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هيئة التحرير

كلمة مدير المركز

بسم الله الرحمن الرحيم

يسرنا في المركز الأكاديمي للتعلُّم والتعليم أن نقدِّم هذا الإصدار من دوريتنا العلمية، التي تهدف إلى أن تكون منصة رائدةً لتبادل المعرفة والخبرات الأكاديمية بين الناشرين وأعضاء الهيئة التدريسية في مختلف التخصصات.

إن هدفنا في المركز هو تعزيز ثقافة التميُّز في العملية التعليمية بالجامعة والابتكار الأكاديمي، وتطوير قدرات المهتمين بالعملية التعليمية، من خلال توفير بيئة محفِّزة للنشر العلمي، والعمل على نشر المعرفة بجودة ومصداقية عالية. كما نحرص على تطبيق أعلى معايير النزاهة الأكاديمية، بما يضمن أصالة الأفكار وصحة النتائج، ويعزِّز الثقة في المخرجات العلمية المنشورة.

أود أن أعبِّر عن امتناني العميق لكل الناشرين الذين وثقوا في نشرتنا لنشر أعمالهم، ولكل أعضاء هيئة التحرير والمراجعين الذين ساهموا بجهودهم ووقتهم في مراجعة المقالات بدقة وموضوعية. إن مساهماتكم العلمية هي الأساس الذي يقوم عليه نجاح النشرة واستمراريتها في خدمة البحث العلمي والأكاديمي.

آمل أن يجد القارئ الكريم في هذا العدد ما يثري معرفته، ويحفِّزه على المشاركة في الحوار العلمي البنَّاء، ويسهم في دفع عجلة البحث والابتكار في جامعتنا ومجتمعنا العلمي.

مع خالص التحية والتقدير،

أ.د ميكائيل إدريس الرفادي
مدير المركز الأكاديمي للتعلم والتعليم

كلمة رئيس التحرير

بسم الله الرحمن الرحيم

يسعدنا في المركز الأكاديمي للتعلُّم والتعليم أن نقدِّم للقارئ الكريم هذا الإصدار الأول من دوريتنا الجديدة والتي ستطبع مرتين سنويا. الدورية تعكس جهود فريق العمل في تقديم محتوى علمي متميز يثري المعرفة في المجالات الأكاديمية المختلفة. تأتي دوريتنا كمنصة رائدة لتبادل الأفكار والمقالات التحليلية لإيصال المعلومات المحدثة ,وتشجيع النقاش العلمي البنَّاء بين الباحثين وأعضاء الهيئة الأكاديمية والطلاب المهتمين.

إن مهمة النشرة لا تقتصر على نشر المقالات, بل تتعداها إلى تعزيز جودة البحث العلمي, وترسيخ مبادئ النزاهة الأكاديمية والأمانة العلمية في جميع الأعمال المنشورة. نحن نسعى لتطبيق أعلى معايير المراجعة العلمية الدقيقة, بما يضمن موثوقية النتائج وأصالة الأفكار, ويحفِّز الباحثين على تقديم أفضل ما لديهم من إسهامات معرفية.

أتوجَّه بالشكر لكل المشاركين الذين أتاحوا لنا فرصة نشر أعمالهم, ولكل أعضاء هيئة التحرير والمراجعين الذين بذلوا جهودهم في تقييم المقالات بدقة وموضوعية. كما نؤكد التزام النشرة بدعم الباحثين الشباب وتشجيعهم على الإبداع العلمي والابتكار البحثي.

آمل أن يجد القارئ في هذا العدد الجديد محتوى قيّمًا يثري المعرفة, ويحفِّز على التفاعل والمشاركة في الحوار العلمي المستمر. ونحن على يقين أن مساهماتكم العلمية هي العمود الفِقَري لنجاح الدورية واستمراريتها في الوصول للتميز في عملية التعلُّم والتعليم بالجامعة.

مع أطيب التمنيات بالنجاح والتوفيق للجميع,

د. بثينة خليل قريو
رئيس التحرير

شروط المشاركة في النشر

تُرحِّب النشرة بالأبحاث العلمية والدراسات الأصيلة في المجالات المعرفية ذات الصلة, وفقًا للشروط التالية:

1- أهلية النشر

- تُقبل المشاركات من أعضاء هيئة التدريس, الباحثين, والخبراء في المجالات المعرفية المرتبطة بموضوع النشرة.
- يمكن قبول مساهمات من طلاب الدراسات العليا بموافقة مشرف أكاديمي.

2- أنواع المقالات المقبولة

- الدراسات والمراجعات التربوية.
- التطبيقات العملية والتجارب التعليمية المبتكرة.
- مقالات الرأي العلمية القصيرة المتعلقة بالقضايا التعليمية (بعد موافقة هيئة التحرير).

3- قواعد التخطيط والتنسيق:

- تنسيق العمودين للمحتوى الرئيسي.
- خط 11–12 نقطة (كاليبري أو تايمز نيو رومان).
- العناوين مكتوبة بالخط العريض؛ العناوين الفرعية بالحروف الكبيرة أو المائلة.
- استخدم لوحة ألوان المؤسسات (الأزرق أو الأبيض والأحمر المفضل).
- استخدم تذييل ACTL في كل صفحة.
- إدراج أرقام الصفحات.

4- معايير الكتابة والتنسيق:

- يُفضل أن تتراوح المقالات بين 1000–3000 كلمة, باستثناء الدراسات القصيرة.
- يجب الالتزام بأسلوب الكتابة الأكاديمية الواضحة, مع تقديم ملخص باللغة العربية والإنجليزية.
- توثيق المراجع وفق نظام APA الإصدار الأخير أو أي نظام تحدده النشرة.
- الالتزام بالأمانة العلمية وتجنب الانتحال أو الاقتباس غير المصرح به.

5- عملية التقديم والمراجعة

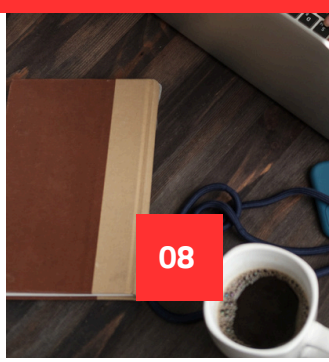
- تُرسل المقالات إلكترونيًا عبر منصة المركز الأكاديمي للتعلم والتعليم أو البريد الأكاديمي المخصص https://aclt.limu.edu.ly/
- جميع المشاركات تخضع لمراجعة تحريرية (Editorial Review) لضمان الجودة العلمية.
- يحق للنشرة تعديل النصوص أو طلب التعديلات قبل النشر.

6- حقوق الملكية والنشر

- يحتفظ المؤلفون بحقوق ملكية مقالاتهم مع منح النشرة الحق في النشر الأوَّلي. ويمكن إعادة نشر المقال أو استخدامه لاحقًا في أماكن أخرى, مع الإشارة إلى أنه نُشر أولًا في نشرة المركز الأكاديمي للتعلُّم والتعليم.
- تُحترم التراخيص العلمية والإبداعية بما يضمن حفظ الحقوق الفكرية لجميع الأطراف.

ملاحظة

تعدُّ المشاركة في النشرة بمثابة موافقة ضمنية على جميع الشروط المذكورة أعلاه.



The Role of the Academic Centre for Learning and Teaching (ACLT) in Higher Education

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Introduction:

Global higher education institutions are undergoing significant and swift changes due to advances in knowledge, technological progress, growing student diversity, heightened accreditation standards, and escalating demands for quality and responsibility. In this evolving environment, universities must exhibit their dedication to quality in pedagogy, learning, evaluation, and student achievement. The construction of an Academic Centre forLearning and Teaching (ACLT) is one of the most successful institutional tools for achieving these objectives. An ACLT is not only an administrative entity; it serves as the intellectual and developmental core of the institution—an engine for enhancement, innovation, and ongoing professional advancement. It assists professors, improves student experiences, bolsters academic quality, and guarantees compliance with national and international higher education standards. This article examines the diverse role of ACLT in higher education, including its fundamental goal, primary functions, strategic contributions, and enduring influence on institutional performance. (Altbach, Reisberg, & Rumbley, 2019) .

The Academic Centre for Teaching and Learning serves as a strategic cornerstone in contemporary higher education. Its impact beyond workshops and training; it moulds institutional culture, enhances academic quality, facilitates accreditation, empowers faculty, and enriches student learning experiences. As institutions encounter increasing demands for excellence and responsibility, ACLT provides a systematic and sustainable framework for ongoing enhancement. Institutions who invest in ACLT are securing their future.

By prioritising learning and teaching, ACLT guarantees that higher education stays pertinent, innovative, inclusive, and equipped to prepare graduates for the challenges of a changing world.

The Academic Centre for Teaching and Learning aims to enhance educational excellence and cultivate a culture of superior teaching.

Historically, research has been the primary factor in university prestige; however, the 21st century has shifted focus towards the significance of teaching efficacy, student involvement, and evidence-based pedagogical methods. 1. ACLT functions as the primary catalyst in these domains by supporting effective pedagogical methods rooted on educational theory and research. 2. Improving student achievement, retention, and academic involvement 3. Delivering faculty.

development that prepares educators with contemporary educational instruments. 4. Aligning academic programs with accreditation and quality standards, including WFME, NARS, the Bologna Process, or national quality assurance systems.and 5. Fostering innovation, integrating technology, and implementing learner-centred instructional frameworks.

Fundamentally, ACLT serves as a conduit between institutional objectives and routine academic practices, guaranteeing that teaching excellence is a collective obligation and a distinct institutional priority. (Altbach, Reisberg, & Rumbley, 2019).

