Improving Practical Competence through Laboratory Simulations in Bioscience Education

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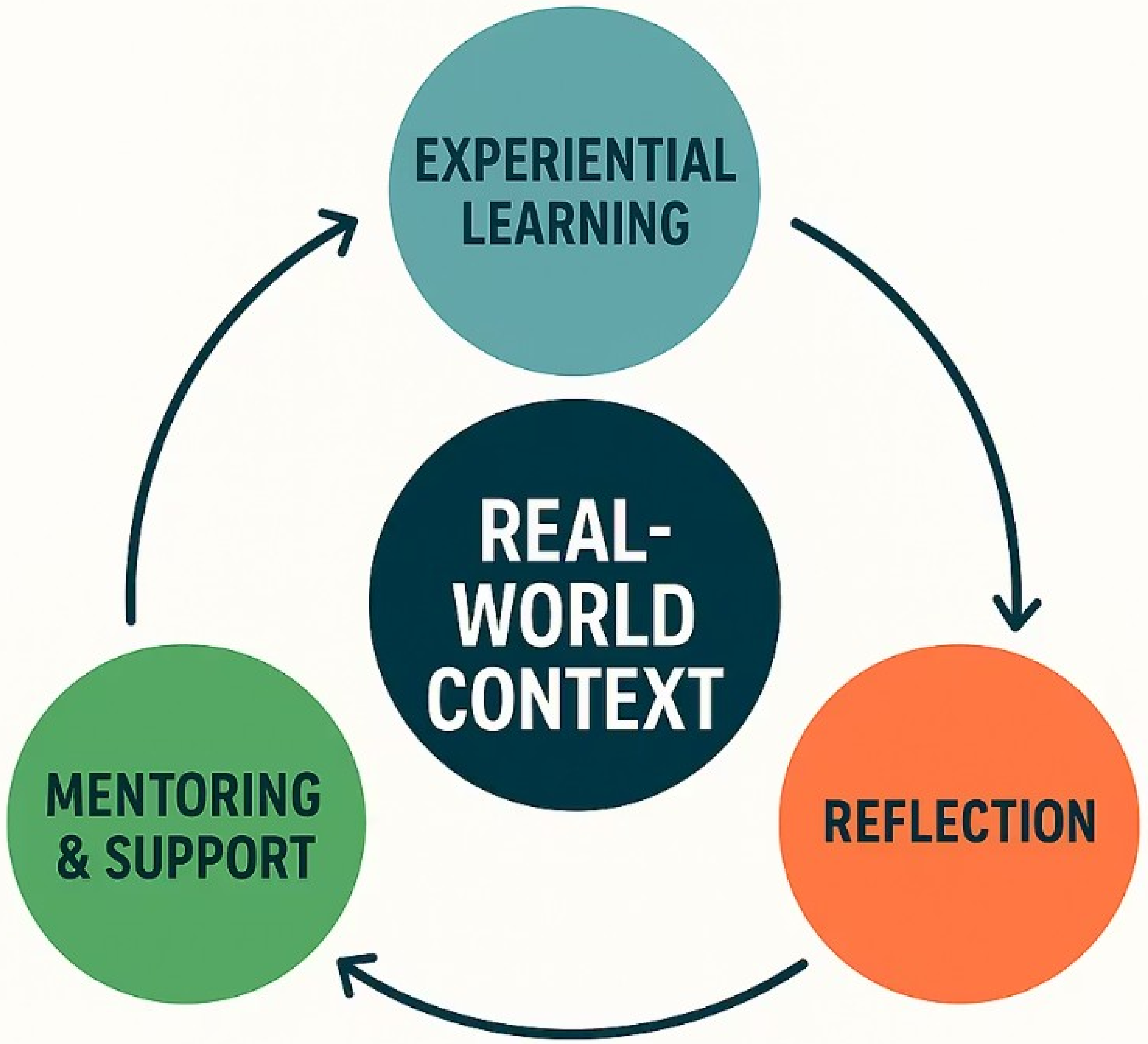
IBMS accreditation is our anchor

Students must demonstrate **safe** working, **accuracy**, quality practice, and competent **data handling**.

