

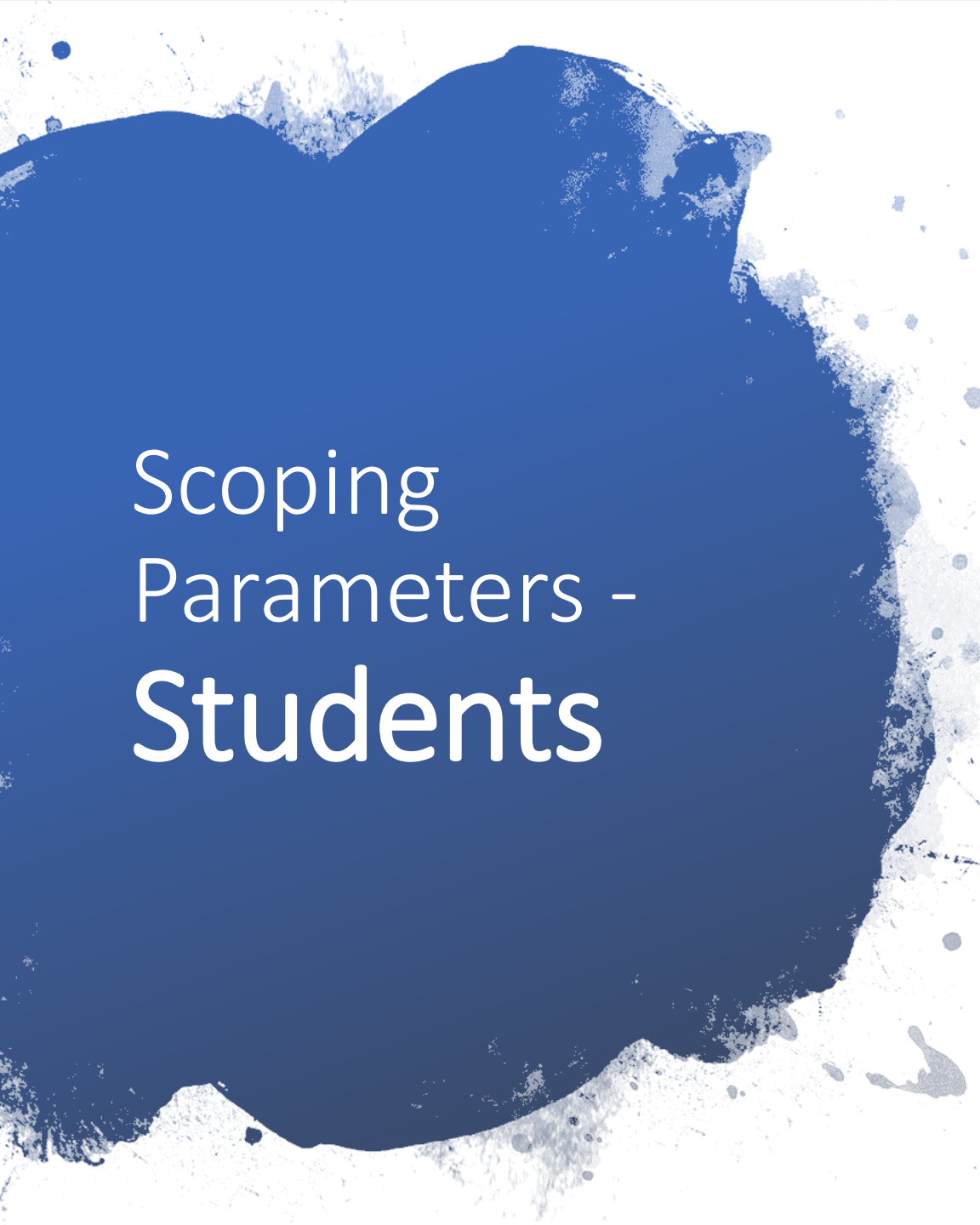


Case Study: The journey to experiential learning in passive design

Dr Vicki Stevenson, Welsh School of Architecture

The opportunity...