Faculty Development and Professional Learning:

The ACLT's primary function is to create and implement faculty development programs that address the changing demands of higher education. Faculty members possess expertise in their respective academic fields; yet, many lack professional training in pedagogy, evaluation, curriculum design, digital learning, or educational psychology.ACLT addresses this deficiency by providing workshops and short courses. Consistent, organised seminars on course design and constructive alignment, formulating quantifiable intended learning outcomes (ILOs), and assessment methodologies (MCQs, OSCE, rubric development). ACLT also facilitates the acquisition of skills in classroom management and communication, research supervision, and instruction within multidisciplinary and integrated curricula. These workshops assist instructors in implementing evidence-based methodologies that enhance active learning and enrich student comprehension. ACLTs frequently engage with international frameworks (e.g., Advance HE, AAC&U) to establish multi-tiered professional development programs. (Advance HE. 2021).

Teaching and learning certificates incentivise professors to enhance their practices, provide evidence for accreditation, and facilitate career progression. It also aids in establishing a systematic peer observation system that improves teaching quality through collaborative reflection, constructive feedback, and the exchange of ideas and resources. Peer observation facilitated by ACLT transitions assessment from "inspection" to "professional development." ACLT assists incoming faculty in cultivating mentorship and coaching abilities, while educational coaching facilitates adaptation to academic culture, enhances teaching efficacy, and aids in the design of courses matched with program objectives. Coaching is particularly advantageous in universities with integrated curricula, where multidisciplinary teamwork is crucial.

Curriculum Design and Academic Program Development:

ACLT has an essential effect process of designing, evaluation, and ongoing enhancement of curriculum development. As higher education transitions to competence-based and integrated models, ACLTs facilitate this shift by ensuring that academic programs implement Constructive Alignment, which necessitates a clear correlation among intended learning outcomes, teaching and learning activities, and assessment methods. ACLT assists departments in aligning these components to guarantee coherence and academic rigour. (Biggs, J., & Tang, C. (2011).

ACLT advocates for a contemporary integrated curriculum and interdisciplinary collaboration by coordinating curriculum committees, ensuring both horizontal and vertical integration, assisting in the creation of learning modules, case studies, and problem-based scenarios, and overseeing workload distribution and credit alignment. ACLT support enables institutions to generate evidence for accreditation visits and audit processes by guaranteeing adherence to accreditation criteria through curriculum transparency, documentation of program specifications, compliance with competencies, and ongoing monitoring and evaluation. (Biggs, J., & Tang, C. (2011).

Digital revolution is progressively influencing higher education. ACLT guarantees that technological innovation augments, rather than simply supplants, effective pedagogy by facilitating blended and online learning, and offering training in Learning Management Systems (LMS), instructional design for e-learning, quality frameworks for blended education, and multimedia and video production assistance.

ACLT advocates for faculty to implement methodologies such as flipped classroom, team-based learning (TBL), case-based learning (CBL), problem-based learning (PBL), and simulation and skills-lab instruction in the realm of active learning promotion. These tactics enhance student engagement, analytical reasoning, and enduring retention. ACLT assists faculty in the adoption of instructional technology tools, including interactive presentations, student polls, microlearning videos, peer assessment, and rubric-based evaluation. (Advance HE. (2021).

Assessment and evaluation are fundamental to academic quality. ACLT assists universities in establishing equitable, valid, reliable, and transparent assessment processes by educating faculty to build blueprint matrices that guarantee comprehensive coverage of ILOs, alignment of cognitive levels, and clear distribution of topics and skills. The centre assists in the creation of assessment instruments, including workshops for writing multiple-choice questions, designing Objective Structured Clinical Examination stations, evaluating clinical and practical abilities, and developing rubrics for projects, assignments, portfolios, reflective practices, competency checklists, and logbooks. ACLT creates course evaluation surveys, instructor performance instruments, and student feedback systems. The objective is to establish a culture centred on feedback-driven quality improvement. (World Federation for Medical Education. (2020)

ACLT plays a crucial role in enhancing the student experience within student support and achievement programs by supervising or partnering with Student Support Services (SSS). This encompasses assisting departments in formulating advising procedures, training advisers, and overseeing student achievement. The Wellness and Mental Health ACLT may collaborate with counselling departments to provide training for faculty in mental health first aid.

In educational research, ACLT regards the scholarship of teaching and learning as a fundamental aspect of academic development, with a key function being capacity building through training faculty in research design, educational methodologies, ethics, Institutional Review Board (IRB) processes, and publication writing. ACLT may provide modest internal funds to facilitate innovation in teaching, assessment research, curriculum evaluation, and learning analytics. The ACLT organises or sponsors conferences that enable faculty to showcase their intellectual work, therefore enhancing academic discourse and institutional reputation. (Advance HE. (2021).

ACLT's efforts directly facilitate the attainment of accreditation from both national and international organizations. Its contributions to institutional accreditation and quality assurance. Incorporate documentation and evidence management (workshops, evaluations, faculty development records), policy formulation (course design policy, assessment policy, blended learning standards), curriculum mapping and alignment with competencies and standards, quality audits, post-accreditation enhancement plans, and the standardization of teaching and assessment practices across departments. (World Federation for Medical Education. (2020)

Accreditation agencies frequently demand proof of ongoing faculty development, student support services, assessment quality, and curriculum alignment—all of which are encompassed under ACTL's obligations. (World Federation for Medical Education. (2020).

In the domain of enhancing Community Building and Institutional Culture, an effective ACLT fortifies the academic community by establishing communities of practice through faculty groups that convene to deliberate on various topics, including pedagogical strategies, digital tools, student challenges, and assessment innovations.

The ACLT plays a crucial role in honoring excellence through the issuance of teaching awards, innovative recognition certificates, and annual reports on teaching excellence. (Advance HE. (2021).

Communication via periodical bulletins and reports facilitates knowledge dissemination, shares updates, promotes transparency, and underscores academic accomplishments. ACLT consequently serves as a cohesive institutional centre that influences the culture of pedagogy, scholarship, and academic assistance. (Biggs, J., & Tang, C. (2011).

The Long-Term Impact of ACTL on Higher Education Institutions:

On the long term a well-organized ACLT can ultimately enhance teaching quality; ongoing improvement fosters superior pedagogy, improved classroom environments, and enhanced outcomes, resulting in stronger markers of student success, including increased retention, progression, performance, and satisfaction.It also improves accreditation preparedness by establishing well-documented processes and regulations that position the institution for external evaluation. (Advance HE. (2021).

In educational research, faculty generate scholarly articles that enhance the institution's reputation. ACLT facilitates institutional transformation through policy formulation, data-driven decision-making, the cultivation of a quality assurance culture, and academic innovation. Ultimately, ACLT serves as the cornerstone for cultivating a sophisticated, reputable, faculty- and student-centered institution, thereby producing a globally competitive higher education entity (Harden, R. (2000).

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Constructivism and Active Learning: Towards an Integrated Educational Model for a Contemporary Multidisciplinary University

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Abstract

In the context of the transition towards a knowledge economy and the Fourth Industrial Revolution, the need for educational models that respond to the complexity of global challenges has become urgent. This paper presents an analysis of the integration of constructivist theory with active learning strategies as an effective framework for multidisciplinary higher education. Drawing on recent educational literature, the paper argues that such integration not only strengthens knowledge construction but also develops essential twenty-first-century skills. It further highlights the role of emerging technologies in enabling this model and provides recommendations for practical implementation.

Introduction

In the twenty-first century, the role of the university has shifted from merely transmitting ready-made knowledge to empowering students to construct knowledge, develop critical thinking, and solve complex problems. This transformation stems from the interconnected nature of knowledge, which is no longer confined to narrow disciplinary boundaries. The acceleration of knowledge production and the complexity of global issues—such as climate change, health and environmental challenges, and artificial intelligence—have redefined the university's mission. The objective is no longer to graduate narrowly specialized professionals, but rather integrative thinkers capable of collaborating across knowledge domains (Mishra & Mehta, 2017). To achieve this transformation, the integration of constructivist theory as a theoretical foundation with active learning as a methodological practice, within the context of multidisciplinary education, emerges as not merely optional but a strategic necessity (Bozkurt, 2019).

1. Constructivist Theory in Contemporary Literature: From Individual to Networked Knowledge Construction

Constructivist theory, building on foundational contributions by Piaget and Vygotsky, does not view the learner's mind as an "empty vessel." Instead, it emphasizes that knowledge is actively constructed through interaction with experiences and the linking of new information with prior knowledge (schemata). While these seminal contributions remain central, contemporary educational discourse has expanded the concept to include new dimensions, such as:

• Knowledge construction in the digital age: Recent studies highlight that knowledge building is no longer limited to interactions with the physical environment. It now extends into digital and virtual spaces, where learners act as "digital integrators," constructing knowledge through networks and open resources (Siemens, 2005; Bozkurt, 2019).

• Learning as a social practice: Contemporary research stresses that collaborative knowledge building lies at the heart of effective learning. Through collaborative tools and technologies, Vygotsky's "Zone of Proximal Development" is broadened, enabling learners to achieve intellectual outcomes that would be unattainable individually (Zhang et al., 2021).

• The educator as a learning experience designer: In the modern constructivist model, the teacher evolves into a "learning experience designer." Rather than merely directing, the educator designs rich learning environments and contexts—such as project-based or challenge-based learning—that stimulate inquiry and active knowledge construction (Laurillard, 2012).

2. Active Learning: Evidence of Effectiveness and Instructional Design

If constructivism represents the theoretical foundation, active learning constitutes the practice. Active learning refers to any instructional approach that meaningfully engages students in the learning process, moving beyond the traditional lecture-based model and translating constructivist principles into tangible strategies in the classroom.

• Empirical evidence: Freeman et al.'s (2014) landmark study, still widely cited, demonstrated that students in active learning courses were 55% less likely to fail and achieved performance gains equivalent to half a standard deviation. Subsequent research further confirms that active learning promotes knowledge retention and enhances critical thinking skills (Theobald et al., 2020).

• Strategies grounded in active learning: Active learning has evolved into a science of designing optimally challenging tasks. Key strategies include:

- Flipped Learning: Delivering theoretical content outside class, reserving classroom time for application and collaboration (Bishop & Verleger, 2013).