Why Practice-Based Education?

Biomedical Science: hands-on learning that applies theory to real diagnostic processes for building professional skills.

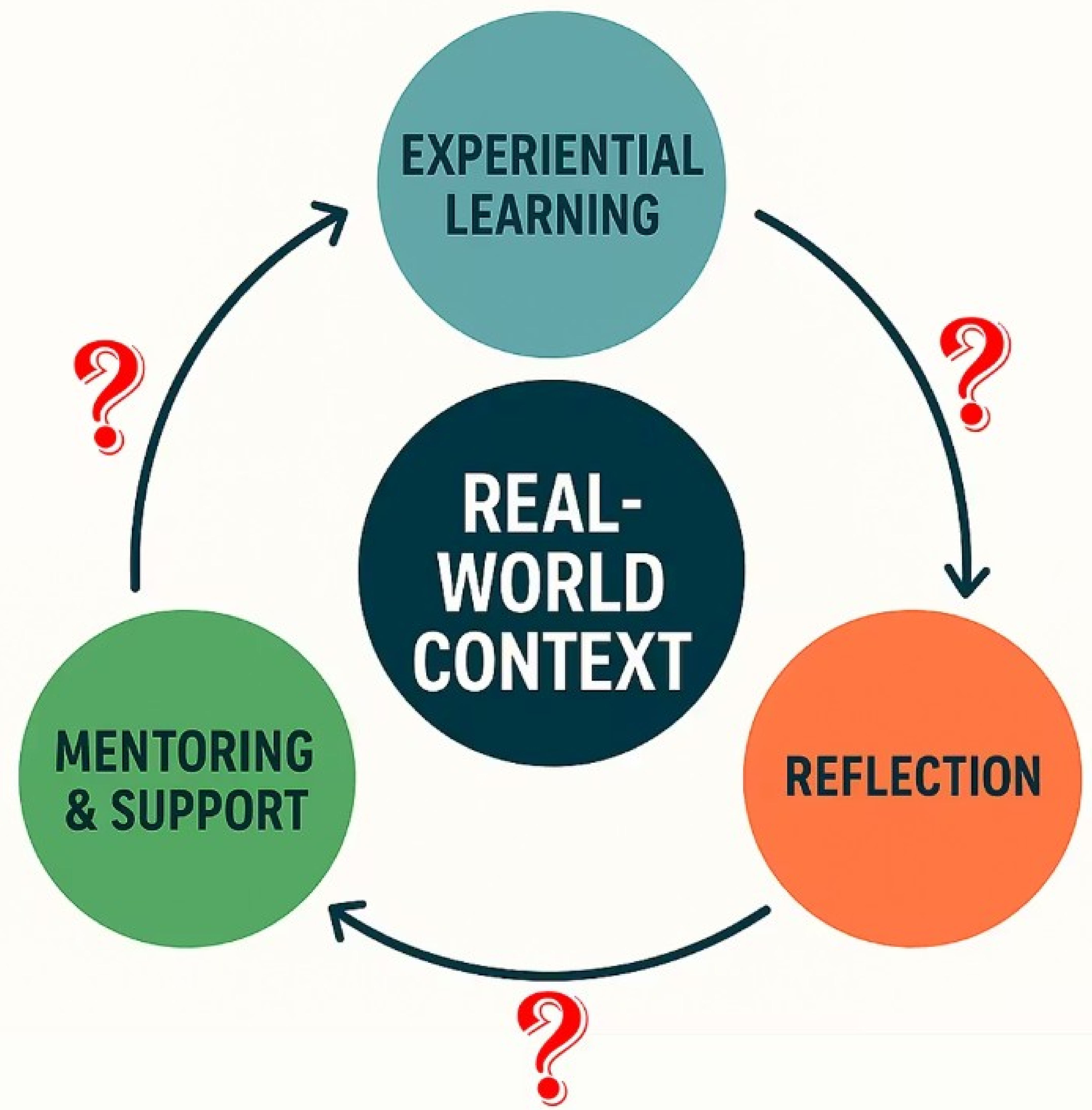


Challenges

<u>Cohort growth !</u>

Preparedness could: reduced anxiety, better cognitive load management, improved efficiency in lab time

Can digital preparation strengthen preparedness ?



