# What the future of flig ht can teach us in Afrika and Europe about the future in m edical education

**From Otto Lilienthal to AI in medical education**

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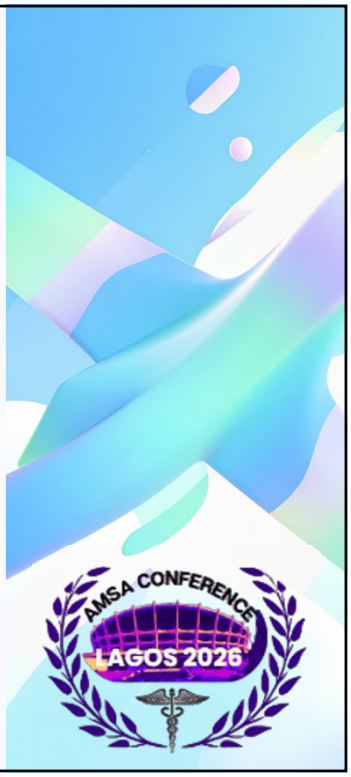



# What the future of flight can teach us in Afrika and Europe about the future in medical education

**From Otto Lilienthal to AI in medical education**

**Different Continents**

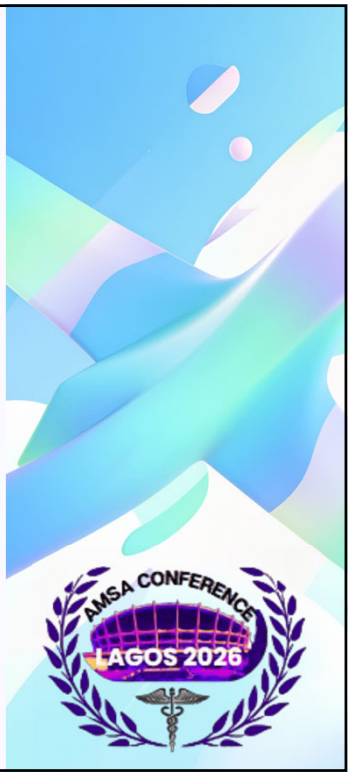
Distinct geographies, histories, and resources

**Similar Pressures**

Converging challenges in health workforce and education

One Common Question:

**How will AI shape the future of medical education?**



SECTION 1

## Europe and Africa: More Similar Than the Headlines Suggest

**Both regions are entering an era of strain, scarcity, and redesign.**

- **Health Workforce Shortages**
  Both continents face critical gaps in the number and distribution of trained health professionals.
- **Uneven Geographic Distribution**
  Rural and underserved communities in both regions lack adequate access to care.
- **Rising Disease Burden**
  Chronic and complex conditions are increasing demands on health systems everywhere.
- **Pressure to Train More, Better, Faster**
  Medical schools are expected to produce more graduates without compromising quality.
- **Turning to Digital and AI Solutions**
  Both regions are exploring technology-enabled approaches to scale and improve education.

THE ANALOGY

## Berlin, 1891–1894: A Man Runs, Jumps, and Changes History

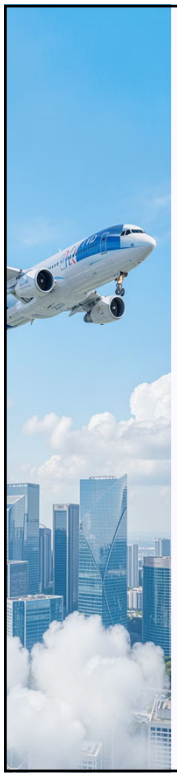
**Otto Lilienthal did not invent aviation as we know it. He made it imaginable.**

**Repeated, Controlled Gliding**
Lilienthal achieved the first documented, repeated controlled gliding flights .

**Experiment, Crash, Learn, Fly Again**
His method was iterative — failure was data, not defeat.

**Proof of Possibility**
He proved that human flight was possible — before anyone could engineer it reliably.

**Unimaginable Futures**
At the time, nobody could foresee the modern aviation system that would follow.



THE CENTRAL ANALOGY

## Lilienthal Could Not Imagine Both London Heathrow — or military air attacks

**The same invention can generate liberation, connection, domination, and destruction.**

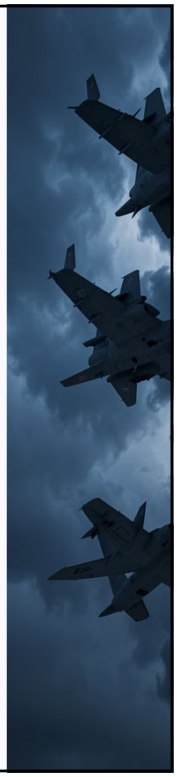
**Civil Aviation: Liberation**

- Travel, trade, and cultural exchange
- Rescue operations and humanitarian aid
- Migration and human connection
- Airports as engines of prosperity

**Military Aviation: Destruction**

- Surveillance and bombardment
- Mass destruction and warfare
- Airports as instruments of control
- Technology did not determine the outcome alone

**The lesson:** The same technology can serve radically different futures. What matters is who governs it, and for what purpose.