- Project- and Challenge-Based Learning: Frameworks for applying active learning in authentic contexts (Larmer et al., 2015).

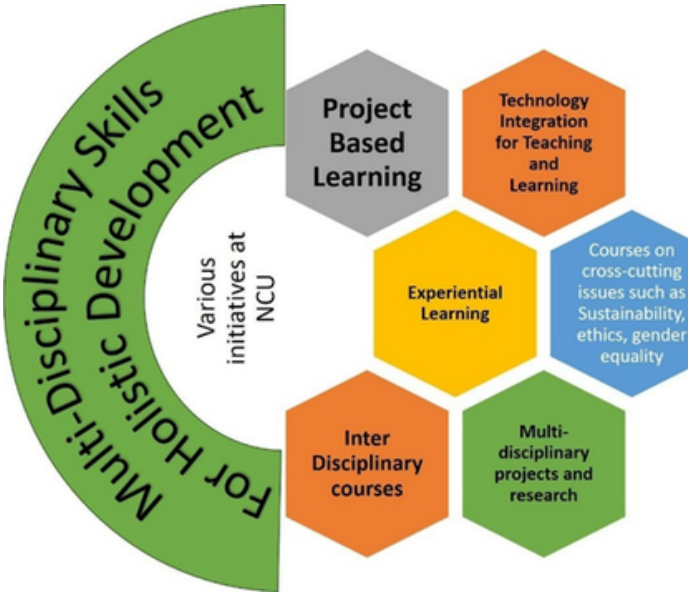
- Problem-Based Learning (PBL): Similar to project-based approaches, but centered on a specific problem as the starting point for inquiry.

- Team-Based Learning (TBL): A structured collaborative learning approach where courses are organized around instructional units involving individual preparation, team assessment, and application of knowledge to complex real-world problems.

3. Integrating the Model in Multidisciplinary Education: From Theory to Comprehensive Practice

Multidisciplinary education provides fertile ground for the integration of constructivism and active learning. Recent evidence supports this linkage:

• Building bridges across disciplines: Addressing complex global challenges requires dismantling disciplinary boundaries and fostering integrative connections (Repko & Szostak, 2020). Constructivist active learning provides the practical mechanism to achieve this integration, as students are compelled through joint projects to combine diverse disciplinary perspectives to generate innovative solutions (Spelt et al., 2019).



• A contemporary applied example: A course titled "Artificial Intelligence, Ethics, and Society." Rather than separate lectures, students from computer science, philosophy, law, and sociology tackle a real challenge: "Designing an ethical framework for an AI-based recruitment algorithm." The computer science students analyze algorithmic functioning, philosophers debate competing ethical principles such as justice and privacy, law students assess regulatory compliance, and sociologists study labor market impacts. Active learning tools such as Moodle, Miro, or Padlet facilitate collaborative brainstorming and the co-construction of integrative concept maps. Here, the instructor acts as a process facilitator, ensuring both inclusivity and depth of dialogue (Lattuca et al., 2017).

Practical evidence from the field supports the effectiveness of this approach. A study by Spelt et al. (2019) demonstrated that applying active learning strategies in an interdisciplinary context significantly enhances students' competence in integrating knowledge from different fields and developing innovative solutions to complex problems."

4. Challenges and Recommendations in Light of Future Trends

Implementing this model is not without challenges, including resistance to change, difficulties in assessment, and entrenched university structures. Considering future directions, several recommendations can be made:

• Adopt integrative assessment systems: Utilize electronic portfolios (E-portfolios) and authentic assessment methods that evaluate knowledge construction and interdisciplinary integration (Wiggins, 2019).

• Leverage emerging technologies: Incorporate generative AI tools such as large language models (LLMs) as augmented reality (AR) to create multidisciplinary simulation contexts (Selwyn, 2022).

• Foster a culture of integrative learning: Establish innovation hubs and promote cross-college research collaborations.

• Develop professional development programs for faculty focused on designing interactive constructivist learning experiences.

• Redesign physical classrooms to support collaboration and teamwork.

Conclusion

The integration of advanced constructivist theory with evidence-based active learning practices offers a powerful educational model, not only for addressing the complexities of the present but also for anticipating the challenges of the future. Within a multidisciplinary university context, this integration shifts from being a pedagogical choice to becoming an inevitable necessity—a strategic investment in unlocking students' creative capacities and preparing them to become solution architects in an interconnected, complex world.

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Designing the Professional Portfolio: It's Role in Education and Professional Development

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Abstract

The professional portfolio has become a cornerstone in modern education and career development, particularly in health professions education. It is more than a collection of certificates or documents—it is a structured, reflective narrative that evidences learning, growth, and professional identity. This paper explores the concept and purposes of the professional portfolio, outlines its main types, and discusses the principles of effective portfolio design. It further examines the reflective dimension as a foundation for lifelong learning and presents a practical application drawn from a workshop on portfolio design conducted at ACLT. The article concludes that portfolios, when designed purposefully and reflectively, transform individual experiences into meaningful learning, fostering competence, accountability, and continuous professional development.

Keywords: Portfolio, Health Professions Education, Competency-Based Education, Reflection, Professional Development

Introduction

Contemporary education (especially in the health professions) has shifted from teacher-centered instruction to competency-based, learner-centered approaches. These approaches emphasize authentic performance, reflection, and self-directed learning. Within this paradigm, the professional portfolio has emerged as an integrative tool that documents learning, demonstrates competence, and supports lifelong professional growth.

A portfolio is not merely a folder of achievements; it is a story of development—a dynamic, evidence-based account of how knowledge, skills, and professional attitudes evolve over time. Through reflection and documentation, it enables learners and practitioners to make their growth visible to themselves and others.

1. Concept and Purpose of the Portfolio:

A portfolio is defined as a purposeful, organized collection of evidence demonstrating an individual's efforts, progress, and achievements across a period of time (Colbert, Ownby, & Butler, 2015). It is both a learning and an assessment tool, providing a holistic picture of competence that integrates multiple dimensions of performance.

1. The purposes of the portfolio include:

1. Documenting learning and achievement.
2. Encouraging reflection and self-assessment.
3. Providing formative and summative assessment evidence.
4. Supporting professional and career development.
5. Demonstrating accountability and lifelong learning.

In health professions education, portfolios have become essential for competency assessment, residency evaluation, and continuous professional development (Michels et al., 2012).

2. Types of Portfolios

Portfolios may vary according to their primary function:

1.Learning Portfolio:

Focuses on the process of learning and promotes reflection during a course or program.

Example: A medical student's log of clinical encounters, feedback, and reflections.

2.Assessment Portfolio:

Serves summative purposes—used for grading or certification.

Example: A nursing intern compiles evidence to meet graduation standards.

3.Showcase Portfolio:
Highlights selected "best works" for job applications, promotion, or awards.

4.Professional Development Portfolio:
Tracks Continuing Professional Development (CPD) activities and career progress over time.

5.Teaching Portfolio:
Demonstrates teaching philosophy, innovations, and effectiveness for academic promotion.

6.E-Portfolio:
A digital format that allows multimedia integration and easier sharing through platforms such as Google Sites, Notion, or Mahara.

Each type serves a distinct yet overlapping purpose —supporting reflection, assessment, and evidence-based growth.

3. Principles of Effective Portfolio Design
An effective portfolio combines structure, reflection, and authenticity.

The following principles guide sound design:

Practical Guidance	Description	Principle
Clarify objectives before assembling evidence	The design must align with the portfolio's main goal (learning, assessment, or showcase).	Purpose-drive
Use clear sections, subheadings, and a table of contents	Information should be easy to locate and comprehend.	Organization & Clarity
Avoid irrelevant or decorative material.	Include genuine, original work that represents real experiences	Authentic
Ask: What did I learn from this?	Link each piece of evidence to personal insights.	Reflection
. Combine data, reflections, and feedback	Balance quantitative and qualitative evidence.	Integrate
Adopt templates or institutional guidelines	Maintain a uniform format and writing style.	Consistency.
. Review and revise regularly	Treat, the portfolio as a living document	Updating

When these principles are applied, the portfolio becomes a coherent narrative of competence rather than a static archive of activities.

4. Reflection as the Core of Portfolio Learning:

Reflection transforms documentation into learning. It encourages individuals to analyze experiences, derive meaning, and plan improvement. Structured models such as Gibbs' Reflective Cycle (1988) and Kolb's Experiential Learning Cycle (1984) can guide this process.

• Gibbs' Cycle moves through six stages: description, feelings, evaluation, analysis, conclusion, and action plan.

• Kolb's Cycle outlines learning through four stages: concrete experience, reflective observation, abstract conceptualization, and active experimentation.

Incorporating reflection prompts—such as "What went well?", "What could be improved?", and "How will I act differently next time?"—helps professionals translate experience into deeper understanding and intentional practice.

5. Application in Health Professions Education:

Within medical and allied health education, portfolios play a vital role in workplace-based assessment (WBA), capturing performance in authentic settings. Common assessment tools integrated into portfolios include:

- Mini-Clinical Evaluation Exercise (Mini-CEX): Observation and feedback on clinical encounters.
- Direct Observation of Procedural Skills (DOPS): Evaluation of procedural competence.
- Case-Based Discussion (CbD): Assessment of decision-making in real patient cases.
- Multi-Source Feedback (MSF): Peer and supervisor feedback on professionalism and teamwork.

When these tools are embedded within a reflective portfolio, they provide a rich, longitudinal picture of competence—spanning knowledge, technical skills, communication, and ethical behavior.

6. Professional Use and Lifelong Learning

In professional practice, portfolios serve as evidence of continuing competence and commitment to growth. They are widely used for licensure renewal, revalidation, or promotion, documenting:

• CPD activities (courses, workshops, conferences).

• Research, teaching, and leadership contributions.

• Reflections on professional challenges and improvements.

For educators, engineers, and healthcare providers alike, the portfolio becomes a living record of development and a tool for structured mentorship.

