and University Commission. Since its inception twelve years ago, Minerva has continuously refined all aspects of its model while retaining the fundamentals that went into the initial plans.

Many aspects of Minerva have proven to be highly effective and enduring, beginning with its selection and orientation of students. Minerva designed its own methods for identifying and attracting qualified students, screening applicants, and preparing them for a rigorous academic curriculum and a global rotation. Although Minerva has refined its outreach process over the years, it continues to focus on finding high-performing high school graduates from all over the world who are eager to try a new way of learning, be part of a globally diverse community, and study in many countries. Students who want to experience a conventional campus with sororities, fraternities, or athletic programs are quickly filtered out. Admissions screening involves review of high school trans-

cripts, a set of Minerva-developed “challenges” that cover both cognitive and noncognitive skills, proctored writing exercises, and a portfolio of student work and achievements beyond required academic work. Screening and orientation also include extensive interviewing with students and their families; online discussions and events with faculty, staff, and current students; practice in mock classes using the Minerva Project’s proprietary online learning platform; and weekends spent with first-year students to simulate the academic experience. This comprehensive approach to attracting, selecting, and preparing students seems to work well: nearly all first-year students continue to the second year, with a first-year attrition rate of about 5 percent.

Another effective and enduring aspect is Minerva’s curriculum, which is driven by first principles that focus on providing the knowledge and skills students need to become leaders, creators, problem-solvers, and innovators in the twenty-first century. At the outset of their studies, students take four rigorous “cornerstone courses” that constitute a highly structured general education program. These year-long courses are centered on two types of learning objectives: habits of mind (skills that should become automatic with practice) and foundational concepts (fundamental concepts that can be built upon). Together, these objectives are referred to as HCs. All students take the same four cornerstone courses. Following this, they choose a major (along with one or more concentrations and courses in other majors); some choose to double major.

The ways this curricular model plays out are exemplified by the experience of two highly successful alumni. One student from the European Union – who has lived in several countries, speaks multiple languages, and now works for the United Nations – valued the opportunity to take courses in several disciplines. He also appreciated not having to select a major and concentrations in his first year of study. He found the HCs to be a great educational innovation well matched to his natural curiosity. Similarly, an alumnus from East Asia, who is graduating from a prestigious law school in May 2024, reported that she used the concepts from the cornerstone courses throughout her studies and in law school.

Even though students live together, all classes are small seminars that are taught synchronously online using the Minerva Forum, Minerva Project’s proprietary, custom-built software system that facilitates active learning. This approach relies on the mutual interaction of three factors. First, the content is intentionally designed to achieve specific learning objectives. Second, the pedagogy is specifically designed to use active learning to help students master that content. Such learning requires students to engage in activities like debates, role playing games, and problem solving. The third factor is technology designed to facilitate the pedagogy and the assessment of student learning. This technology plays a key role in recording and providing data about student behavior and performance. These data, in turn, become part of a feedback loop that is used to improve all three fac-

tors. The university's pedagogy and technology are informed by the science of learning, which guides how both are developed and refined.

In addition, classroom learning is integrated with experiential learning, which takes place as students engage in applied projects in cities around the world. These projects draw and build on what they studied in class. An early alum who cofounded an organization that promotes educational innovation and technology cited the chance to lead groups, be entrepreneurial, and learn to think from multiple interdisciplinary perspectives as key benefits. Even though he sometimes found achieving the right balance difficult, the experience of doing different kinds of applied learning, while having to prioritize academics and projects, prepared him well for life after Minerva. Another alum, an aspiring journalist, felt like she did not get a break for the entire four years, surviving on five hours of sleep and lots of coffee and ramen. Yet she also excelled by being proactive and staying ahead in all her classes.

Minerva faculty members are committed to teaching. Although they are encouraged to do research, publish academic papers and books, and present on their work (especially research on learning), faculty members are evaluated on their teaching, contributions to continued innovation at Minerva, and impact on the Minerva community. After their first year, faculty members work on three-year contracts, which are renewed only if they have proven to be effective teachers. However, they are not simply dropped in the deep end and expected to swim. Not only do faculty members participate at the outset in an extensive orientation to train them to teach with “fully active learning” methods, but every class is recorded, and the recordings are used to provide faculty with feedback on their teaching to help them improve.

Because all Minerva classes are seminars, faculty walk a fine line between allowing students to explore while also keeping them focused on the learning objectives. One professor found that he loved not having to lecture and enjoyed the process of nudging students in seminars so that they addressed the learning goals. He found it particularly gratifying when students would spontaneously lead the discussion in productive directions, minimizing his role.