5 sessions of 4 hours to teach passive design

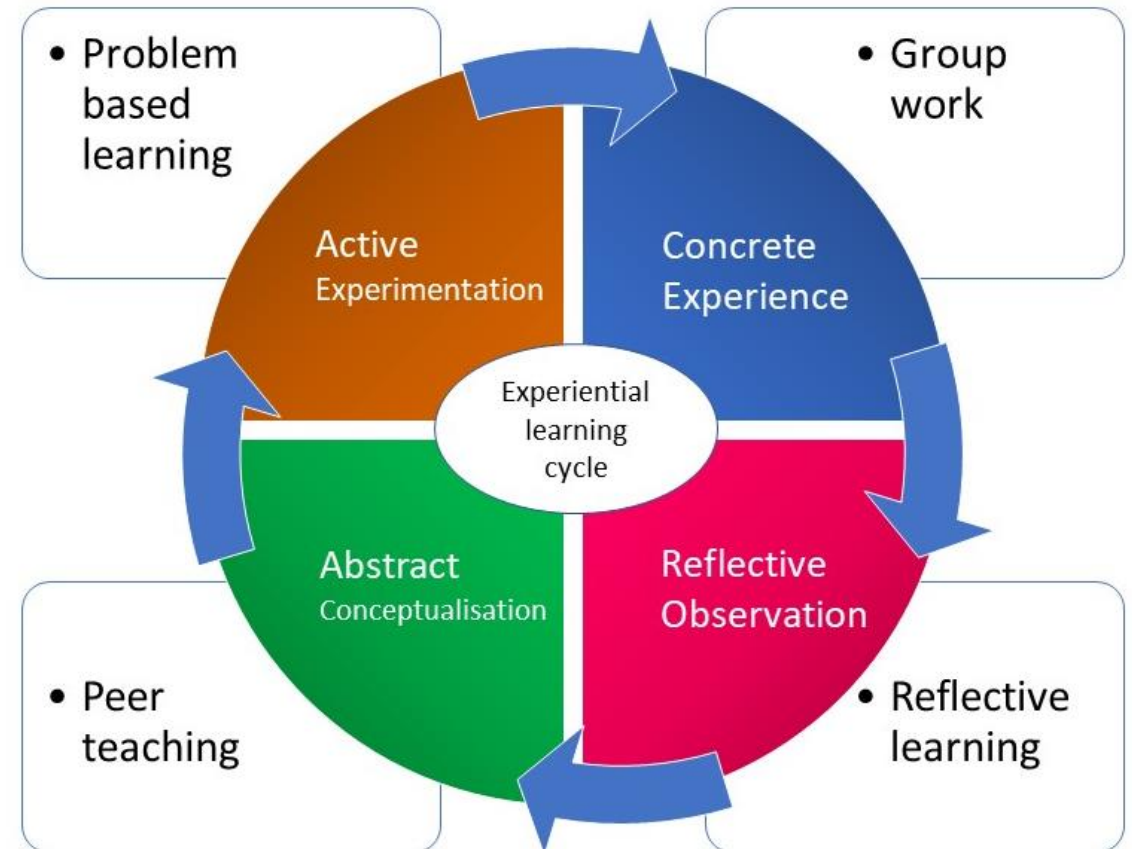


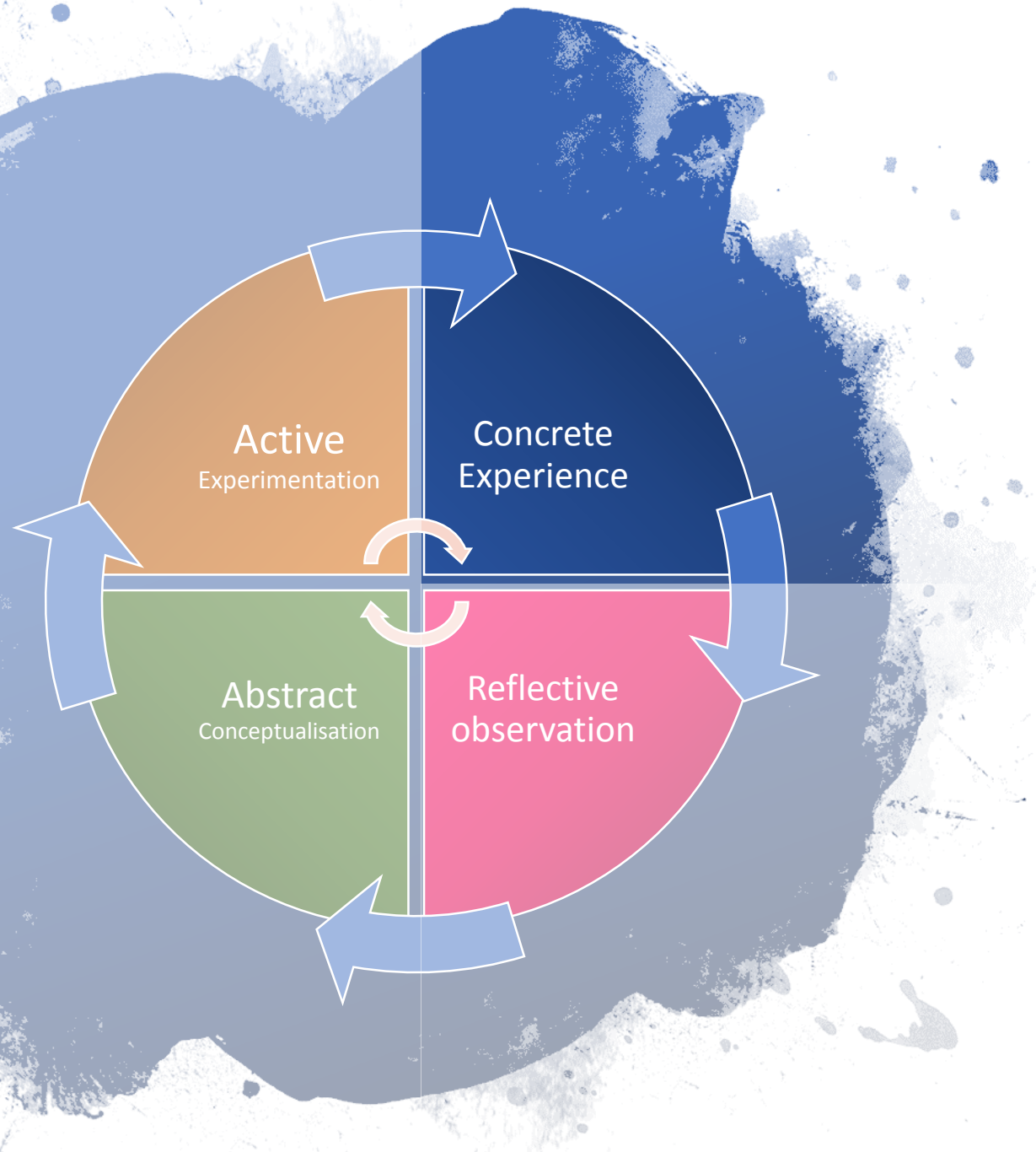
Scoping Parameters - Students

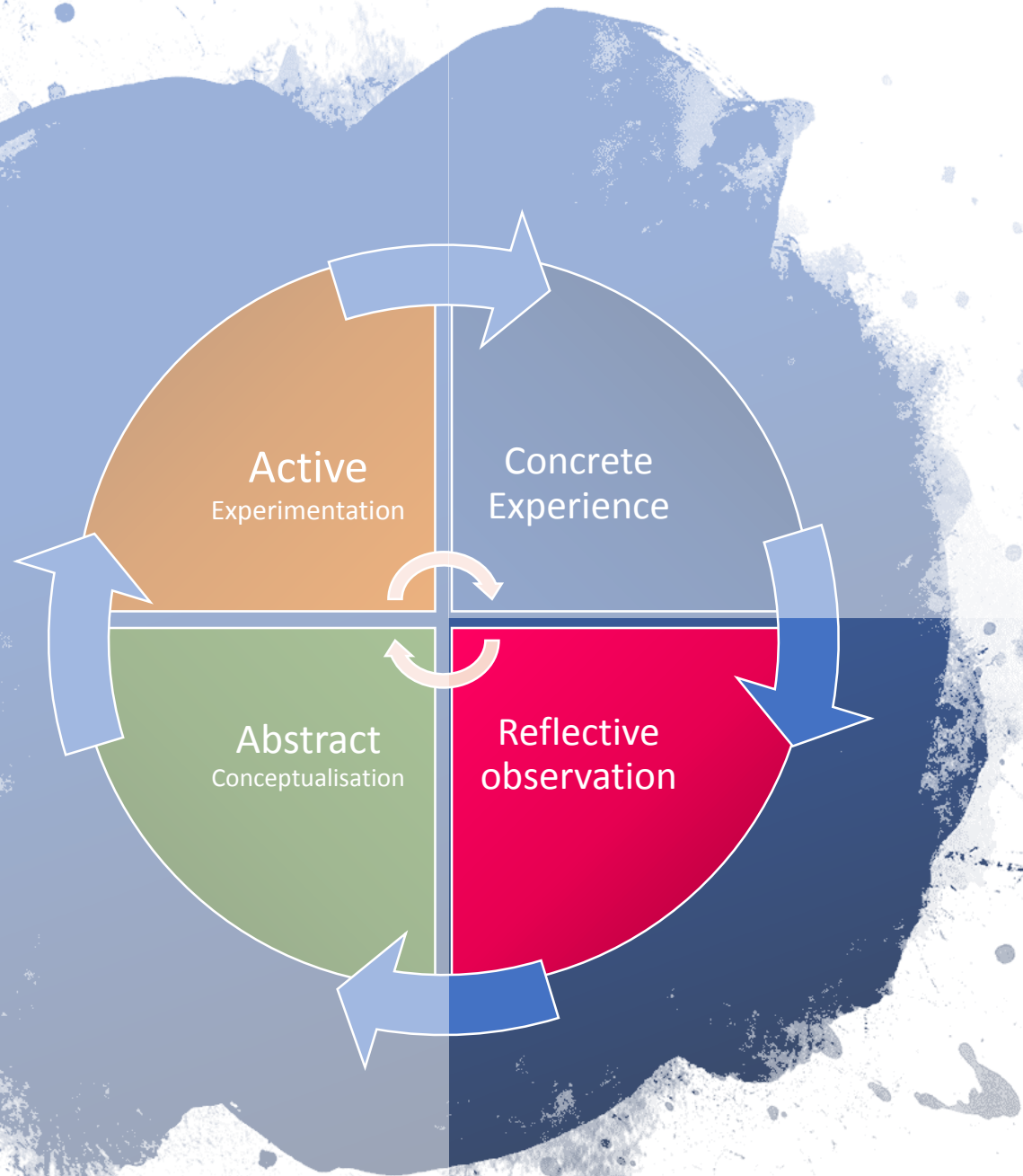
- Local / Distance / Full time / part time
 - Study time availability*
 - Study time quality*
- Semesters
- Culture differences
- Range of Academic backgrounds
 - Architecture, Landscape architecture, Interior design, Engineering, ...
 - Strong affinity for visual materials
- English language issues

Lecturing, Reflective learning,
Experiential learning,
Workplace learning, Group work,
Problem/case based learning, Peer
teaching

Aim – Deep
student learning
Method?