7.Practical Experience:

Portfolio Design Workshop at ACLT

To translate theory into practice, the author conducted a "Portfolio Design Workshop" at the Advanced Center for Learning and Teaching (ACLT)

The workshop introduced participants to the concepts, types, and principles of portfolio construction, emphasizing reflection and evidence selection. Participants developed draft outlines for two portfolios:

1. A professional portfolio for documenting career advancement.

2. An assessment portfolio for evaluating learning outcomes in academic programs.

Through guided exercises, attendees practiced writing reflective statements using Gibbs' framework, organizing evidence coherently, and creating digital portfolios on accessible platforms. Post-workshop evaluations revealed significant improvement in participants' understanding of portfolio purpose and their ability to integrate reflection into professional documentation

This experience demonstrates the transformative value of experiential workshops in building portfolio literacy and promoting reflective practice among health-profession educators and trainees.

8. Conclusion

The professional portfolio stands at the intersection of learning, assessment, and professional identity. It bridges the gap between doing and understanding—turning everyday experiences into opportunities for growth.

When educators and practitioners adopt portfolios not as bureaucratic requirements but as reflective instruments, they nurture habits of inquiry, adaptability, and lifelong learning.

As the results of the ACLT workshop illustrate, portfolio-based learning cultivates self-awareness, critical thinking, and continuous improvement—qualities essential for excellence in both education and professional life.

A well-crafted portfolio is not a box of certificates; it is a mirror of growth and a narrative of becoming

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Educational Objectives: The Foundation of Effective Teaching and Learning

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Introduction

Every successful learning experience begins with a clear sense of direction. In education, that direction is provided by educational objectives. They describe what we want students to learn, how deeply they should understand it, and how they can demonstrate their learning. Well-written objectives serve as a roadmap for teachers, students, and curriculum planners alike. This article explains what educational objectives are, why they matter, and how to write them effectively, using Bloom's taxonomy as a guiding framework.

What Are Educational Objectives?

Educational objectives are specific, measurable statements that describe what learners should be able to do after a lesson, course, or program. They express expected outcomes in terms of observable behavior—what the learner can demonstrate—rather than vague intentions like "understand" or "know."

The most widely used framework for classifying objectives is Bloom's Taxonomy, first developed by Benjamin Bloom and later revised by Anderson and Krathwohl. It organizes learning into three domains (moves from simple to complex levels):

1. Cognitive Domain (Knowledge and thinking skills)

•Remember: Recall of facts, definitions, and basic concepts without interpretation.
•Understand: Explanation of ideas, summarizing concepts, and interpretation of information.
•Apply: Use of knowledge in new or real-life situations.
•Analyze: Breaking information into components and identifying relationships among parts.
•Evaluate: Justification of decisions, appraisal of evidence, and reasoned judgment.
•Create: Integration of knowledge to generate new ideas, plans, or solutions.

2. Affective Domain (Attitudes and values)

•Receiving: Awareness of and openness to learning experiences or professional expectations.
•Responding: Active participation and engagement in learning activities.
•Valuing: Expression of commitment to specific principles, ethics, or professional values.
•Organization: Integration of values into priorities, decision-making, and behavior.
•Characterization: Consistent and habitual demonstration of professional attitudes in

3. Psychomotor Domain (Practical skills and actions)

•Imitation: Reproduction of a demonstrated procedure or action.
•Manipulation: Performance of a skill with guidance and increasing control.
•Precision: Accurate and consistent execution with minimal errors.
•Articulation: Coordination of multiple skills into a smooth and logical sequence.
•Naturalization: Automatic, confident, and proficient performance in authentic settings.

Recognizing these levels helps educators select the right verbs and design learning experiences that promote deeper understanding.

Why Educational Objectives Matter?

Educational objectives are more than just words on a syllabus—they shape every part of the teaching and learning process.

•Curriculum Design: Objectives ensure that the curriculum is coherent and aligned from start to finish. They link institutional goals to individual lessons, ensuring every activity contributes to larger learning outcomes.

•Lesson Planning: Objectives help teachers focus on what matters most. When objectives are clear, teachers can select the most effective strategies—whether lectures, discussions, simulations, or projects—to achieve the desired learning.

•Assessment: Assessment should always align with objectives. If an objective expects students to "analyze," then the test or task should require analysis, not mere recall. Well-written objectives make assessment fair, focused, and meaningful.

•Student Motivation: When students know exactly what is expected of them, they can take more responsibility for their learning. Clear objectives guide study habits and promote self-regulation.

In short, educational objectives bring coherence, clarity, and purpose to teaching.

Examples of Well-Written Objectives:

Here are examples across Bloom's three domains:

Cognitive Domain (Knowledge and Thinking Skills)

•By the end of the lecture, the student will be able to list the main types of immune cells.

Affective Domain (Attitudes and Values)

•By the end of the seminar, the student will demonstrate active listening and empathy when discussing patient experiences.

Psychomotor Domain (Skills and Performance)

•By the end of the lab session, the student will perform proper aseptic technique when handling biological samples.

Common Mistakes When Writing Objectives:

Even experienced educators can fall into a few traps:

•Using vague verbs like "understand" and "learn." These are not measurable. Instead, use action verbs such as define, apply, analyze, or demonstrate.

•Combining multiple actions in one objective. Keep it focused on one behavior or outcome at a time.

•Writing objectives that don't match assessments. If your assessment checks for memorization but your objective says "evaluate," there's a mismatch.

•Setting unrealistic expectations. Objectives should match students' level of experience and available resources.

Best Practices for Writing Effective Objectives:

•Be SMART: Specific, Measurable, Achievable, Relevant, and Time-bound.

•Start with the learner: Write objectives from the student's perspective—what they will do, not what you will teach.

•Use precise action verbs: Refer to Bloom's taxonomy lists to pick verbs that clearly describe the intended performance.

Include context and criteria when needed: For example, "calculate drug dosage with 95% accuracy" or "write a summary using correct APA style."

•Check alignment: Make sure objectives, activities, and assessments all point to the same outcome.

•Review and refine: Ask peers or students for feedback to ensure clarity and practicality.

Conclusion

Educational objectives are the backbone of effective teaching. They transform broad goals into clear, measurable targets that guide both instruction and learning. When aligned with Bloom's taxonomy, objectives help educators plan lessons that move students from basic knowledge to higher-order thinking and real-world application.

Writing strong objectives may take time, but the payoff is substantial—better teaching, fairer assessment, and more meaningful learning experiences. In the end, clear objectives don't just guide teachers; they empower learners to take ownership of their education.

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Learning How to Learn in Higher Education: Informed Agenda for Teaching Staff

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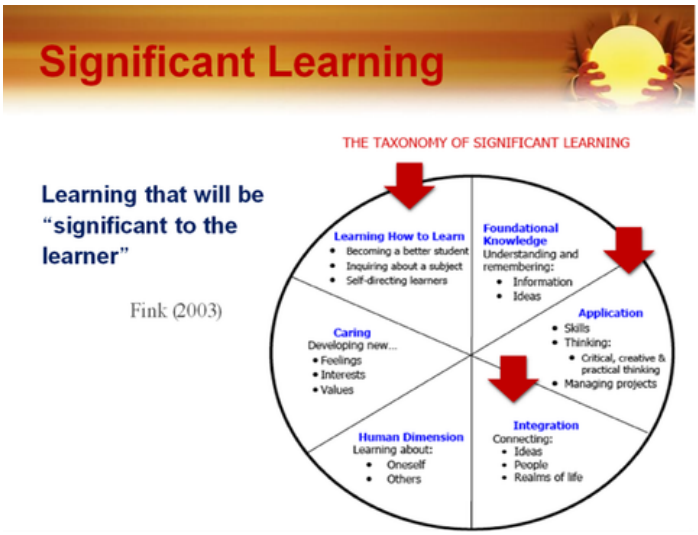
Abstract:
Effective learning is not an inherent gift but a skill that can be acquired, determined by the brain's functioning. By comprehending two essential cognitive modalities, the details of memory, and prevalent illusions of competence, the educators can construct training that facilitates genuine learning rather than mere rote memorization. The fundamental principle for educators is to present the evidence-based justification for transitioning from a content-delivery approach to a learning-facilitation model. Educators must understand the rationale behind good teaching tactics to build courses more efficiently.

Keywords: metacognition; self-regulated learning; retrieval practice; spacing; interleaving; feedback; desirable difficulties; higher education; academic development



Introduction:

Despite comprehensive research on effective learning, many university students continue to employ ineffective strategies that obstruct enduring understanding and transferability. "Learning how to learn" (LHTL), the metacognitive, motivational, and strategic competencies utilized by learners to plan, monitor, and regulate their educational processes offers a unified framework that synthesizes cognitive psychology, self-regulated learning, and instructional design within higher education (HE).

This paper clarifies (1) essential concepts (metacognition, self-regulation, desirable difficulties, retrieval practice, spaced learning, interleaving, feedback), (2) translates evidence into pedagogical practices suitable for various curricula and disciplines, (3) outlines assessment strategies to measure students' lifelong learning and teaching growth, (4) proposes a faculty development framework for institutional incorporation, and (5) addresses concerns regarding equity, inclusion, and digital implementation.

The brain functions in two separate modes: focused mode, characterized by intense and effortful attention on a specific topic or notion. Whereas the diffuse mode mostly represents a tranquil, resting state in which the brain establishes vast, subconscious connections, facilitating "big picture" cognition.

Universities increasingly expect graduates to adapt to emerging issues, collaborate across disciplines, and engage in lifelong learning beyond formal education. Numerous courses persist in emphasizing short-term performance on instant evaluations above long-term retention, transferability, and self-directed learning. The consequent "illusion of learning" is well-documented: students often confuse fluency (ease while study) with mastery (enduring, transferable knowledge), relying on rereading, underlining, and massed practice.