## What Shaped Aviation Was Not Just Engineering

**It was ambition, money, war, regulation, and desire.**

### Scientific Discovery

Fundamental research enabled what imagination had already conceived.

### State Power

Governments funded, directed, and weaponised aviation for national interest.

### Commercial Opportunity

Markets accelerated development and determined who could access the skies.

### Infrastructure and Regulation

Rules, standards, and infrastructure shaped what aviation became — not just what it could be.

### Human Appetite

The desire for speed, reach, and control drove adoption far beyond rational need.

THE PIVOT

## We Are Now at a Lilienthal Moment for AI

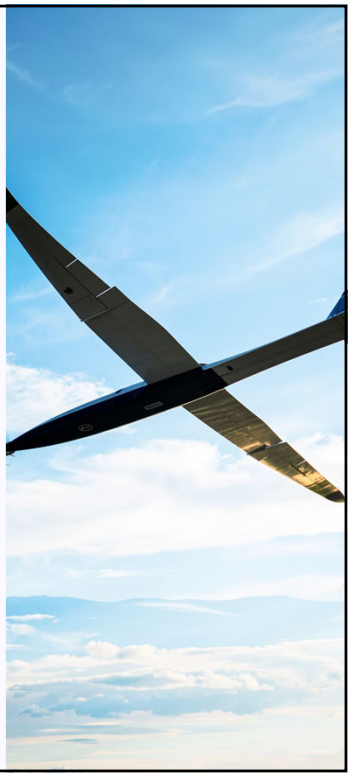
**We can already glide. We still do not know the airspace we are building.**

- AI Is Already Here
- Already in Learning
- Already in Clinical Work
- Already in Assessment

**And we are still pretending we have time.**

The question is no longer whether AI will transform medical education.

The question is whether we will shape that transformation — or be shaped by it.



SECTION 2 — THE FOUR DOMAINS

## How AI Will Transform Medical Education

AI will not arrive in medical education as a single event. It is already reshaping four interconnected domains — each with profound implications for how we train the next generation of health professionals.

**DOMAIN 1: KNOWLEDGE & LEARNING**

- Adaptive Tutors
- Personalized Pacing

**DOMAIN 2: TEACHING & FACULTY ROLES**

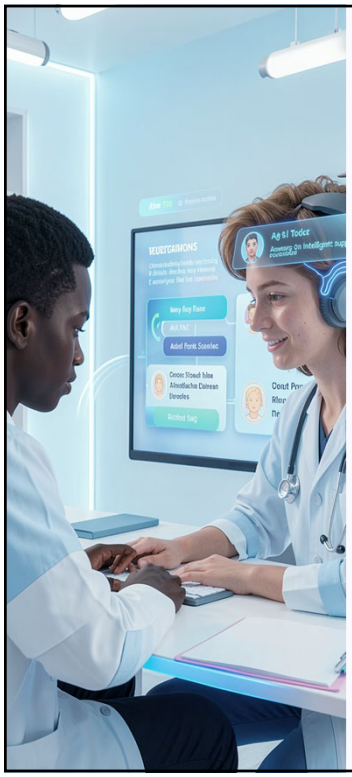
- Coaching
- Judgment
- Formation

**DOMAIN 3: ASSESSMENT**

- Authentic Tasks
- Continuous Data

**DOMAIN 4: CLINICAL TRAINING**

- AI-Assisted Diagnosis
- Documentation
- Triage



DOMAIN 1

## AI Will First Transform How Students Learn

**From static curriculum to adaptive, conversational, always-on learning.**

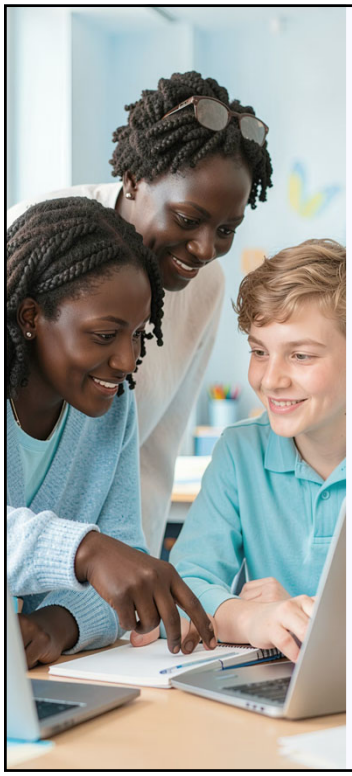
### AI Tutors
Explanation, questioning, and rehearsal available at any hour, in any language.