- Questions in the Activity brief

- Quizzes for each theme

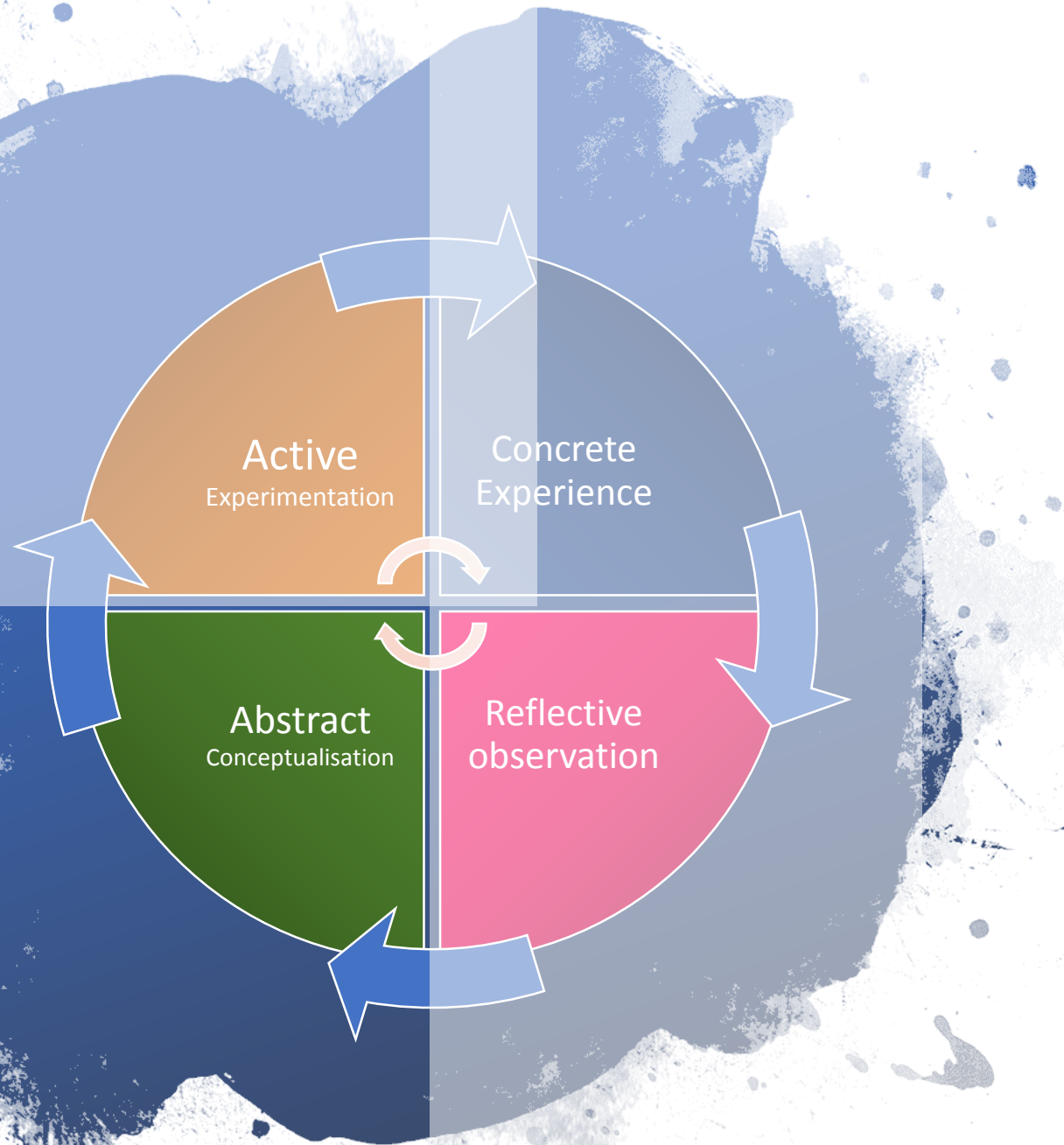
For passive solar heating
Should the glazing face
towards A, B, C or D?

A diagram illustrating four orientations for a glazing face (A, B, C, D) relative to a building. The orientations are:

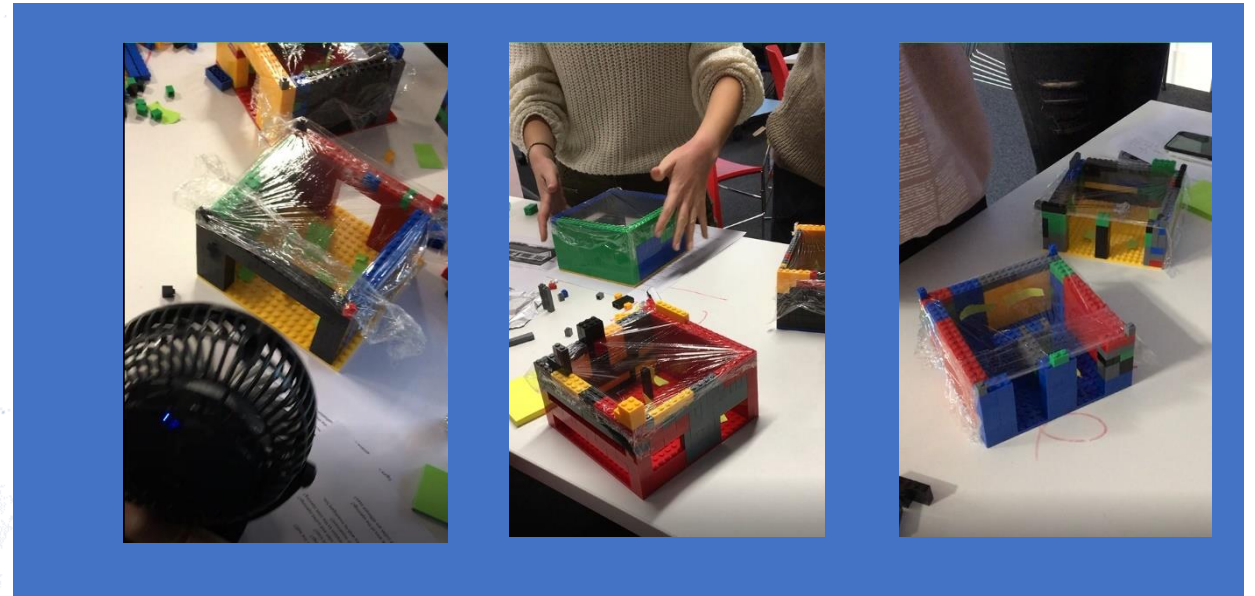
- A**: Left-facing
- B**: Top-facing (Polar Facing)
- C**: Right-facing
- D**: Bottom-facing (Equator Facing)

A sun icon is positioned near orientation D. A small image of a modern house is shown on the left side of the diagram.

<https://s3.eu-central-1.amazonaws.com/content-wp/homebuilding/ency/content/uploads/2017/04/Content-wp-14-14-14-passive-house-plan-1002x1288.jpg>