Minerva is also committed to helping students become self-sufficient and resilient, as well as preparing them to use their education to benefit the world. They work and live together in cohorts of about one hundred fifty students. Minerva provides support for mental health and other related services, coaches in their first year, and intensive advising to help them as they develop and identify their purpose and life goals. Minerva staff help students find summer internships, research positions, and volunteer work that will prepare them to achieve their professional goals, and Minerva provides them with lifetime services as they move through their careers. Given Minerva's emphasis on solving complex prob-

lems and contributing to the world, it is fitting that most students engage in projects that help them forge a path ahead after graduation. The alum who is graduating from law school this year confided that she struggled in a philosophy class and sought support from the professor, who helped her learn how to organize her thinking more systematically and serves as a mentor and guide to this day. Another alum, who is now a journalist, got extensive advice from the coaching and talent development team on career exploration. They also used every opportunity to treat curricular and extracurricular projects as investigative journalism.

In developing students' values and attitudes, Minerva leans into its mission to "nurture critical wisdom for the sake of the world." It places special value on an applicant's commitment to do something to make the world a better place. Several of the HCs (that is, the learning objectives of habits of mind and foundational concepts), which students learn during their first year, focus on ethics and social responsibility. These objectives are reinforced during the four years of study. Also in the first year, students engage in a civic project, working with a diverse team of peers to present solutions to a vexing problem identified by a sponsoring organization. Students also develop an understanding of Minerva's integrated learning outcomes (ILOs). These ILOs are reinforced across the four years students spend at the university. They include listening and empathizing, making a positive contribution, treating everyone with respect, engaging in civil dialogue, recognizing their own biases, exercising cultural humility and awareness, and improving the lives of others. Along with these objectives and outcomes, students are expected to engage in volunteer work and civic projects throughout all four years. Postgraduate results attest to alumni's strong commitment to continued work and further studies that contribute to the common good.

Minerva set out to be a global institution by intentionally building a student body, faculty, and staff that now represent more than one hundred countries. Moreover, Minerva created a global rotation to six cities outside the United States (currently Seoul, Hyderabad, Berlin, Buenos Aires, Taipei, and London), where students spend one semester in each city. We understood that teaching students to solve the world's most complex problems requires interdisciplinary and globally diverse teams, and the ability to see problems from multiple perspectives. Students greatly value the global experience and often work after graduation in cross-cultural teams, global organizations, or countries different than their country of origin.

When we ask graduating students what they valued most about Minerva, they often cite the global community of friends and colleagues they were part of, and the experience of having lived and learned in multiple cities, developing a global perspective and an appreciation of different cultures. However, some students have found the global rotation challenging and exhausting. Alumni sometimes cite the frequent moves to a new city and related travel requirements to be stress-

ful. Nevertheless, nearly all complete the global rotation and view it as an extraordinary learning experience. One alumnus who is starting a job working on global climate change utilized counseling and psychological services to get him through rough spots. In fact, about 50 percent of students take advantage of these services at some time during their first year.

We learned a lot in the process of implementing the ideas behind Minerva. When we discovered that some feature or practice was not working well, we quickly took steps to revise it. In what follows, we note cases in which we identified areas for improvement and development, along with how we responded. One overall observation: students who are the most successful, both academically and in terms of their personal trajectory and growth, are those who really believe in the Minerva model, who lean into the opportunities for learning, who develop close relationships within the Minerva community, and who get the most out of the global rotation. One other attribute is also connected to these positive outcomes: the extent to which the student plots out their own Minerva journey, identifying their purpose, setting early goals, and building their portfolio of experiences toward their chosen objectives.

This drive and the confidence that a Minerva education engenders have resulted in students starting businesses and nongovernmental organizations and getting into some of the most competitive graduate and professional schools in the world. The few students who are not well matched to the Minerva model are identified quickly, given the small classes and cohort-based community, and leave voluntarily within the first semester or two. Some of the mismatched students have included one who didn't like being required to go to class and one who found that she did not like taking classes on her computer. A few students early on came to Minerva mistakenly thinking they could party heavily, which is not tolerated or even feasible with the workload in and out of class.

One problem we identified early was that most instructors seem to gravitate toward teaching the way they were taught, which typically involves asking students to listen to lectures and write down what the instructor says. Minerva, however, relies entirely on active learning in small live seminars. Although the basic idea of active learning is simple, it is not simple to implement. Part of the issue is that active learning depends on having specified clear learning objectives in advance, which then define the targets of active learning exercises.

In many traditional courses, such clear objectives are not defined, let alone used as guides for teaching. Sometimes faculty members struggle with adhering to the learning objectives as they conduct their seminars. For example, sometimes faculty allow class sessions to veer into tangents, and do not cover all of the material that address the learning objectives. Another part of the problem is that faculty sometimes feel that if they aren't talking, they aren't teaching. It requires delib-

erate effort to present and discuss the empirical results that counter this perception. This did not always work.