LearnSci

Pedagogical scaffolding + Smart Worksheets for data analysis

labster

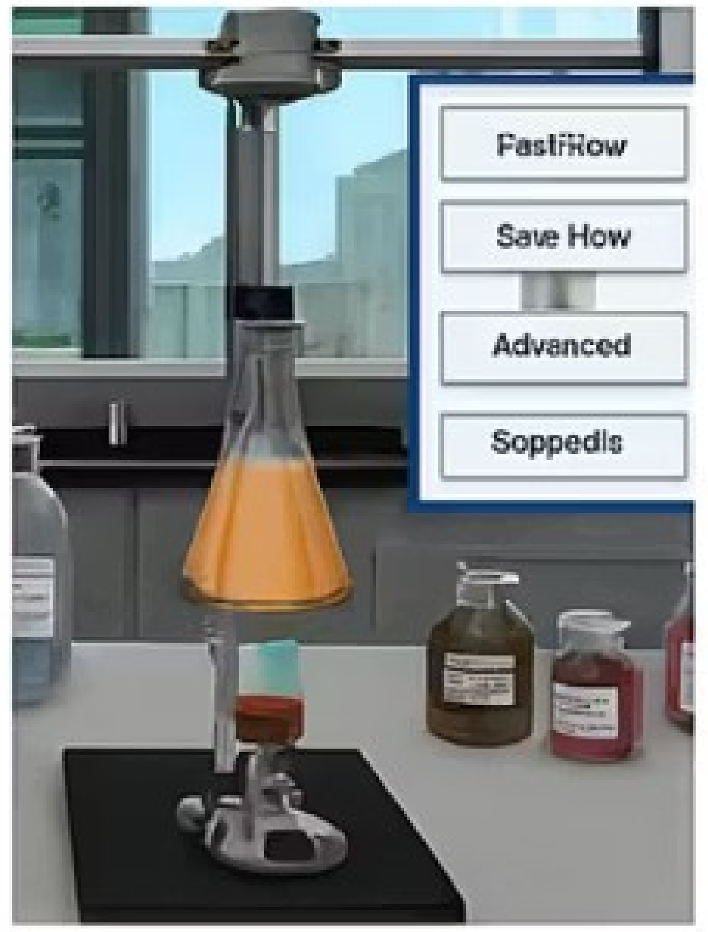
