Learning Innovation Centre

LEARNING BEYOND AI

A Framework for Strengthening Human Intelligence in the Age of AI

Prepared by:
Zunaira Khalid & Rimsha Munir

Department:
Learning Innovation Center-UCP

University of Central Punjab
UCP
Lahore, Pakistan 2002

Contents

1. Program Overview

1.1 Purpose

The Learning Beyond AI initiative is a structured intervention within the Student Pedagogy Partnership (SPP) Program at the Learning Innovation Center (LIC), designed to strengthen the integrity of teaching, learning, and assessment in the age of generative AI. Built on the premise that the long-term response to generative AI is not to restrict its use but to establish classrooms that strengthen human intelligence. The initiative supports educators in redesigning pedagogy, classroom practices, and assessment to foster authentic thinking and meaningful learning within an AI-infused educational environment. Through teaching and learning practices that strengthen human intelligence, students are encouraged to make their thinking visible, apply knowledge in meaningful contexts, and demonstrate conceptual mastery, building practices of thinking and learning that cannot be convincingly replicated through AI-generated output alone.

The initiative operates through a distributed partnership model that aligns internal faculty support through a network of Departmental Pedagogy Partners (DPPs). Each DPP supports assigned faculty partnerships per semester, working collaboratively with instructors to redesign classrooms using the framework. The DPPs are, in turn, supported by the core LIC team through training, mentoring, and ongoing consultation. Together, this collaborative model builds institutional capacity to create an AI-ready learning environment that cultivates critical and conceptual thinking while remaining resilient to current and future AI technologies.

1.2 Scope and Limits

The initiative provides a pedagogical framework for strengthening human intelligence in an AI-infused educational environment. It supports educators in rethinking teaching practices, classroom interactions, learning experiences, and assessment so to make learners active participants in the learning process rather than passive consumers of AI-generated content.

Through the three pillars; Visible Thinking, Relational Thinking, and Conceptual Mastery, the initiative encourages learning environments that make student thinking observable, connect knowledge to meaningful contexts, and develop deep conceptual understanding. It recognizes that AI is becoming an integral part of teaching and learning and focuses on helping educators integrate it responsibly while preserving the cognitive, social, and conceptual processes that underpin meaningful learning. The framework supports faculty in identifying where AI can enhance learning, where human thinking should remain central, and how classroom practices and assessments can be designed to encourage genuine engagement.

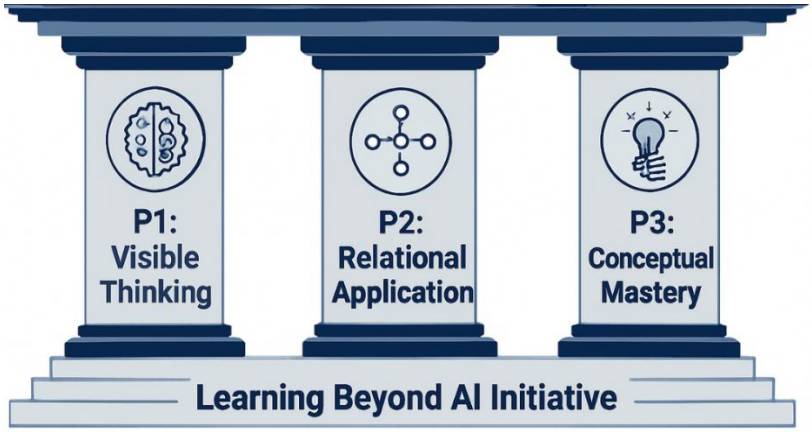
The framework is intended as a pedagogical guide rather than a prescriptive model. It does not replace disciplinary expertise, curriculum design, institutional AI policies, or professional judgement. Because disciplines differ in their learning outcomes, teaching approaches, and assessment practices, Learning Beyond AI is designed to be adapted across contexts. While the three pillars remain constant, their implementation should reflect the needs of individual disciplines, courses, and learners, allowing educators the flexibility to design classrooms that are both authentic and resilient to the evolving capabilities of AI.