Educators under pressure to implement curriculum and meet accreditation standards, which limits their ability to actively teach learning techniques. “Learning how to learn” (LHTL) recontextualizes this challenge. LHTL constitutes a collection of teachable, assessable competencies integrated within disciplinary learning, rather than serving as an ancillary workshop: students engage in planning their learning (goal setting, strategy selection), monitoring progress (metacognitive awareness), regulating effort and emotion (motivation, self-efficacy), and employing effective strategies (retrieval, spacing, interleaving, elaboration, dual coding) accompanied by high-quality feedback. (Oakley’s, B & and Dr. Terrence Sejnowski, T. Coursera course, 2020).

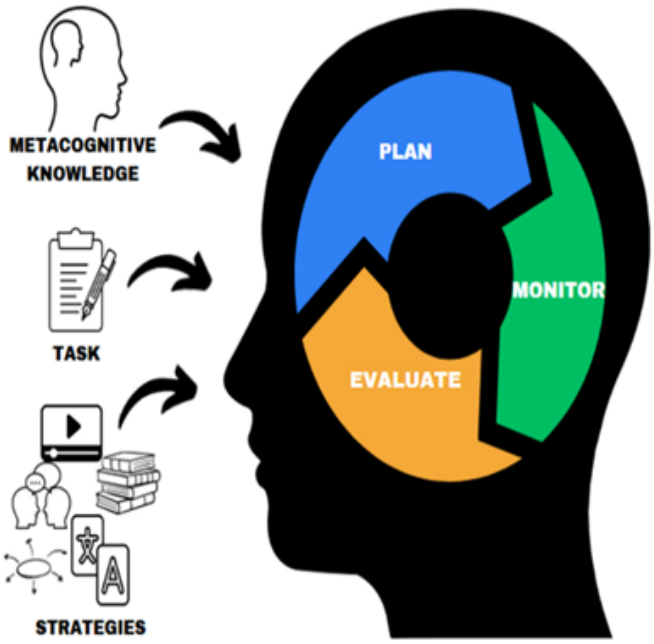
A programmatic approach to LHTL promotes fairness by rendering expert tactics transparent and teachable, so reducing reliance on prior cultural capital and emphasizing explicit training and practice for success.

(1) Essential & Fundamental concepts & core findings pertinent to higher education:

Metacognition and Self-Regulated Learning:

Metacognition pertains to awareness of one's cognitive processes (e.g., recognizing that spaced repetition enhances memory) and the regulation of those processes (planning, monitoring, assessing). Metacognition comprises two elements: awareness of strategies (recognize that self-testing enhances recall) and management of cognition (student may opt to prepare flashcards prior to an examination).
Educational psychology emphasizes the cyclical nature of learning: preparation (planning), performance (strategy implementation and monitoring), and reflection (evaluation).

Self-regulated learning (SRL) broadens this perspective by integrating motivation, self-efficacy, and emotional regulation, so encompassing motivational beliefs, affect, and behavioural management. Traditional SRL models illustrate cyclical stages: foresight (goal setting, strategy selection), performance (monitoring, strategy modification), and reflection (self-assessment, attributions).



In higher education, the explicit instruction of self-regulated learning is associated with increased persistence, enhanced learning strategies, and superior achievement. (Bjork, R, Dunlosky, J, & Kornell, N, 2013).

Desirable Difficulties: These are strategies that enhance effort in learning while augmenting long-term retention and transfer, such as spacing, interleaving, diversified practice, and generation. They appear more challenging initially yet result in superior long-term retention of knowledge. Educators should assist students in reinterpreting short-term challenges as indicators of profound consolidation rather than as failures. Desirable difficulties assert that more challenging learning experiences frequently result in enhanced retention. Spacing study periods, interleaving subjects, and participating in retrieval practice exemplify obstacles that, despite requiring effort, result in enhanced encoding. In higher education, LHTL integrates cognitive, motivational, and behavioural components into a cohesive framework.

Retrieval Practice: Actively recalling material from memory alters the memory itself, enhancing representations and retrieval pathways. Low-stakes tests, clicker questions, and one-minute essays yield diagnostic insights for both the student and the educator. Feedback is most impactful when it is prompt, task-oriented, and centred on process and self-regulation (rather than solely on accuracy), while allowing learners the opportunity to re-engage with the problem.

Spacing allocates practice throughout time to use forgetting and relearning cycles, hence improving consolidation. Interleaving combines various problem kinds or subjects to enhance discrimination and facilitate flexible retrieval. In higher education, the integration of spaced micro-quizzes with interleaved practice sets is both practical and effective.

Elaboration integrates novel concepts with pre-existing knowledge. Dual Coding, along with concrete examples, synchronizes verbal and visual channels; concrete-to-abstract sequencing aids pupils in comprehending concepts prior to generalization. These tactics are most effective when congruent with disciplinary traditions (e.g., mechanism diagrams in physiology; worked examples in engineering). (Hattie, J. & Donoghue, G. 2016).

(2). Pedagogical Practices for Educators:

a) Cease Lecture Interruption: Organize lectures of 50, 75, or 90 minutes to incorporate breaks. Following the elucidation of a complex idea, provide students with a 1-2 minute "diffuse mode break"—free from phones, allowing their thoughts to wander, engage in doodling, or gaze out the window. This facilitates subconscious consolidation.

b) Encourage Spacing: Assign tasks that require students to interact with the content, subsequently set it aside, and revisit it later. This inherently utilizes both modalities. For instance, present an idea in Monday's lecture, assign preparatory reading for Wednesday's seminar on the same subject, and thereafter administer a low-stakes quiz on Friday.

c) Normalize Struggle: Educate kids regarding these modalities. Experiencing a mental block while in focused mode, such as during a problem set, indicates the necessity of a break to allow the diffuse mode to function effectively.This recontextualizes "failure" as an essential component of the learning process.

Chunking: A chunk is a cohesive unit of information that is interconnected by significance and application. Proficiency in a domain fundamentally entails possessing an extensive repository of well-formed cognitive units. Deliberately construct chunks within the classroom by actively assisting students in forming them, rather than only presenting knowledge.

Chunking helps in:

1.Direct Attention: Commence with the principal concept.

2.Comprehend the Fundamental Concept: Convey the essential significance.

3.Practice Context: Demonstrate the application of the chunk in various scenarios.

4.Establish Connections Between New and Existing Knowledge: Employ analogies and metaphors that associate new, intricate content with concepts familiar to pupils. This expands upon established neuronal frameworks.

5.Develop "Conceptual Maps": Offer visual representations (such as flowcharts or mind maps) that illustrate the interconnections among the segments of your course

6.Illusions of Competence and the Significance of Recall: Rereading notes and underlining material foster a false sense of understanding. The information appears familiar, yet this familiarity is erroneously perceived as mastery. The most efficacious learning method is active recall, which involves attempting to retrieve information from one's own memory. (Oakley, B & and Dr. Terrence Sejnowski, T. Coursera course, 2020).

Improvement for Educators:

I. Prohibit Passive Review, Enforce Active Recall: Structure your class sessions and assignments to prioritize retrieval practices.

II. Initiate lectures with the question, "What did we learn last time?" compelling students to recollect information without consulting their notes.

III.Employ Mini-Quizzes: Regular, low-stakes quizzes serve largely as a tool for learning rather than assessment. They compel a recall.

IV. The "One-Minute Paper": At the conclusion of the lesson, inquire: "What was the most significant point discussed today?"

V. What question occupies your thoughts most prominently? Teach Students How to Study: Explicitly tell them that rereading is a poor strategy. Advocate for the Feynman Technique (explaining a concept in simple language as if to a novice) and self-testing. (Butler, A. C. (2010).

VI. Procrastination (The Habit to delay) is a habitual cycle motivated by the brain's inclination to evade tasks that are perceived as unpleasant. The essential factor is to regulate habits rather than solely relying on willpower. The teaching staff assist by implementing the "Starting Easy" approach, utilizing the Pomodoro Technique. Explicitly endorse this strategy. Urge kids to dedicate a mere 25 minutes to concentrated effort. This renders the first discomfort of commencement feel manageable. Subsequently, create "Process-Oriented" Assignments: Rather than a singular final paper deadline, decompose the task with process checkpoints: "Submit your thesis statement and three sources by Week Three," "Submit a comprehensive outline by Week Five." This incentivizes the process rather than solely the outcome. Ambiguity and last-minute alterations significantly contribute to student procrastination; therefore, eliminate procrastination by providing a clear, consistent course schedule and distributing tasks evenly. (Oakley, B & and Dr. Terrence Sejnowski, T. Coursera course, 2020).

Actionable Teaching Strategies Summary

Concept from Course	Actionable Strategy for Teaching Staff
Focused & Diffuse Modes	Chunk lectures with breaks. Use spaced repetition in your schedule
Chunking	Structure lessons to explicitly build chunks. Use analogies and concept maps.
Illusions of Competence	Replace passive review with active recall (mini-quizzes, one-minute papers).
Procrastination	Teach the Pomodoro Technique. Break large projects into process-oriented steps.
Testing & Desirable Difficulty	Use frequent, low-stakes testing as a learning tool. Embrace retrieval practice.

The incorporation of these principles enables staff to transition from mere knowledge dispensers to architects of learning experiences, equipping students not only with disciplinary content but also with the meta-skills necessary to become self-directed, effective lifelong learners—the paramount objective of higher education.

Ten Optimal Learning Strategies for Higher Education Students:

1. Employ Active Recall: Assess your knowledge rather than reviewing notes.
2. Distribute Study Sessions: Revisit content over several days or weeks.
3. Diverse Subjects: Interleave several themes rather than grouping them sequentially.
4. Enhance Visual Representation: Employ diagrams, flowcharts, and dual coding techniques.
5. Instruct Others: Articulating concepts to another individual solidifies comprehension.
6. Develop Concept Maps: Connect concepts for enhanced comprehension.
7. Engage in self-reflection: Inquire, 'What knowledge have I acquired?' What do I continue to struggle with?
8. Establish Specific Objectives: Decompose tasks into actionable components.
9. Engage in Practice Under Examination Conditions: Replicate the strain.
10. Utilize Feedback: Acquire knowledge from assessments, colleagues, and mentors. (Federici, C. 2021)

(3). Evidence Findings

A considerable body of research highlights several important effects related to higher education: Retrieval practice exceeds restudy in enhancing long-term retention and transfer, especially in authentic classroom settings. The benefits of spacing are uniform across different domains, with optimal intervals dependent on the desired retention period.