The most extreme example of a failure to adjust to the Minerva teaching model was a faculty member in the university's early years who could not resist the temptation to lecture. This resulted in his dominating the sessions with asides, sometimes by dwelling on personal anecdotes that barely touched on Minerva's learning objectives. He would not change his approach despite numerous discussions and tutorials that he resisted and resented, and he ended up resigning midterm, which disrupted the class and required one of the college heads to finish teaching his course. Minerva addressed these sorts of challenges by modifying processes for hiring to ensure faculty commitment to active learning, by greatly enhancing orientation, training, and mentoring of new faculty members, and by developing lesson plans for each course that are directed toward students' mastering the established learning objectives for the class.

We have also found that as faculty become more experienced and comfortable in the digital classroom, they may sometimes start improvising and drifting from the lesson plan. In some cases, this is warranted, such as if students clearly have difficulty understanding the material. In other cases, it is not. For example, one faculty member loved the idea of making students struggle and then springing a "reveal" at the very end of class. This was effective sometimes but was not designed in advance to ensure that the struggle was productive – and often seemed intended more to keep the faculty member stimulated than to help students learn. Because all classes are recorded and the college heads and other peer mentors review those recordings periodically, we know when instructors consistently deviate from the lesson plans. When that happens, the appropriate head talks to those instructors about why we have shared lesson plans and why active learning is important. One college head reported, "In my experience, this has been a friendly conversation where they weren't trying to go rogue but might have been slipping into some old habits or believe the course should be revised and are actually doing things that will probably be implemented in a summer revision cycle."

When they first encounter active learning, many students not only don't like it, they also don't believe that it's effective. Like faculty members, they are accustomed to a model of mainly listening and taking notes in class. However, studies have consistently shown that active learning does produce better outcomes than traditional teaching methods. One way to make students more comfortable with active learning is to explain at the outset that, although they may not believe they are learning much, and would rather be told what they need to memorize, active learning will help them learn better. Additionally, they will come to enjoy the process of this learning style after they get used to it. Another step to address students' perceptions was to provide extensive opportunities

for applicants to have active learning experiences on our platform before they enrolled. Finally, students receive formative feedback right away, which helps them see the effectiveness of this model. In our experience, students adapt well to the learning model within the first few weeks of instruction.

All that being said, we have found that some of the principles of active learning are easier to implement than others. For example, the principle of deep processing – which states that people are likely to understand and later recall material that they pay attention to and think about in detail (even if they don't try to learn it) – is easy to implement in active learning exercises. In contrast, the principle of deliberate practice, which states that learning is enhanced by using feedback to focus on the most challenging aspects of a task, is harder to implement. In this case, the instructor may need to identify a problem that only a particular student has, give that student immediate feedback, and then help the student improve – all of which is difficult in a group setting.

One challenge we observed early on was the variability in student engagement in the global rotation. For example, Betsy (fictional name) ventured out and took advantage of the opportunities in the cities, exploring museums, parks, and cheap eateries. Her classmate Sam, however, tended to stay close to his dorm room and was slow to engage with the local setting. To maximize the value of studying with students from all over the world, and going on the global rotation, Minerva established its set of integrated learning outcomes, which include one focused on developing global skills, understanding, and perspective. This outcome along with four others guide the programs that support student growth and development.

Specifically, the five integrated learning outcomes are self-management and wellness, interpersonal engagement, professional development, civic responsibility, and intercultural competency. Each area is integrated with the HCs that students learn in their academic coursework. After the first few years, Minerva added a required integrated learning course to give students a structured opportunity to attend to their growth and development in these areas, including the ability to be self-aware and identify aspects for further self-growth. For example, students identify cultural biases they may have before they travel to a new country, and then assess how they developed during their semester in residence there as they leave. This course is a half credit each semester for all four years. The learning is largely experiential and includes individual self-reflection and collaborative activities. Although this course has provided a structure that promotes regular reflection and growth, the course is “Pass/No Pass,” and so not all students give the course the attention it warrants.

Operating in seven very different countries requires a high degree of skill, adaptability, creativity, and persistence. In addition to the practical challenges of finding appropriate housing, arranging visas, selecting academic partners, and identifying civic projects, we need to be alert to geopolitical matters. Some of the

urgent issues that have arisen include threats from North Korea to South Korea, fears about Taiwan being attacked by China, and supporting large numbers of students from countries at war – like Ethiopia, Ukraine, and Russia. These geopolitical challenges affect visa policy too. For example, Pakistani students cannot get visas to study in India. Some countries do not recognize Bosnia, so a Bosnian citizen cannot get a visa to those locations.