2. Introduction to Learning Beyond AI

Learning Beyond AI focuses on equipping faculty with the skills to create a conducive thinking environment that in turn prepares the learners to fortify their own capacity to think intelligently while employing AI as a thought partner mindfully in today's age of artificial intelligence. Three pillars are identified to target different dimensions of learner-AI interaction. Together, these pillars create an AI resilient learning environment that attempts to restrain extensive cognitive offloading, retaining the learner's agency of critical thinking and learning command.

This initiative is underpinned by three pedagogical pillars that inform the design of active thinking classrooms, learning experiences, and assessments. In an AI-infused educational environment, meaningful learning depends on more than just the quality of students' final products; it requires evidence of how they think (Pillar 1: Visible Thinking), how they connect learning to authentic contexts (Pillar 2: Relational Application), and how deeply they understand disciplinary concepts (Pillar 3: Conceptual Mastery). These three pillars provide a shared pedagogical framework for faculty to design learning environments that cultivate critical thinking, conceptual understanding, and authentic engagement to mentally evolve with the dynamic capabilities of generative AI.

Figure 1



Pillar	What it does	Core design move
P1 **Visible Thinking**	Makes learners' thinking visible by equipping them with thinking practices to support them in exercising their mental muscles, helping them identify how they can arrive at their ideas, decisions, or solutions. By making thinking visible learners can learn how to build real intelligence which prepares them to actively critique and engage with artificial intelligence thoughtfully.	Cultivate a classroom culture that values inquiry, dialogue, and metacognition. Employ thinking routines to build habits of regular purposeful mental work that externalizes student reasoning. Learning activities and assessments should embed thinking routines requiring students to recognize their cognitive processes.

P2 **Relational Application**	Encourages students to connect classroom learning with authentic situations by applying knowledge to meaningful contexts. Students learn to make connections between theory and practice, using their experiences, communities, and real-world challenges to develop informed judgement and decision-making.	Create opportunities to apply content knowledge to the real world. Use authentic problems, case studies, community engagement, project-based learning, experiential activities, and collaborative inquiry to help students apply concepts in meaningful contexts. Encourage learners to draw on personal experiences, local issues, and disciplinary practices to make informed decisions and construct meaningful connections with learned concepts.
P3 **Conceptual Mastery**	Develops deep conceptual understanding by enabling students to explain, justify, critique, and synthesize ideas rather than simply recalling information. Students demonstrate mastery by recognizing relationships between concepts and transferring their understanding to new and unfamiliar situations.	Cultivate classrooms, learning experiences, and assessments that prioritize conceptual understanding. Facilitate inquiry, discussion, and collaborative learning that encourage students to examine underlying principles, justify their reasoning, critique ideas, make conceptual connections, and transfer knowledge across contexts. Design assessments that reward depth of understanding, conceptual relationships, and the ability to apply knowledge beyond familiar situations.

2.1 Expected Outcomes

Faculty Capability	Student Literacy	Institutional Evidence
Faculty reforms traditional classrooms into active thinking classrooms, and cre ate learning experiences, and assessments using the three-pillar framework. They adopt pedagogical practices that make student thinking visible, encourage authentic application of knowledge, and develop conceptual	Students become active, reflective, and self-directed learners who make their thinking visible, connect learning to meaningful contexts, and demonstrate deep conceptual mastery. They develop AI literacy by recognizing when AI enhances learning and when	The institution develops a scalable model for faculty development, and cross-disciplinary collaboration. Findings from the initiative inform future teaching practices, curriculum innovation, and institutional policies for teaching and learning in an AI-infused educational environment.

mastery while integrating AI ethically into teaching and learning.	it replaces the cognitive work necessary for meaningful learning.	