Immersive gamified 3D simulations

PraxiLabs

Affordable, simple virtual labs

BEYOND LABZ

Realistic lab replication

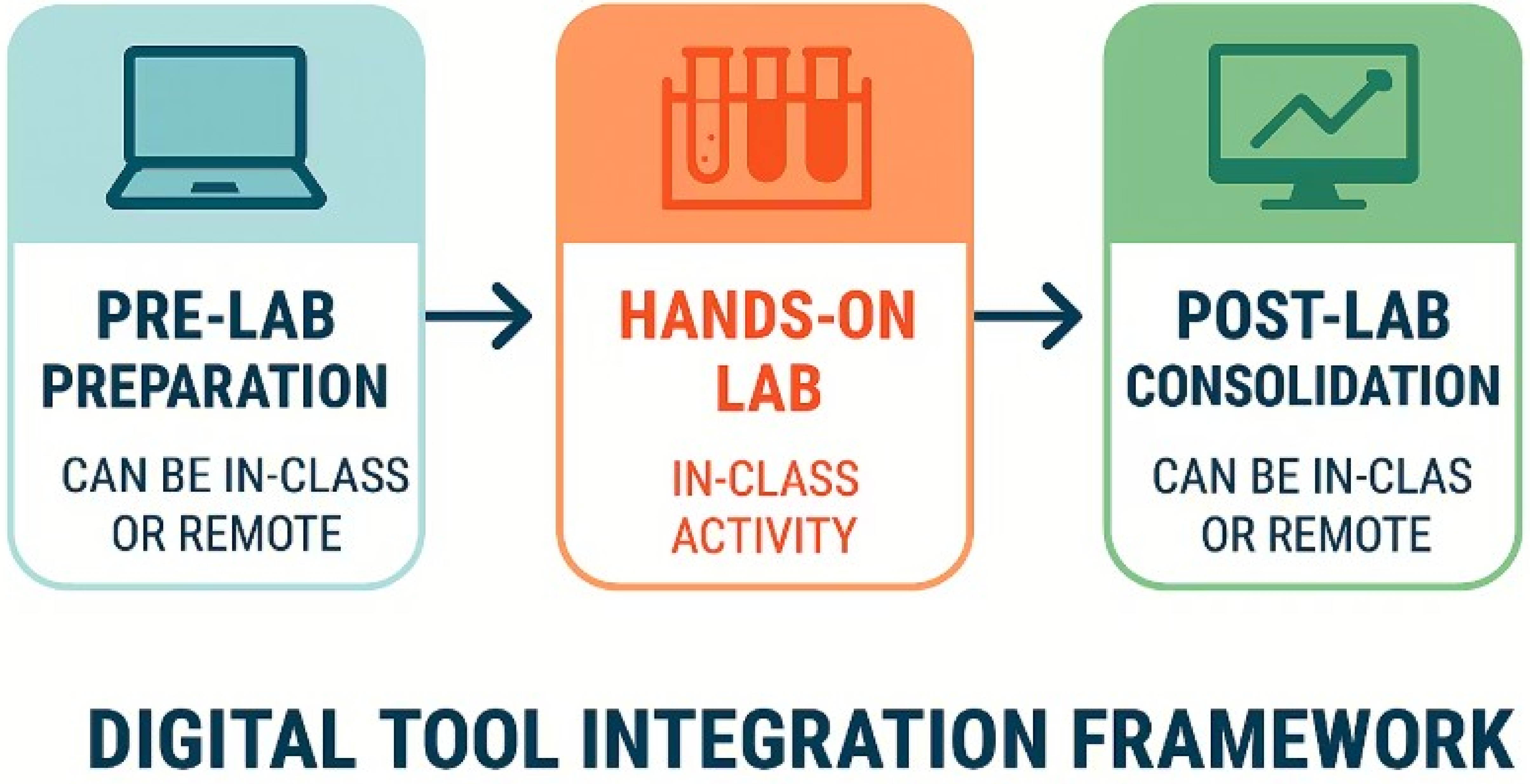


Moodle

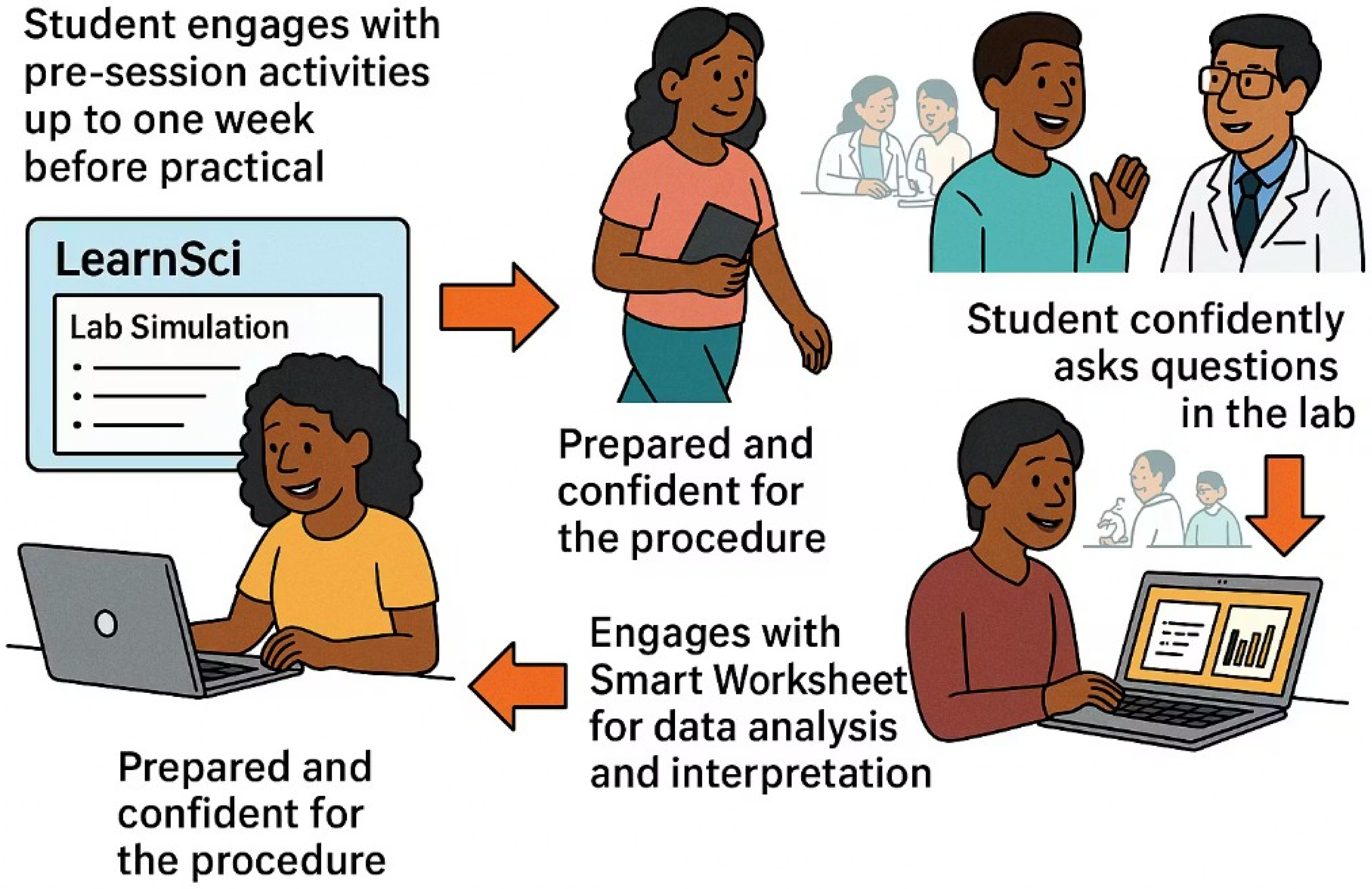
Accessibility

VR ready

Highly gamified