### Personalised Pacing
Targeted remediation based on individual learning patterns and gaps.

### Instant Summarisation and Translation
Complex content made accessible across languages and literacy levels.

### Case Generation
Diagnostic and therapeutic reasoning practised through AI-generated clinical scenarios.

### Continuous Support
Learning no longer confined to classroom hours or faculty availability.



DOMAIN 2

## AI Will Also Transform What Teachers Are For

Faculty will shift from content delivery to judgment, design, and human formation.

1. **Less Content Delivery**
   AI handles explanation, repetition, and summarisation.
2. **More Sense-Making**
   Faculty guide students through complexity and ambiguity.
3. **More Coaching**
   Individual mentorship and professional development take centre stage.
4. **More Judgment**
   Teaching the irreducibly human — ethics, uncertainty, and clinical wisdom.
5. **More Professional Formation**
   Identity, values, and vocation cannot be automated.

DOMAIN 3

## AI Will Transform the Way We Assess

If AI can answer our exams, our exams may be asking the wrong questions.

### What Changes

- Traditional written tasks are increasingly less important
- AI can support scoring, feedback, and pattern detection
- Validity will become the real battleground

### What Must Replace It

- Oral and authentic workplace assessment will matter more
- Competency assessment may become more continuous and data-rich
- Assessment must test what AI cannot replicate: judgment, empathy, and reasoning under uncertainty

DOMAIN 4

## AI Will Transform Clinical Education Even Faster

Students will not just learn medicine — they will learn medicine-through-AI.

**AI-Assisted Diagnosis**

**AI-Assisted Documentation**

**AI-Assisted Triage**

**AI-Assisted Prediction**

**AI-Shaped Clinical Judgment**

The clinical environment of 2030 will be AI-saturated. Training students to work *with* AI — critically, ethically, and effectively — is now a core educational responsibility.

SECTION 3 — THE ECOSYSTEM

## What Will Drive the AI Future in Medical Education?

Not the algorithm alone — the ecosystem.

### Economic Pressure
Cost constraints will accelerate AI adoption regardless of pedagogical readiness.

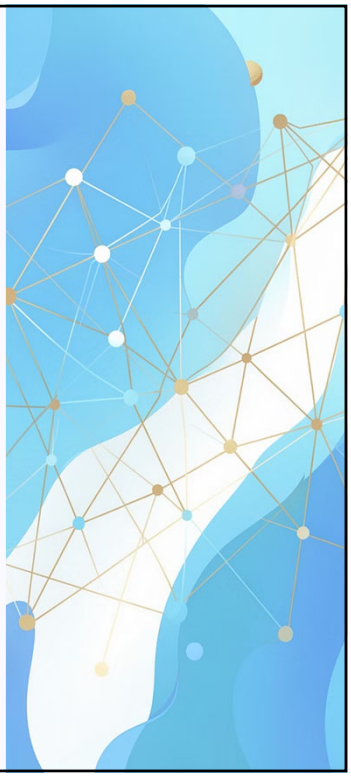
### Workforce Shortages
Scarcity of faculty and clinical supervisors creates demand for scalable solutions.

### Data and Infrastructure
Availability of health data and digital infrastructure determines what is possible.

### Regulation and Governance
Policy frameworks will shape whether AI serves public or commercial interests.

### Commercial Power and Geopolitics
Global platform companies and state actors will compete to define AI in education.

### Faculty Capability and Institutional Leadership
The most decisive factor is whether institutions lead — or merely react.