3. Learning Beyond AI Framework

The Learning Beyond AI initiative incorporates best practices from the realm of cognitive pedagogy to enhance human intelligence in spaces of learning. Brown et al (2014) emphasize that it is the struggle that individuals incur when acquiring knowledge that makes it last. The pillars are devised with the intention to instill value for the human thinking and learning processes with guidance on how to create effective opportunities of teaching and learning that prepares future generations with the necessary skills and abilities to own and develop their mental capability in times where AI provides various conveniences to avoid the struggle of learning.

3.1 Learning Beyond AI Pillars

Pillar 1: Visible Thinking

This pillar recognizes the human capacity to think while utilizing thinking routines as an active pedagogical practice adopted in the classrooms. These routines become the tools that teachers can deploy to elicit thinking aligned with the purpose they intend to achieve during various topics and stages of a course (Ritchhart et al., 2011). Harvard's Project Zero has developed multiple routines that facilitate making the invisible process of thinking visible in the classroom. The initiative prepares SPP partners through guidance on incorporating 9 Core routines as an introduction to the practice of including thinking routines as a classroom norm. With this, the faculty and student partners begin exploring the various ways of contextually embedding relevant routines to facilitate learners in recognizing the thinking required for their relevant disciplines and the tasks it incurs, rather than instinctively asking AI to take over the mental work required. Transparency of cognitive work prepares learners to build the habit of continuously using routines not just in a single course but also as a life skill.

Pillar 2: Relational Application

To facilitate learners to demonstrate their understanding from the thinking, Pillar 2: Relational Application facilitates faculty in redesigning learning experiences so that students consistently apply disciplinary knowledge within authentic and personally meaningful contexts. This pillar aligns closely with Fink's Taxonomy of Significant Learning, particularly with the dimensions of Integration and Application. Fink argues that significant learning occurs when students move beyond acquiring knowledge to making meaningful connections among ideas, disciplines, and their personal, social, and professional lives. Relational Application operationalizes this principle by training pedagogy partners to create opportunities for learners to apply disciplinary knowledge to authentic contexts, real-world challenges, and lived experiences. Through case studies, project-based learning, community engagement, and experiential activities, students develop the ability to transfer learning beyond the classroom and make informed, contextually grounded decisions.

Pillar 3: Conceptual Mastery

Pillar 3: Conceptual Mastery, guides SPP partners in designing learning experiences and assessments that prioritize conceptual understanding over factual recall. Informed

by Foundational Knowledge, Application, and Integration in Fink's Taxonomy, faculty and student partners redesign assessment tasks to require learners to explain, justify, critique, synthesize, and transfer ideas across contexts. Students are encouraged to demonstrate conceptual relationships, defend their reasoning with evidence, and critically evaluate both their own thinking and AI-generated outputs. By emphasizing deep understanding rather than the production of polished answers, this pillar prepares learners to engage thoughtfully with AI while developing the intellectual flexibility and disciplinary expertise needed to solve complex problems independently.

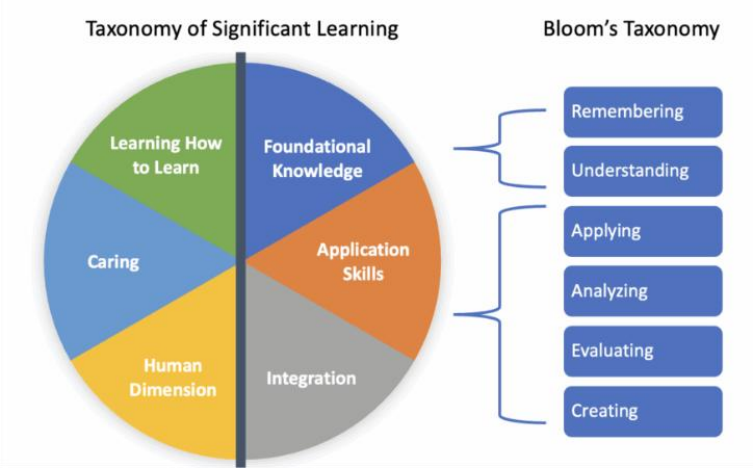
3.2 How we can use it in classroom

Fink's Taxonomy of Significant Learning builds upon Bloom's Taxonomy by incorporating its cognitive dimensions within a broader model of learning as an overarching pedagogical lens because it extends beyond the acquisition of knowledge. It positions learning in an interactive process in which foundational knowledge, application, integration, the human dimension, caring, and learning how to learn to develop simultaneously to create significant learning experiences. Rather than viewing teaching as the transmission of knowledge and students as passive recipients, the framework encourages both partners to engage in continuous reflection, dialogue, application, and shared inquiry. As these practices become embedded within the partnership, they gradually shape the culture and norms of the classroom.