Enhancement not replacement



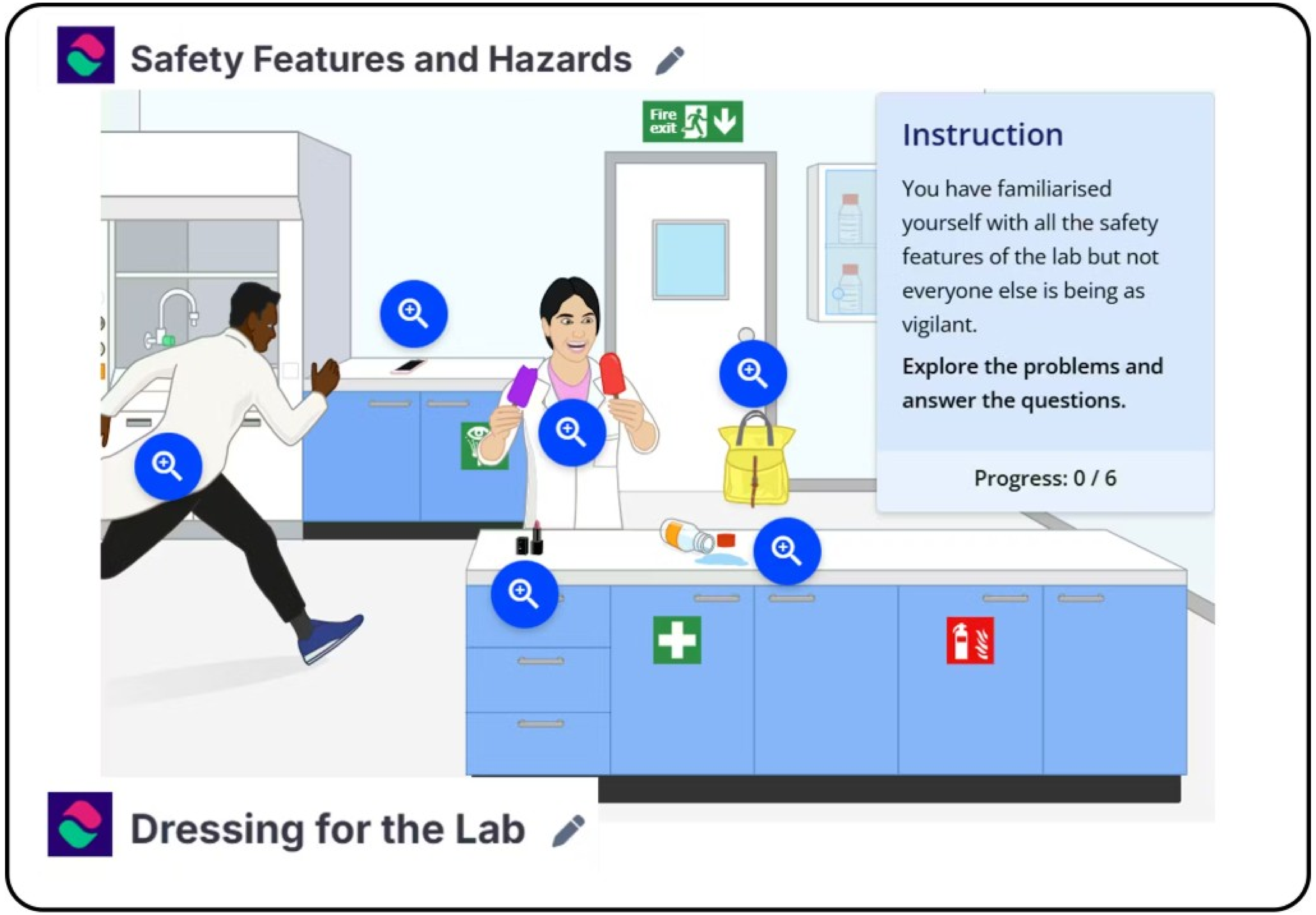
What We Implemented: LearnSci digital resources Pre and Post lab.