THE DEFINING CHOICE

## Both Africa and Europe face a defining choice

**Will AI deepen dependency—or faster progress?**

- Expanding need for medical education
- Uneven access to faculty and infrastructure
- Enormous potential for scalable support
- Serious risk of imported, misaligned systems
- The issue is not adoption; it is authorship

## Let's look into the future –> into 20 years from now

POSITIVE FUTURE 2046

## 2046 - Now imagine the positive future - the humane intelligence university

AI makes medical education more effective and more human, not less

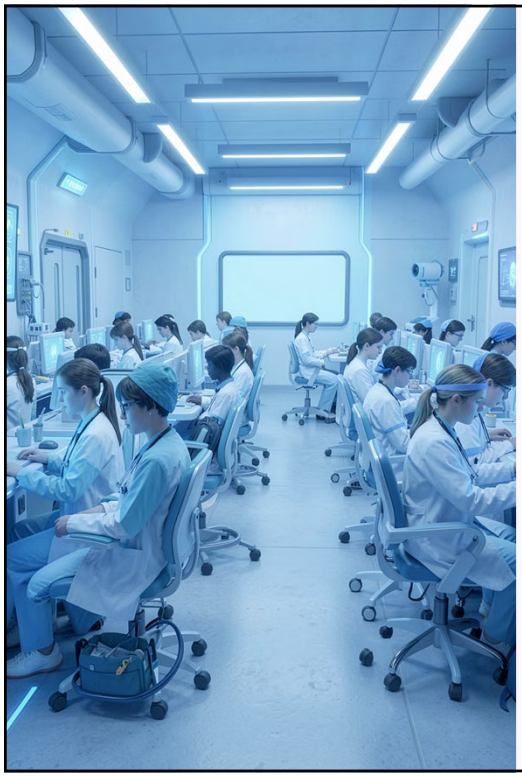
1. Every learner gets high-quality support
2. Faculty time is freed for mentorship
3. Assessment becomes more authentic
4. Clinical training becomes safer and deeper
5. Access improves without lowering standards

DRIVERS OF THE POSITIVE SCENARIO

## The drivers of the positive scenario

Good futures are governed into existence

- Clear institutional policy and ethical guardrails
- Investment in faculty development and AI literacy
- Assessment redesign before crisis forces it
- Public-interest partnerships, not blind procurement
- Commitment to inclusion, language diversity, and local relevance



NEGATIVE FUTURE 2046

## 2046 - Now imagine the negative future - the automated diploma mill

AI hollows out expertise, trust, and professionalism

1. Students outsource thinking
2. Faculty become editors of machine-made curriculum
3. Institutions outsource judgment
4. Global platform monopolies define knowledge, language, and standards
5. Assessment becomes theatre: polished outputs, weak competence

DRIVERS OF THE NEGATIVE SCENARIO

## The drivers of the negative scenario

The danger is not intelligence. The danger is surrender.

- Procurement before pedagogy
- Convenience before validity
- Automation before accountability
- Scale before equity
- Market logic before professional values

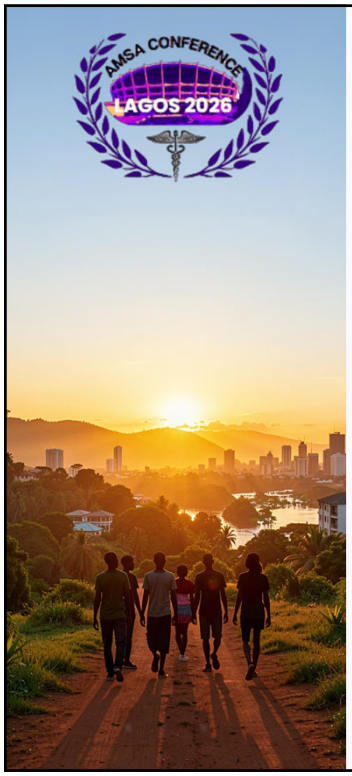
Each of these drivers represents a choice — a moment where institutional leaders prioritised the wrong thing. The negative future is not imposed from outside. It is chosen, incrementally, through inaction and convenience.

SECTION 5 — WHAT WE MUST DO

## What African and European Medical Schools Must Do Now

**Not admire AI. Govern it.**

- **Define Core AI Competencies for Every Graduate**
- **Redesign Assessment for Authenticity and Performance**
- **Invest in Faculty Development at Scale**
- **Build Governance for Data, Procurement, and Bias**
- **Collaborate Across Continents Without Reproducing Dependency**




CLOSING

## The Future Is Uncertain. That Is Exactly Why Our Actions Matter.

> Otto Lilienthal did not choose the future of flight. We can still choose the future of AI in medical education.

### The Future Is Not Forecast

It is governed — by the choices institutions, educators, and policymakers make today.

### AI Can Deepen Learning — or Deskill It

The same technology serves radically different outcomes depending on how it is governed.

### It Can Widen Equity — or Dependency

Leapfrogging is possible. So is a new form of intellectual colonialism.

### The Most Important Variable Is What We Do Next

Together — across Africa and Europe — we have both the responsibility and the capacity to choose well.