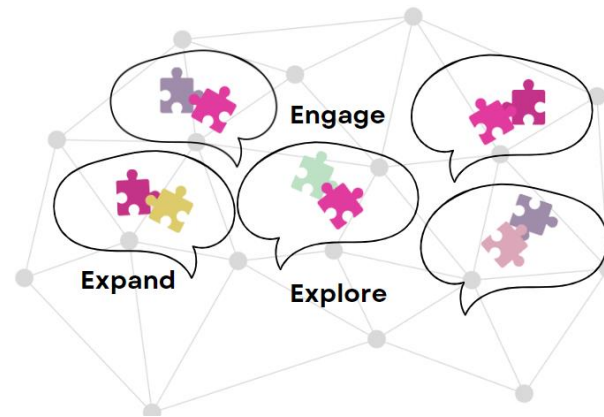


## Phenomenon-based Learning: Key Features and Pedagogic Connections



The following tables set out the key features of three different approaches to learning and teaching – phenomenon-based, inquiry-based and problem-based learning. The description of phenomenon-based learning depicted here emerged from team discussions, consultations with international PHBL scholars and examination of published literature. These descriptions are intended to show the cross-over and points of difference between these pedagogies.

They are not intended to be absolutely accepted, but they may provide a stimulus for discussion and learning design.



	Phenomenon Based Learning	Inquiry Based Learning	Problem-Based Learning
What three words	Unbounded; Investigative; Collaborative but not always groupwork	Questions; Research; Evidence	Problem-Solving; Sharing; Reflection
Philosophical Aim	Investigating phenomena	Generating and exploring questions	Generating solutions
Nature of problem under investigation	Based around a real world, observable phenomenon Open-ended No single 'right answer' Uncertain May be social or scientific Wicked problems – complex, multifaceted and often previewed as unsolvable PhBL may investigate without acting to solve	Multiple possible outcomes [variation in how knowledge is arrived at as well as sometimes, different possible conclusions] May be simple investigations or complex and evolving with a 'living problem'	Real-world problems Multifaceted requiring knowledge from different areas of a discipline or different disciplines Realistic problems that resonate with the students Should encourage the surfacing of different approaches to resolution
Student activity	Autonomy to choose lines of inquiry Collaboration and question generation Ownership of skills development to support investigation Open to new experiences and viewpoints Failure as part of learning Regulating own learning by asking questions about personal performance Oscillating between states: playful and exploratory, discursive, researching, and preparing	Driven by curiosity Generating questions Observing and investigating Shaping the inquiry Develops working discipline to complete and organise work Developing appreciation of how knowledge is created Student identity as researcher	Reasoning to support problem-solving Observation of the problem Hypothesis generation Drawing on prior learning to use in formulating solutions Working in peer groups as effective collaborators Uses creativity Locate facts and ideas about the 'problem' and arrive at next steps

Teacher activity	<p>Facilitation          Providing opportunities to engage with experiences.          Connection to people, places, and technologies          Providing opportunities to engage with stakeholders          Developing investigative skills; Asking provoking questions          Responsive to student needs          Support the development of skills as they are needed for the inquiry e.g. signposting          Trusting the process to lead to learning</p>	<p>Facilitator          Models investigative question asking          Co-learner          Scaffolds learning by recognising and supporting the skills required to make progress          Ensuring that the possible inquiries align with learning outcomes          Guide the task for the appropriate level of study          Developing a relationship of trust with students          Goes beyond discipline specialist to create social safety to support learning</p>	<p>Ensuring prior knowledge is sufficient          Probes knowledge to encourage students to verbalise or articulate complexity          Asks questions to draw out reasoning and reflection          Models working with uncertainty to provide 'cognitive apprenticeship'          Encourages students to consider and evaluate evidence          Establishes training so that students can work effectively.          Often hosting PBL tutorial formats</p>
Cognitive processes	<p>New information is integrated with existing experiences          Sharing between peers and with experiences assimilates with understanding</p>	<p>Develops critical thinking          Metacognition          Evaluating evidence          Learning through restructuring existing knowledge and generating new insights</p>	<p>Metacognition – evaluation of self and the extent to which progress is being made          Reasoning          Working on problems to achieve a learning goal          Reflection to understand where personal development may be needed          Relates knowledge acquisition to real world cases</p>
Sequence	<p>Exposure to phenomena through exposure and immersion          Students consider how to investigate the 'problem'          Sensemaking, sometimes leading to recommendations to stakeholders or sometimes leading to articulation of learning.</p>	<p>Students have prior learning appropriate to the situation          Exploration          Question identification [varying degrees of choice]          Formulation of inquiry methods          Gather data          Develop conclusions</p>	<p>Form a team [often - not always]          Examine the problem          Explore what is known and what is needed          Evaluate ways to solve the problem          Take action [single action or experiment with different options]          Report the experience</p>

		Communicate	
Skills developed	Collaboration Metacognitive awareness (i.e. self regulation of learning) Communication; Conceptualising Experiential learning Listening; Empathy	Develops growing autonomy Planning inquiry Evidence evaluation Confidence to ask questions	Collaboration Listening Self-regulation