LearnSci

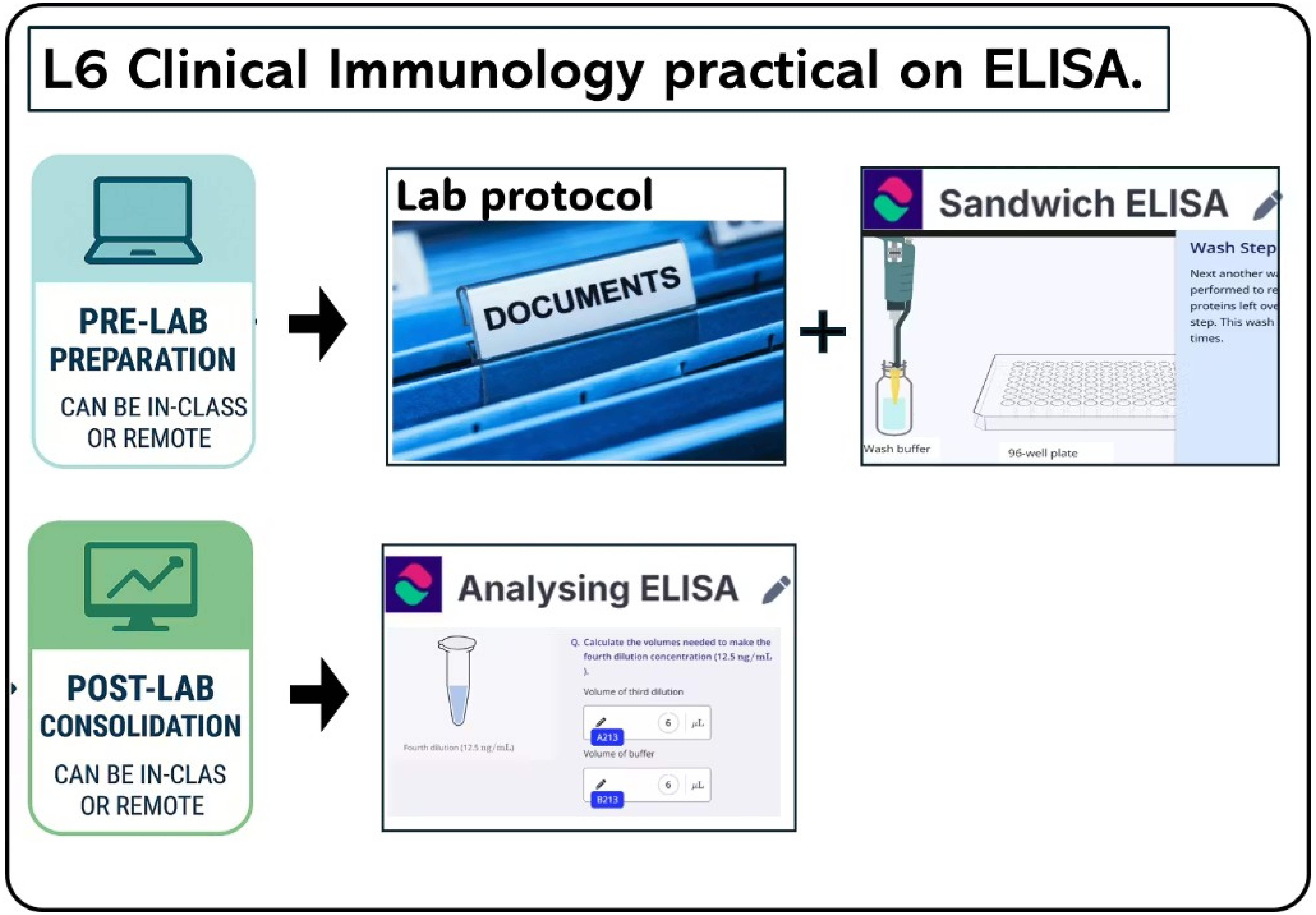
LearnSci digital resources

1. Lab sims
2. Smart worksheets (feedback!)
3. Usage analytics to monitor engagement

Lets take a look ...



Health and safety: **more engaging**!



Complex protocols: **Reduces errors and anxiety**.

L6 Clinical Immunology multi-skill application.

Autoimmune disease and diagnosis

Learning outcomes

By the end of this resource, you will be able to:

- apply knowledge of immunology laboratory diagnostic processes to analyse and interpret haematological and immunological data.
- construct an ELISA standard curve to analyse patient IgG serum concentrations.
- analyse complex patient profile data to inform diagnosis.

Complex analysis and application: **with formative feedback**

Student Feedback

L5 - 5 courses

"I would like to see more of the smart worksheets as I particularly found this **helpful for calculations**." MEQ2025

"Highly recommended, would be **great** if had at level 4."