In classroom practice, Bloom's Taxonomy helps faculty determine the level of thinking required for learning activities and assessments, progressing from remembering and understanding to analyzing, evaluating, and creating. Fink complements this process by encouraging teachers to design learning experiences that also promote integration across ideas, application in authentic contexts, awareness of the human dimension, motivation to learn, and the ability to continue learning independently.

While Bloom guides the cognitive complexity of classroom tasks, Fink shapes the overall learning experience by connecting knowledge with real-world application, reflection, collaboration, and personal growth. Figure 2 illustrates how Fink's Taxonomy encompasses Bloom's cognitive domain within a broader conception of learning; that while cognitive development remains an essential component, it is complemented by additional dimensions that emphasize personal growth, meaningful engagement, and lifelong learning.

Figure 2



4. Process Flow and Role Progression

The process moves through four phases, Preparation, Design, Delivery, and Evaluation, and at each phase the Departmental Pedagogical Partner, the Faculty Partner, and the Student Partner carry out a distinct but connected role.

Roles Assigned within the Partnership:

Departmental Pedagogical partners: DPPs are functional bridges between LIC and Student and Faculty Partnership, each supporting a number of designated Pedagogy Partnerships each semester. Their intended role is to support the partnership in design, delivery, and assessment of reframe.

Faculty Partner: A Faculty Partner is the person who works closely with their Student Partner to look at their course through the lens of the three pillars, and to gradually reshape their teaching, assessments, and classroom activities. Their role is to stay open to feedback, experiment with new approaches alongside their Student Partner, and use AI thoughtfully as something that supports their teaching rather than something that replaces it. The DPP keeps actively in touch with the Faculty Partner to provide support and monitoring of the partnership.

Student Partner: A **s**tudent Partner is the person who brings a learner's perspective into the equation, sharing honest feedback on how redesigned tasks and assessments feel from a student's perspective, sharing feedback which might otherwise go unnoticed. The DPP keeps actively in touch with the Student Partner to provide support and monitoring of the partnership.

4.1 Preparation

The partnership process begins with LIC training DPPs, Faculty Partners, and Student Partners through dedicated sessions on how to participate within the partnership. DPPs are oriented with the expectations of their role to support both Faculty and Student Partners, acting as a functional bridge between the classroom, partners, and the LIC core team. Faculty and Student Partners are orientated with facets of the partnership to be able to reimagine and innovate in their chosen courses.

Once this preparation is complete, Faculty and Student Partners are expected to outline their core objectives regarding their partnership, with the DPPs in the loop. All 3 members within each partnership must have a clear understanding of the course outlines, the designed objectives and the way forward within two weeks of the orientation session.

This understanding shall be built by evaluating the course and partnership objectives against the three pillars to identify where and how student thinking can be made more visible, where knowledge can be applied to authentic contexts, and where conceptual depth can be strengthened. All three members are expected to establish a shared commitment to collaboration from this point forward, recognizing that reinventing classroom design, assessment, and delivery depends on active input from each role. Innovation is treated as a collective responsibility, with every partner expected to contribute ideas and perspective rather than defer entirely to the others.

4.2 Design

Faculty and Student Partners develop mechanisms for feedback meetings and weekly co development sessions, sometimes with the DPP present and sometimes one on one, depending on availability. The DPP provides guided support both in and outside classes, checking in with both partners on a biweekly basis.