We also needed to adapt to how each country responded to the COVID-19 pandemic (which varied from complete lockdown to expensive quarantines to few restrictions). Students experienced unexpected consequences from emergency-stage lockdowns, including a group that had to stay in Buenos Aires for many months. Two students used that time well and invented a robotic device that is now being patented. Minerva's global model requires a strong local staff to support student needs and to lead the programming on the ground, including the sponsored "civic projects" that enable students to apply what they are learning and work side by side with locals. To address the challenges posed by this aspect of Minerva, we have plans and criteria for choosing cities and countries, identifying housing and visa pathways, creating consistent week-by-week plans for activities in each city, hiring many local staff and training staff, and establishing protocols for emergency and crisis management.

Although the model works well, no two cities provide a perfectly comparable experience for students. For example, in some cities, Minerva partners with a local university that sponsors student visas by enrolling the students. This model, in place in two cities, has the advantages of connecting Minerva students with other university students in that city and of providing learning opportunities, such as research labs and cultural instruction. In countries where Minerva can sponsor student visas directly, costs are lower, and staff must develop relationships that provide opportunities for exchanges between Minerva students and other university students and faculty members.

The efficacy of a Minerva University education is demonstrated by the results: high retention and graduation rates (about 90 percent, despite the demanding academic program and global rotation) and the extraordinary achievements of alumni. Among the first four graduating classes, more than 90 percent graduated with well-defined career goals and have taken steps to advance them. Of those graduates, 15 percent have been admitted to prestigious graduate and professional schools; another 15 percent started their own ventures; and the rest are employed in a variety of jobs related to their studies. Many are working directly on solving complex global problems. For example, two Minerva graduates started a company that deploys new carbon-capture technology in global shipping.¹ Another established a global network of educators who are making powerful reforms in education (all three alumni were named on the "30 Under 30" list

published by *Forbes* magazine).² Another Minerva alumnus was named a Rhodes Scholar.

Many of the virtues of Minerva are difficult, but not impossible, to implement at a traditional university. They require a pedagogical shift in the faculty to a student-centered, active-learning approach. They also require faculty to become comfortable using new technology to teach. And students need to embrace not only the active-learning approach, but also an international perspective, which is not for everyone. That said, the innovations in pedagogy and assessment of student learning have wide applicability and can be integrated into standard curricula – especially now, after the emergency stages of the COVID-19 pandemic, when many faculty have experience teaching online and can appreciate the value of Minerva’s innovations. In addition, institutions seeking to instill a global perspective or “internationalize” can benefit from the applied and experiential learning model and the ways that Minerva builds global understanding, perspective, and citizenship among students.

A little more than ten years old, Minerva University will continue to innovate while adhering to its student-centered and mission-driven ethos. Building on its global and innovative curriculum and teaching methods, the university plans to expand its graduate-level offerings in innovative ways and to increase its undergraduate enrollment, while also enhancing the educational experience and preparation of students to tackle the world’s challenges. Scaling the model while preserving Minerva’s distinctive elements and character is the next phase of its development.

ABOUT THE AUTHORS

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Stephen M. Kosslyn, a Fellow of the American Academy since 1995, is the Founder and President of Active Learning Sciences, Inc., and the Lindsley Professor Emeritus at Harvard University. He served as the Founding Dean and Chief Academic Officer of Minerva University from 2012 to 2018. He is the author of over three hundred fifty articles and author or editor of over two dozen books, including *Building the Intentional University: Minerva and the Future of Higher Education* (with Ben Nelson, 2017), *Top Brain, Bottom Brain: Harnessing the Power of the Four Cognitive Modes* (with G. Wayne Miller, 2015), and *Active Learning with AI: A Practical Guide* (2023).

ENDNOTES

- ¹ Alisha Fredriksson and Roujia Wen founded Seabound, based in London. See “Climate Takes The Stage Among This Year’s 30 Under 30 Europe Social Impact Entrepreneurs,” *Forbes*, March 6, 2023, <https://www.forbes.com/sites/oliviapeluso/2023/03/06/climate-takes-the-stage-among-this-years-30-under-30-europe-social-impact-entrepreneurs>.
- ² The Transcend Network hosts a six-week program three times a year for founders of companies specializing in edtech, connecting those entrepreneurs with other investors. Alberto Arenaza cofounded The Transcend Network in 2019 after graduating from Minerva. See “30 Under 30–Education (2022): Alberto Arenaza,” *Forbes*, <https://www.forbes.com/profile/alberto-arenaza> (accessed April 22, 2024).