Interleaving improves discrimination and transfer, especially in cases of ambiguous problem types (e.g., statistical tests; similar conceptual categories). Explanatory and process-oriented feedback significantly. improve subsequent performance compared to simple accuracy.Metacognitive judgments often demonstrate miscalibration; explicit calibration activities, such as prediction-postdiction and test wrapping, prove advantageous.

Self-Regulated Learning (SRL) education, which includes goal setting, planning, and monitoring, improves academic achievement and perseverance. Demonstrated examples reduce cognitive load for novices; progressively reducing the supplied steps encourages independence. Motivation and mindsets (self-efficacy, growth mindset beliefs) influence the use of strategies, hence impacting persistence. (Bjork, R, Dunlosky, J & Kornell, N (2013).

Despite variations in impact sizes across contexts, the overarching finding is clear: structured retrieval opportunities, spaced or interleaved practice, targeted feedback, and explicit metacognitive instruction provide more lasting learning outcomes than traditional methods of "content coverage coupled with high-stakes assessments." (Butler, A. C 2010).

Converting Evidence into Curriculum Development

Utilization of a basic framework: PRIME

The PRIME approach encourages students to become more reflective learners (knowing how they are being assessed, understanding how it links to their learning) rather than just responding to arbitrary tasks. It helps in Improving assessment quality, supporting curriculum alignment and coherence, enhancing student engagement and autonomy, and adapting to changing demands by:

Plan: Develop a learning plan that clearly defines learning outcomes and success criteria; collaboratively construct study schedules that inherently incorporate spaced learning.

Retrieve: incorporate low-stakes retrieval during both contact and non-contact periods.

Interleave and diversify: combine similar subjects and problem types; alternate modalities.

Monitor and calibrate: Oversee and adjust, employ prediction–postdiction, error analyses, and exam wrappers to refine metacognition.

Elicit feedback and explain: Solicit input and elucidate. deliver prompt, process-oriented feedback; instruct students on how to request and utilize it. (Federici, C. 2021).

Develop a week-by-week study schedule that allocates retrieval and practice activities, such as a micro-quiz on Monday, an application activity on Wednesday, and a reflection on Friday.).

Class Meetings

- Commence with 3–5 retrieval questions (ungraded) aimed at assessing prior knowledge pertinent to the day's topic.
- Utilize think-pair-share to elicit thinking, reveal prevalent misconceptions, and provide concise process-oriented criticism.
- Conclude with a one-minute "muddiest point" to identify spacing objectives for the subsequent session.
- Extracurricular Framework
- Substitute passive readings with guided notes that necessitate generative replies (e.g., elucidate a figure, illustrate a mechanism).
- Provide interleaved problem sets that necessitate the selection of a method rather than merely executing a predetermined one.
- Establish a spaced micro-quiz schedule (e.g., 5–7 items per week) that revisits previously covered topics. (Chi, M. & Wylie, R. (2014).

(4) delineates assessment methodologies to evaluate students' lifelong learning and teaching development:

- Implement low-stakes mastery assessments (pass/fail) initially; subsequently escalate complexity and realism.
- Implement test wrappers: following each assessment, students evaluate errors, method use, and calibration (predicted against actual score), subsequently drafting a plan to modify their study approach.
- Implement two-stage assessments: an individual examination succeeded by a collaborative retake; the latter functions as organized feedback and retrieval.
- Enhance self-efficacy by providing initial achievements accompanied by comments focused on the process rather than the individual (e.g., "Your diagram effectively identified the causal mechanism—continue utilizing that method"). (Butler, A, 2010).

(5) Digital and AI-Enhanced Execution

Learning platforms can automate spacing, randomize interleaving, and provide timely feedback.

- Implement weekly auto-released cumulative micro-quizzes consisting of 5 to 8 items.
- Utilize question banks categorized by themes and difficulty; intersperse through mixed quizzes.
- Encourage student-generated retrieval: learners formulate questions (along with answers/explanations) and evaluate each other's contributions.With AI tools, prompt students to:

Generate varied practice problems, then explain solutions back to the tool (retrieval + elaboration).

Transform notes into retrieval prompts and spaced reminder calendars.

Conclusion

The acquisition of learning methodologies is instructive, evaluable, and capable of institutional expansion. By including metacognition, retrieval, spacing, interleaving, and feedback into daily design, higher education instructors can facilitate students' transition from performance-driven cramming to lasting, transferable comprehension.

The PRIME structure provides a straightforward and practical foundation. When bolstered by program-level evaluation and faculty development, LHTL integrates into the learning culture—enhancing outcomes, promoting equity, and equipping graduates for lifetime learning.

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من التلقين إلى التمكين
تطبيق استراتيجية التقييم من أجل التعلم في تعليم الهندسة والتكنولوجيا

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الجزء الأول " الإطار المفاهيمي والاستراتيجي لتطبيق التقييم من أجل التعلم في التعليم الهندسي

الملخص

تشهد الساحة التعليمية العالمية تحولاً جوهرياً في فلسفة تعليم الهندسة، ينتقل من النماذج التقليدية القائمة على التلقين والحفظ إلى نماذج تمكينية تركز على تطوير الكفاءات الشاملة للطلاب.

يقدم هذا المقال الإطار المفاهيمي والاستراتيجي لتنفيذ استراتيجية التقييم من أجل التعلم (Assessment for Learning- AfL) كحجر زاوية في هذا التحول. حيث يستعرض المقال الأسس الفلسفية لهذا النموذج، ويبين الفروق الجوهرية بينه وبين التقييم التقليدي، مقدماً تحليلاً تشخيصياً للتحديات والفرص في سياق التعليم الهندسي.

يختتم المقال بمقترح لخارطة طريق مرحلية للتحول المؤسسي، تهدف إلى بناء ثقافة تعليمية جديدة تركز على تمكين الطالب وجعله شريكاً فعالاً في رحلة التعلم.

الكلمات المفتاحية: التقييم من أجل التعلم، التعليم الهندسي، التحول التعليمي، التمكين، التلقين، الإصلاح البيداغوجي، التعلم مدى الحياة.

1- المقدمة:

الحتمية الإصلاحية للتعليم الهندسي

في ظل المتغيرات المتسارعة للثورة الصناعية الرابعة والتحول الرقمي، لم تعد النماذج التقليدية في تقييم طلاب الهندسة، القائمة على التلقين وقياس الحفظ، قادرة على إعداد الخريجين للمتطلبات المعاصرة. تشير الدراسات إلى وجود فجوة واضحة بين مخرجات التعليم الهندسي التقليدي ومتطلبات سوق العمل، حيث يفتقر الخريجون إلى المهارات الناعمة والقدرة على التكيف مع بيئات العمل المتغيرة (Litzinger et al., 2011)

يكمن أحد التحديات الرئيسية في هيمنة أساليب التقييم الختامي (Summative Assessment)، حيث يكتشف الطالب الفجوات في معرفته عندما يكون الوقت قد فات للعلاج، مما يعزز التعلم السطحي ولا يتوافق مع الممارسة الهندسية الواقعية القائمة على التكرار والتصميم وإعادة التصميم. هناك حاجة ملحة إلى نوعية جديدة من المهندسين؛ مهندس لا يتمتع بالكفاءة التقنية العميقة فحسب، بل يمتلك أيضاً قدرات متميزة في حل المشكلات المعقدة بشكل إبداعي، والعمل التعاوني ضمن فرق متعددة التخصصات، والتعلّم المستمر مدى الحياة. الفرضية المحورية لهذا المقال هي أن التنفيذ الاستراتيجي للتقييم من أجل التعلم (Assessment for Learning) يُمثل أداة فعالة وقائمة على الأدلة للانتقال بالتعليم الهندسي من ثقافة التلقين السلبية إلى ثقافة تمكين الطالب الفعال.

2- الإطار النظري: من الحكم إلى النمو

يشكل التقييم من أجل التعلم نقلة نوعية في الغاية من التقييم. فبينما يركز التقييم التقليدي (Assessment of Learning) على الحكم النهائي، يركز التقييم من أجل التعلم (Assessment for Learning) على دعم النمو المستمر (Black & Wiliam, 2009). وهذا التحول يتطلب إعادة نظر جذرية في فلسفة التقييم وأدواته.

2.1 الأسس الفلسفية للتقييم من أجل التعلم

ينطلق التقييم من أجل التعلم من رؤية بنائية (Constructivist) تبنى المعرفة من خلال التفاعل النشط بين المعلم والمتعلم. وتستند هذه الرؤية إلى عدة مبادئ أساسية:

- التعلم عملية نشطة يبني فيها المتعلم معرفته
- التقييم جزء لا يتجزأ من عملية التعلم
- التغذية الراجعة أداة فعالة لتحسين التعلم
- المشاركة النشطة للطالب أساسية للتعلم العميق

يُعرّف بلاك وويليام التقييم من أجل التعلم بأنه "عملية البحث عن وتفسير الأدلة من قبل المعلمين والمتعلمين أنفسهم، لتحديد مكان المتعلمين في مسيرة تعلمهم، والاتجاه الذي يحتاجون إلى السير فيه، وأفضل السبل للوصول إلى هناك" (Black & Wiliam, 2009). هذا التعريف يؤكد على تحول جذري عن النماذج التقليدية: فالتقييم يصبح عملية مستمرة، انعكاسية، وديناميكية، منسوجة بشكل عضوي في نسيج التعلم اليومي، وليس حدثاً منفصلاً ونهائياً يتبع عملية التعلم.