4.2.1 AI in Design

Faculty and student partners are encouraged to draw on AI in this capacity throughout the design work, determining the possibilities and limitations it presents to the teaching and learning occurring in the course and consider ways of using it to sharpen thinking rather than replace it. AI use shall be determined as per the courses' requirements and is encouraged to be taken as a thought partner, where needed, rather than a tool confined to any single assignment/task/teaching methodology, its use is woven into the redesign of learning experiences and assessments across all three pillars, thinking routines that make reasoning visible, tasks that connect knowledge to real world application, and assessment questions that ask students to justify, critique, and synthesize rather than simply recall.

4.3 Delivery

Faculty and Student Partners implement the classroom interventions they have designed together and observe how well they hold up in practice. The DPPs maintain a regular system of check-ins and documentation to keep the LIC team updated through monthly check ins. This phase becomes the clearest window into how the interventions are faring in real time, where each partner is observing whether thinking is being made visible, whether application feels authentic, and whether understanding is deepening rather than being outsourced through their designed interventions. This is also where student partners take on a visible peer facing role, where student partners support and guide the students being taught on learning practices and revised learning expectations, extending the initiative's reach in ways faculty alone cannot.

4.4 Evaluation

All partnerships shall go through a process of reflective ongoing evaluation that is regularly supported and documented against the SPP Evaluation Rubric. This allows all stakeholders to observe the levels of innovation and creativity partners bring into designing tasks, assignments, and assessments while using AI as a thought partner. DPPs, Faculty and Student Partners bring observations together for discussion, analyzing final findings against the three pillars and partnership objectives, determining areas for improvement and emerging best practices. Together, these combined perspectives, rather than any single partner account, shape the final findings report.

Learning Innovation Centre

Guidelines for Effective Pedagogy and Assessment in the Age of AI

1. Introduction

These guidelines extend the *Learning Beyond AI* initiative into the domain of assessment. While the three pillars guide the design of learning experiences and assessments, these guidelines address an additional question faced by Faculty Partners during curriculum redesign: **How can assessment encourage students to use AI as a thought partner while ensuring that it is used ethically and transparently?**

It is built on the same premise that underpins the initiative, that the long-term response to generative AI is not to restrict its use but to establish classrooms and assessments that strengthen human intelligence. Restriction alone cannot achieve this. What can be achieved is a deliberate distribution of assessment across tasks where thinking is witnessed and tasks where AI engagement is scaffolded, sequenced, and made visible.

1.1 Scope and Limits

The *Learning Beyond AI Assessment Guidelines* is intended as recommended strategies for SPP programmes. They are advisory rather than mandatory and should be adapted to disciplinary contexts. It does not address the use of AI by faculty in marking, feedback generation, or assessment authoring, which require separate institutional guidance.

Like the three pillars, this is intended as a pedagogical guide rather than a prescriptive model. It does not replace disciplinary expertise, curriculum design, accreditation requirements, or professional judgement. Disciplines differ in their learning outcomes and in the forms of evidence that legitimately demonstrate attainment, and weightings should be adapted accordingly.

The model assumes a taught course with regular contact hours. It requires adaptation for distance provision, blended delivery, and thesis-based programs.

2. Design Principles

Faculty should design learning experiences that:

1. Make thinking processes visible rather than focusing only on final answers.
2. Connect disciplinary concepts to authentic contexts and real-world challenges.
3. Encourage conceptual understanding before procedural completion.
4. Require students to justify decisions, explain reasoning, critique ideas, and revise thinking.
5. Scaffold learning progressively from guided thinking toward independent intellectual work.

3. The Two Lanes

In the age of generative AI, the purpose of assessment has evolved considerably. Assessment that permits no AI use at all is now considered narrow, and where it is applied across an entire course it limits rather than supports student learning. At the same time, students will use AI regardless of what institutional policy states, so an approach that leaves AI unaddressed does not prevent its use, it only ensures that use goes unguided. AI usage policy must therefore be embedded within the course itself, so that students learn to use it ethically and so that it functions as a scaffolding agent in their learning journey rather than a shortcut

around it. This is the reasoning behind the two-lane approach (Bridgeman, Liu and Weeks, 2024).