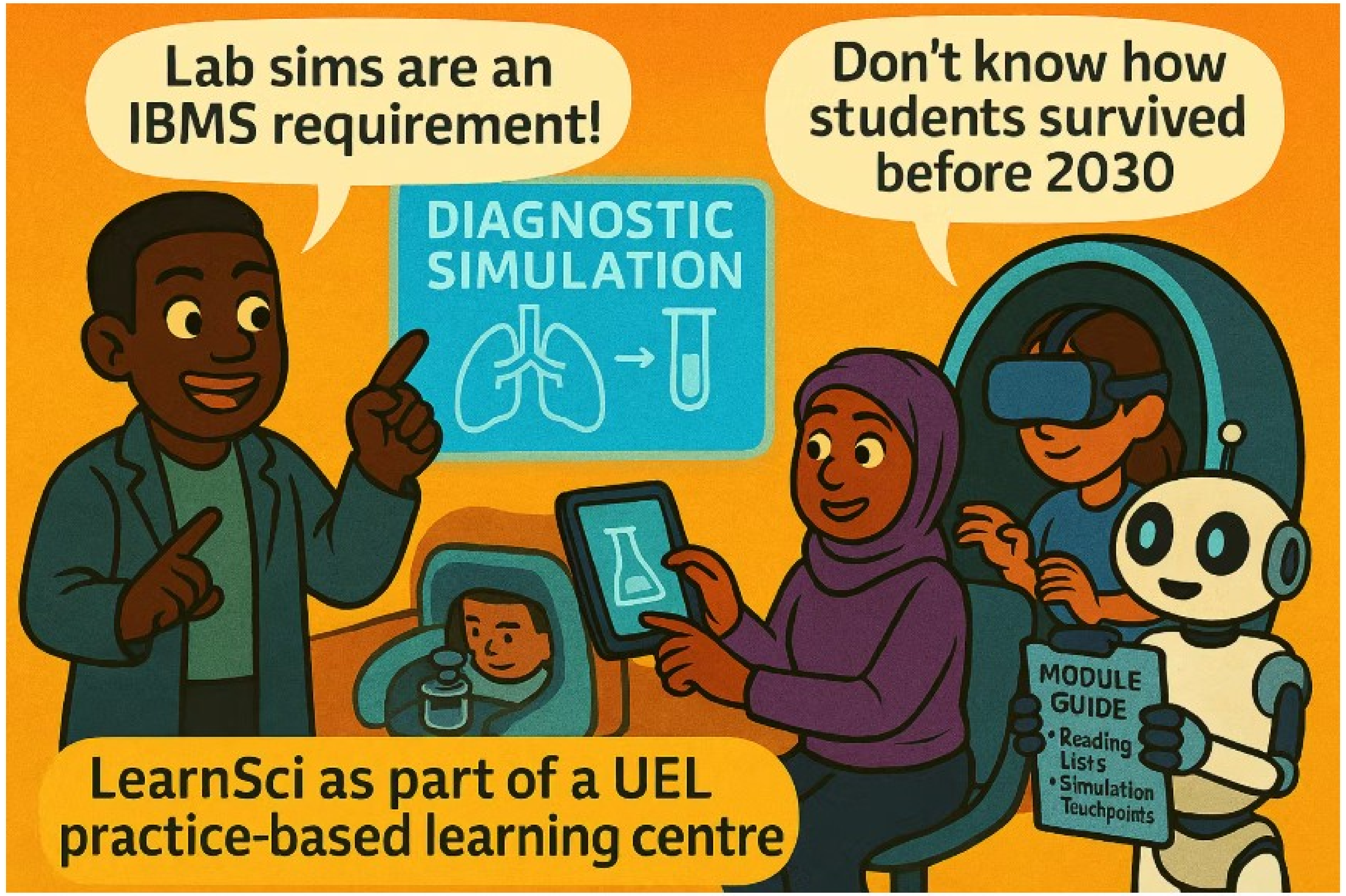
"It's a really **helpful** way to prepare for practicals beforehand so we can go in a lot more **confident** with what to do."

"It had **helped** in **understanding** lab techniques and **visualise** it which helped for practical lessons."

LeanSci benefits:

- Reduce first-exposure anxiety (**confidence**).
- Structured guidance (**formative**).
- Allow repetition without risk (**safe**).
- Any cohort size (**scalable**).
- Unlimited access, anytime, anywhere (**equitable**).

Staff support!



What might a blended practical curriculum look like in 2030?

Thank you for your time :)

If you have any questions, have ideas, would like to collaborate please email me:

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