2.2 الفروق الجوهرية بين نماذج التقييم

الجدول (1): مقارنة بين نماذج التقييم من التعلم والتقييم من أجل التعلم

الجانب	التقييم من التعلم	التقييم من أجل التعلم
الهدف	قياس التحصيل النهائي	تحسين عملية التعلم
التوقيت	نهاية الوحدة أو المقرر	مستمر خلال عملية التعلم
الدور الطلابي	مستقبل سلبي	مشارك نشط
أدوات التقييم	امتحانات موحدة	أدوات متنوعة (روبرك، ملف إنجاز)
دور التغذية الراجعة	تصنيفي وحكمي	تطوري وداعم
الجمهور الأساسي	صانعو السياسات، الإداريون	الطلاب والمعلمون
التأثير على الدافعية	قد يثبط همم الضعفاء	يُمكّن جميع المتعلمين

2.3 الأدلة البحثية على فعالية التقييم من أجل التعلم:

تم توثيق الأثر الإيجابي للتقييم من أجل التعلم بشكل واسع ومتكرر في الأدبيات التربوية العالمية. فقد خلصت مراجعات منهجية شاملة إلى أن استراتيجيات التقييم التكويني، التي تشكل جوهر التقييم من أجل التعلم، هي من بين أكثر التدخلات التعليمية فعالية في تحسين التحصيل الدراسي للطلاب، حيث يمكن أن يعادل حجم تأثيرها تقدماً إضافياً يصل إلى عدة أشهر دراسية، مع إفادتها بشكل خاص للطلاب منخفضي التحصيل، مما يسهم في تحقيق مبدأ الإنصاف والمساواة في التعليم (OECD, 2005).

وتظهر الأبحاث أن التقييم من أجل التعلم يعزز ما يسمى "ما وراء المعرفة " (Metacognition) لدى الطلاب، حيث يصبحون أكثر وعياً بعمليات تفكيرهم الخاصة وأكثر قدرة على تنظيم تعلمهم ذاتياً. وهذا يتوافق مع متطلبات التعليم الهندسي الحديث الذي يحتاج إلى مهندسين قادرين على التعلم الذاتي والتكيف مع التقنيات المتطورة باستمرار.

3 . السياق التعليمي: تحليل تشخيصي للتحديات والفرص

إن نجاح اعتماد التقييم من أجل التعلم ليس مجرد نقل تقني بسيط لمجموعة من الممارسات؛ بل هو عملية تتطلب فهماً عميقاً ودقيقاً للنظام البيئي الخاص بالتعليم العالي، بكل تعقيداته وإمكاناته. وتشير التحليلات إلى وجود مجموعة من التحديات المترابطة، ولكن في المقابل، توجد فرص حقيقية يمكن البناء عليها لتحقيق إصلاح ذي معنى.

3.1 العقبات الهيكلية والمنظومية:

- اكتظاظ المناهج والهياكل الأكاديمية المقيدة: غالباً ما تتصف المناهج الهندسية في الجامعات باكتظاظها بالمحتوى النظري، مدفوعة بالسعي لتحقيق "التغطية الشاملة" للموضوعات. هذا الاكتظاظ لا يترك مساحة كافية للممارسة التكرارية، والتغذية الراجعة التفصيلية، والمراجعة المتعمقة، وهي جميعاً عناصر حيوية للتقييم من أجل التعلم.
- كثافة أعداد الطلاب: الفصول الدراسية كبيرة العدد، والتي تعد سمة شائعة في العديد من الجامعات، تُشكل حاجزاً كبيراً أمام تقديم تغذية راجعة فردية ذات معنى، وهي حجر الزاوية في أي نموذج فعال للتقييم من أجل التعلم.

- أطر الاعتماد الأكاديمي : بينما تؤكد هيئات الاعتماد الدولية مثل ABET بشكل متزايد على أهمية التعلم القائم على النتائج والتقييمات المتنوعة، قد تظل بعض أنظمة الاعتماد المحلية تركز بشكل أكبر على المدخلات الكمية القابلة للقياس بسهولة (كعدد المختبرات أو الكتب) والتقييمات التقليدية الموحدة، مما قد يخلق بيئة تنظيمية لا تشجع على الابتكار في الممارسات التقييمية.

3.2 العوامل البشرية والثقافية:

• جاهزية هيئة التدريس وهياكل الحوافز: يشكل العديد من أعضاء هيئة التدريس في كليات الهندسة خبراء في تخصصاتهم الدقيقة، لكنهم قد لا يكونون قد تلقوا تدريباً كافياً في البيداغوجيا الحديثة أو نظريات التقييم. يضاف إلى ذلك أن أنظمة الترقية والعمل الدائم في العديد من الجامعات تمنح أولوية ساحقة للأبحاث المنشورة على حساب التميز في التدريس والابتكار التعليمي، مما لا يوفر حافزاً كافياً للاستثمار الجوهري في الوقت والجهد المطلوبين لإعادة تصميم المقررات وفق مبادئ التقييم من أجل التعلم.

• توقعات الطلاب وجاهزيتهم: غالباً ما يدخل الطلاب الجامعة قادمين من أنظمة تعليمية ما قبل الجامعي تركز بشكل مكثف على الحفظ والاسترجاع من أجل اجتياز امتحانات عالية المخاطر. هذا يخلق " ثقافة اعتماد " راسخة، حيث يتوقع الطلاب أن يكونوا مستقبلين سلبيين للمعرفة، وقد يبدون مقاومة أو يجدون صعوبة في البداية للتكيف مع الدور النشط والمتمحور حول التوجيه الذاتي الذي يتطلبه التقييم من أجل التعلم.

• الحساسيات الثقافية والتغذية الراجعة: في بعض السياقات الثقافية، قد يُنظر إلى النقد المباشر، وهو عنصر أساسي في التغذية الراجعة البناءة، على أنه أمر محرج أو مسيء للكرامة. لذلك، يجب تنفيذ التقييم من أجل التعلم بذكاء ثقافي، مع التأكيد على أن التغذية الراجعة هي هديفة تهدف إلى النمو وليست هجوماً شخصياً، وترسيخ فكرة أن السعي للإتقان هو جهد جماعي تعاوني.

4 . خارطة طريق التحول المؤسسي

إن التغيير الحقيقي لا يحدث بين عشية وضحاها، بل يحتاج إلى خارطة طريق واضحة تأخذ بعين الاعتبار تعقيدات النظام الأكاديمي وتحدياته. يقترح هذا المقال خارطة طريق مرحلية تمتد على ثلاث مراحل رئيسية:

المرحلة الأولى: التأسيس

- تشكيل فريق قيادي واختيار 2-3 مقررات تجريبية
- تدريب أعضاء هيئة التدريس على فلسفة AfL وأدوات القياس
- إعادة تصميم المقررات التجريبية

المرحلة الثانية: التجريب والتوسع

- تنفيذ المقررات التجريبية وجمع البيانات (كمية ونوعية)
- عقد ورش تحسين فصلية وتعديل الاستراتيجيات بناءً على النتائج
- التوسع التدريجي ليشمل 50-75% من المقررات
- نشر نتائج أولية في مؤتمرات محلية

المرحلة الثالثة: الاستدامة والدمج المؤسسي

- تحديث السياسات الأكاديمية وتطوير نظام حوافز للتميز في التدريس
- إنشاء وحدة دائمة للتطوير التعليمي لدعم أعضاء هيئة التدريس
- نشر أبحاث في مجلات محكمة وبناء شراكات استراتيجية
- دمج ممارسات AfL في ثقافة المؤسسة وهياكلها الرسمية

مؤشرات النجاح الرئيسية:

- تحسن درجات الطلاب ومعدلات النجاح
- زيادة تفاعل الطلاب
- رضا الطلاب وأعضاء هيئة التدريس عن عملية التقييم
- إنتاج علمي منشور في مجال التعليم الهندسي

6 . خاتمة وتوصيات

إن رحلة التحول من التلقين إلى التمكين تمثل تحدياً، لكنها ضرورة ملحة لإعداد مهندسين قادرين على قيادة التغيير في عالم متسارع. يقدم هذا المقال إطاراً متكاملاً وخارطة طريق محسّنة لتحقيق هذا التحول الجوهري.

التوصيات الاستراتيجية:

1. تبني رؤية استراتيجية شاملة للتحول نحو التقييم التمكيني على مستوى الكلية أو الجامعة.
2. الموافقة على خارطة الطريق المقترحة والبدء في المرحلة الأولى (التأسيس).
3. تخصيص الموارد اللازمة (بشرية، مالية، تقنية) لدعم عملية التحول وضمان استدامتها.
4. بناء نظام متكامل للتقييم والمتابعة لقياس أثر هذا التحول وتوجيه قرارات التطوير المستقبلية.

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فاعلية دمج نظم المعلومات الجغرافية (GIS) في تعزيز مخرجات التعلم بالتعليم الطبي (مراجعة تحليلية)

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ملخص:
تهدف هذه الورقة البحثية إلى استقصاء الدور التربوي لنظم المعلومات الجغرافية (GIS) في تطوير التعليم الطبي، متجاوزةً الطرح التقليدي الذي يركز على الجانب التطبيقي الصحي فقط. تنطلق الدراسة من الإشكالية الرئيسية المتمثلة في الحاجة إلى تبني استراتيجيات تعلم حديثة لمواجهة تعقيدات المشكلات الصحية في العالم الحقيقي، والتي تتطلب من الخريج الطبي امتلاك مهارات تحليلية ونقدية متقدمة. تعتمد المنهجية على التحليل النقدي والمراجعة المنهجية للأدبيات ذات الصلة. وتخلص النتائج إلى أن دمج GIS في المناهج الطبية، عند تصميمه وفقاً لنظريات التعلم البنائي والقائم على المشكلات، يمكن أن يعزز بشكل كبير مهارات التفكير النقدي، والتحليل المكاني، وحل المشكلات المعقدة لدى الطلاب. كما تسلط الضوء على التحديات التنظيمية والتقنية التي تواجه هذا الدمج. تختتم الورقة بتقديم توصيات إجرائية لتطوير المناهج، وتأهيل أعضاء هيئة التدريس، واقتراحات لبحوث مستقبلية.