The Secured Lane establishes what the student can do independently. Because these tasks are observed, they confirm that the learner has understood the material themselves. This is what makes AI use safe elsewhere in the course, since a student who cannot reason independently has no basis on which to judge whether AI output is accurate or appropriate.

The Open Lane establishes how well the student works with AI. These tasks are where learners practise prompting, questioning, correcting, and rejecting what a tool produces, and where they build the habit of documenting their reasoning. Removing this lane does not remove AI from the course, it only removes the opportunity to teach its use.

Lane	Definition
Secured	Tasks that are observed, invigilated or dialogic, where the institution can verify that the enrolled student produced the work. Examples include invigilated examinations, in class tests, interactive oral assessment, observed practical work, and project defences.
Open	Tasks completed without supervision, where completion cannot be verified. AI use is permitted at a declared level. These carry lower individual weight and are structured to develop AI judgment.

4. Permitted use scale

Every task in the course must state its level on the scale below. The levels are adapted from the AI Assessment Scale (AIAS) and are intended to function as a task design tool, not only as a permissions label.

Level	What the student may do	Evidence required
0. No AI	No AI use at any stage. Applies to secured tasks only, since this is the only lane where the rule is enforceable.	Observation or invigilation
1. AI for planning	AI may be used to brainstorm, structure and locate material. All drafting and analysis is the student's own.	Disclosure statement naming tools and prompts
2. AI collaboration	AI may be used within the drafting process, provided the student	Disclosure plus annotated record of what was changed and why

	substantially revises, corrects or extends its output.	
3. AI evaluation	The student is required to generate AI output and then critique it against disciplinary standards, identifying error, bias, or omission.	The critique itself is the assessed artefact
4. AI exploration	The student designs their own workflow with AI and justifies the choices made across a body of prior work.	Reflective portfolio with evidence trail

5. The Weighting model

The Two-Lane Model recommends distributing assessment across a range of secured and open assessment types rather than relying on a single mode of assessment. This ensures that students have multiple opportunities to demonstrate independent disciplinary competence while progressively developing the ability to use AI ethically, critically, and transparently. Secured assessments provide verified evidence of individual learning and should form a substantial component of the overall assessment strategy, while Open Lane assessments provide structured opportunities for students to engage with AI as a learning partner through planning, collaboration, evaluation, and reflection.

The recommended distribution is intended as a curriculum design guide rather than a prescribed model. Programmes should select assessment types that align with their learning outcomes, disciplinary requirements, and accreditation standards while ensuring that both lanes are represented across the course. Collectively, the assessment strategy should provide sufficient evidence of students' independent achievement alongside their capacity to exercise informed judgement when working with AI.

Task	Lane	Permitted AI use	Weight
Assignment 1: concept map and annotated plan	Secured	Level 0. Completed in class	
Assignment 2: short analysis	Open	Level 1. AI for planning	
Assignment 3: applied case response	Open	Level 2. AI collaboration	
Assignment 4: critique of AI generated output	Open	Level 3. AI evaluation	
Assignment 5: process portfolio	Open	Level 4. AI exploration	
Midterm examination	Secured	Level 0. Invigilated	

Final examination	Secured	Level 0. Invigilated	
Project artefact	Open	Level 2. AI collaboration	
Project defence: interactive oral	Secured	Level 0. Observed	
Secured subtotal			
Open subtotal			
Total			**100**

References

Brown, P. C., Roediger, H. L., III, & McDaniel, M. A. (2014). *Make it stick: The science of successful learning*. Harvard University Press. https://doi.org/10.2307/j.ctt6wprs3

Fink, L. D. (2003). *Creating significant learning experiences: An integrated approach to designing college courses*. Jossey-Bass.

Ritchhart, R., Church, M., & Morrison, K. (2011). *Making thinking visible: How to promote engagement, understanding, and independence for all learners*. Jossey-Bass.