الكلمات المفتاحية: نظم المعلومات الجغرافية، التعليم الطبي، مخرجات التعلم، التعلم القائم على المشكلات، التحليل المكاني، التفكير النقدي.

المقدمة:

تشهد الأنماط التربوية "paradigmes" التعليم الطبي تحولاً جوهرياً من النموذج القائم على التلقين والحفظ إلى النموذج القائم على الكفاءة وحل المشكلات (Frank et al., 2010). في ظل هذا التحول، برزت الحاجة إلى أدوات تعليمية مبتكرة تمكّن الطلاب من ربط العلوم الطبية المجردة بالسياقات الواقعية المعقدة. تأتي نظم المعلومات الجغرافية (GIS) كأحد هذه الأدوات الواعدة، التي لم يُستغل إمكاناتها التربوية بالكامل بعد في العديد من الكليات الطبية العربية.

على الرغم من تزايد الأدبيات التي تناقش تطبيقات GIS في مجال الصحة العامة والوبائيات (عبد العزيز، ٢٠١٨؛ أبو زيد، ٢٠٢٠)، إلا أن معظمها يركز على الجانب العملي الإجرائي، متجاهلاً الإطار النظري التربوي الذي يحكم دمج هذه التقنية في العملية التعليمية. يشكل هذا "الفراغ المعرفي" المشكلة المركزية لهذه الورقة. لذلك، تهدف هذه الدراسة إلى الإجابة على السؤال الرئيسي: كيف يمكن لدمج نظم المعلومات الجغرافية (GIS) في المناهج الطبية أن يساهم في تحقيق مخرجات تعلم متقدمة، مثل التفكير النقدي ومهارات التحليل المكاني، من منظور نظريات التعلم الحديثة؟

1. الإطار النظري: التقاء نظريات التعلم مع التقنيات الجغرافية:

١.١ نظم المعلومات الجغرافية: أكثر من مجرد خرائط:

تُعرف نظم المعلومات الجغرافية على أنها إطار منهجي متكامل لجمع، وإدارة، وتحليل، وعرض البيانات ذات المرجعية المكانية (Chang, 2019). قوتها لا تكمن في إنتاج الخرائط فحسب، بل في قدرتها التحليلية على كشف الأنماط والعلاقات والاتجاهات الخفية في البيانات الصحية والبيئية والسكانية.

١.٢ نظريات التعلم ذات الصلة:

يخدم دمج GIS في التعليم الطبي عدداً من النظريات التربوية الراسخة:

التعلم البنائي (Constructivism): يؤكد على أن المتعلم يبني معرفته بشكل فعال من خلال التفاعل مع الخبرات (Dewey, 1938). يمكّن GIS الطلاب من التفاعل مع بيانات حقيقية، واختبار فرضياتهم، وبناء استنتاجاتهم الخاصة حول علاقة المكان بالصحة.

التعلم القائم على المشكلات (PBL): يعتبر GIS أداة مثالية لتطبيق هذا النهج، حيث يمكن للطلاب استخدامه لتحليل مشكلة صحية معقدة (كتفشي وباء) في منطقة جغرافية محددة، مما يعزز التعلم الذاتي والعمل الجماعي (Barrows, 1996).

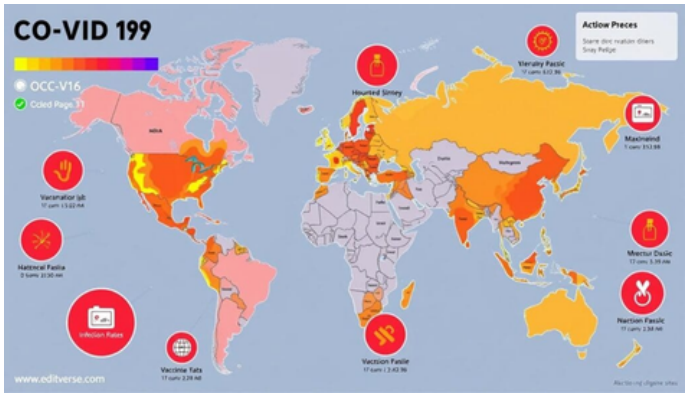
التعلم القائم على المكان (Place-Based Learning): تربط هذه النظرية عملية التعلم بالبيئة المادية والاجتماعية المحيطة (Sobel, 2004). يجسد GIS هذا المبدأ بشكل حرفي، مما يربط المعرفة الطبية بالسياق الجغرافي والاجتماعي للمجتمع الذي يخدمه الطبيب.

٢. التحليل والمناقشة: تطبيقات GIS كأدوات لتحقيق مخرجات التعلم:

يمكن تحليل الدور التعليمي لـ GIS من خلال تأثيره على المهارات والقدرات التي يطورها لدى طالب الطب:

٢.١ تعزيز التفكير النقدي والتحليل المكاني من خلال الوبائيات:

بدلاً من دراسة الأمراض المعدية كحقائق مجردة، يمكن للطلاب استخدام GIS لتحليل بيانات حقيقية عن انتشار مرض مثل "الملاريا" أو "كوفيد-١٩" في منطقة ما. هذه العملية – التي تشمل طرح أسئلة، وربط بيانات صحية ببيانات بيئية (كمستويات الرطوبة أو تواجد المستنقعات)، وتفسير الأنماط على الخرائط – هي جوهر التفكير النقدي والتحليل المكاني (Kistemann et al., 2002). هذا يتوافق مباشرة مع مخرجات التعلم المتعلقة بـ "القدرة على تحليل العوامل البيئية والاجتماعية المحددة للصحة".



٢.٢ تنمية مهارات حل المشكلات المعقدة عبر تخطيط الخدمات الصحية:

يمكن تصميم مشروع تعليمي يطلب من الطلاب استخدام GIS لتحديد الموقع الأمثل لمركز صحي جديد في منطقة حضرية. يتطلب هذا تحليل طبقات متعددة من البيانات: الكثافة السكانية، التوزيع العمري، مواقع المرافق الحالية، شبكة الطرق، ومستويات الدخل. هذا النشاط يحاكي مشكلات العالم الحقيقي ويعزز مهارات حل المشكلات المعقدة، والعمل الجماعي، واتخاذ القرار القائم على الأدلة (ملحم، ٢٠١٩).

٢.٣ تطوير الكفاءة الثقافية والاجتماعية:

من خلال تحليل الخرائط التي تظهر ارتباط مؤشرات الصحة (كسوء التغذية أو وفيات الأطفال) بمؤشرات الفقر والحرمان الاجتماعي، يطور الطلاب فهماً أعمق للمحددات الاجتماعية للصحة. هذا يبني التعاطف والكفاءة الثقافية اللازمة لممارسة طبية أكثر إنصافاً وفعالية.

٣. التحديات في ضوء جودة العملية التعليمية:

إن التحديات التي أشار إليها المقال الأصلي لها انعكاسات مباشرة على جودة التعلم:

ضعف الكوادر المؤهلة: يؤدي نقص تدريب أعضاء هيئة التدريس على دمج GIS تربوياً إلى تحويله إلى أداة عرض تقنية بدلاً من كونها محوراً للتعلم النشط، مما يحد من تحقيق مخرجاته التعليمية المرجوة.

محدودية البنية التحتية: عدم توفر معامل حاسوب مجهزة أو برامج مرخصة يخلق فجوة رقمية بين الطلاب، ويحرمهم من فرص التعلم المتكافئة.

عدم وجود أطر تقييم مناسبة: كيف يمكن تقييم تطور "مهارة التحليل المكاني" لدى الطالب؟ يتطلب هذا تطوير أدوات تقييم مبتكرة مثل مقاييس التقييم الروبريك (Rubrics) لتقييم المشاريع القائمة على GIS، وهو ما تفتقره العديد من المؤسسات.

٤. الاستنتاجات والتوصيات:

٤.١ الاستنتاجات:

1. يمثل دمج GIS في التعليم الطبي نقلة نوعية من التعلم السلبي إلى التعلم النشط القائم على الاستقصاء وحل المشكلات.
2. تتجاوز فاعلية GIS كونها أداة تقنية إلى كونها منصة لتحقيق مخرجات تعلم متقدمة كالتفكير النقدي والتحليل المكاني.
3. نجاح هذا الدمج مرهون بتصميم أنشطة تعلمية مقصودة (Intentional Learning Design) تستند إلى نظريات التعلم، وليس مجرد إضافة تقنية للمناهج القائمة.

٤.٢ التوصيات:

1. **تطوير المناهج:** تصميم "وحدة تعليمية إلزامية" في مناهج الصحة العامة والوبائيات، تركز على تطبيقات GIS في تحليل المشكلات الصحية المحلية، وتُدرَج ضمن خطة المقرر وليس كأنشطة اختيارية.
2. **بناء القدرات:** تنفيذ برنامج تطوير مهني مستمر لأعضاء هيئة التدريس، لا يعلمهم استخدام برامج GIS فحسب، بل أيضاً كيفية تصميم أنشطة تعلمية وتقويمها بناءً عليها.
3. **الاستدامة والتكلفة:** التوجه نحو اعتماد البرامج مفتوحة المصدر مثل QGIS وبناء شراكات مع أقسام الجغرافيا ونظم المعلومات لتقليل التكاليف وتبادل الخبرات.
4. **البحث والتقويم:** إجراء دراسات تجريبية وشبه تجريبية لقياس الأثر الملموس لدمج GIS على مهارات محددة لدى الطلاب، ونشر هذه النتائج لتكون دليلاً للمؤسسات الأخرى.

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