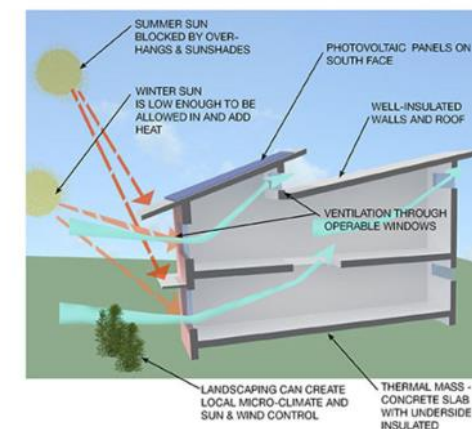
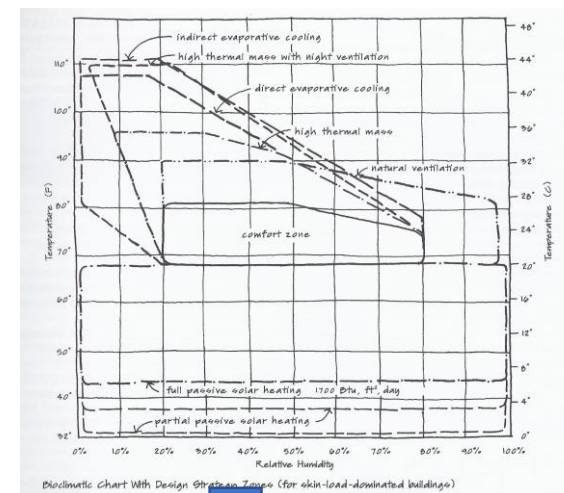
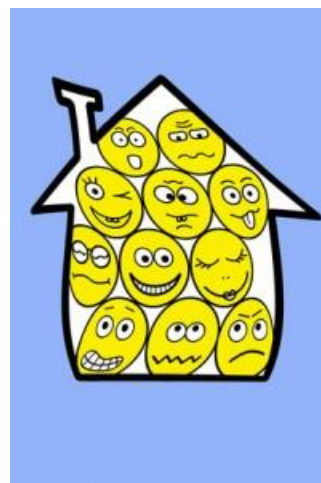
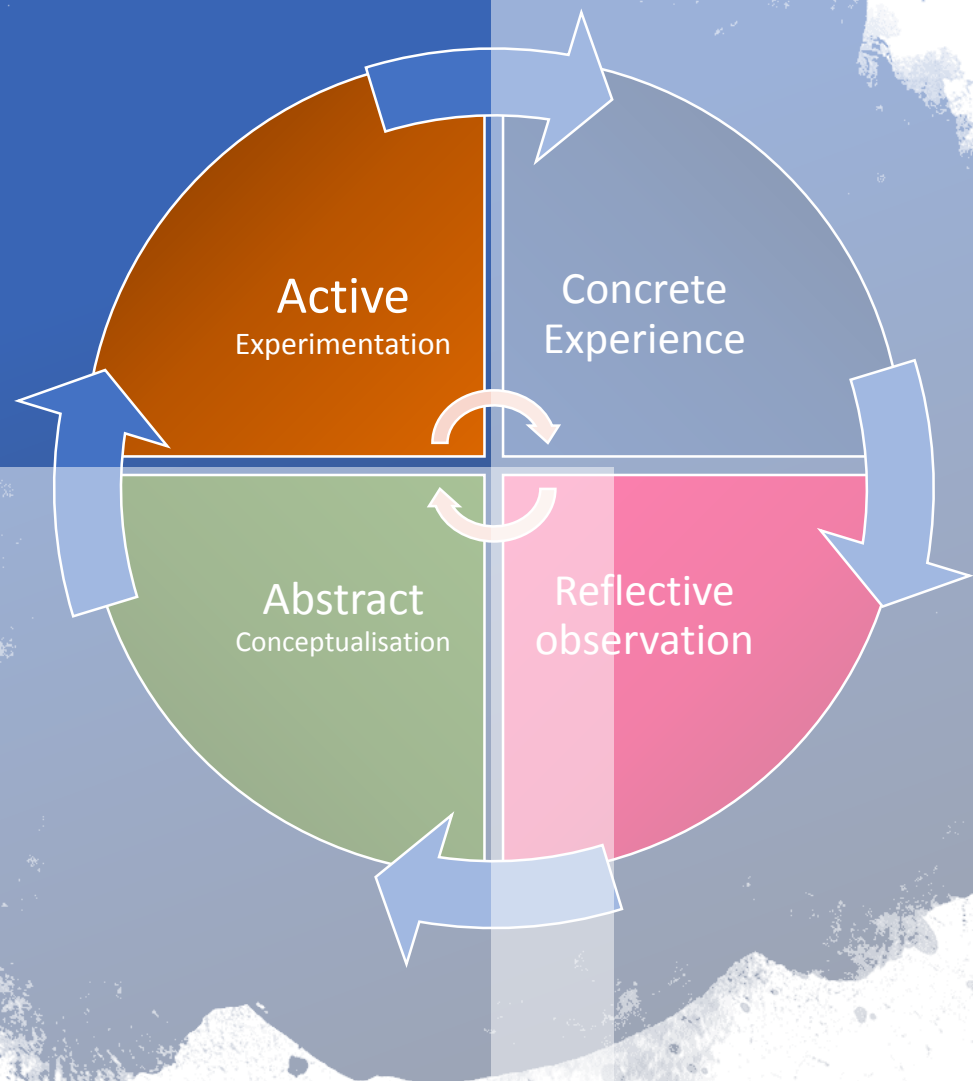
- Group Presentations (peer teaching)



- Summative Assessment
 - What needs does the strategy respond to?
 - How would it be applied?
 - How would it perform?

Project module

Problem based learning



<https://www.csemag.com/articles/solar-design-strategies-passive-versus-active/>

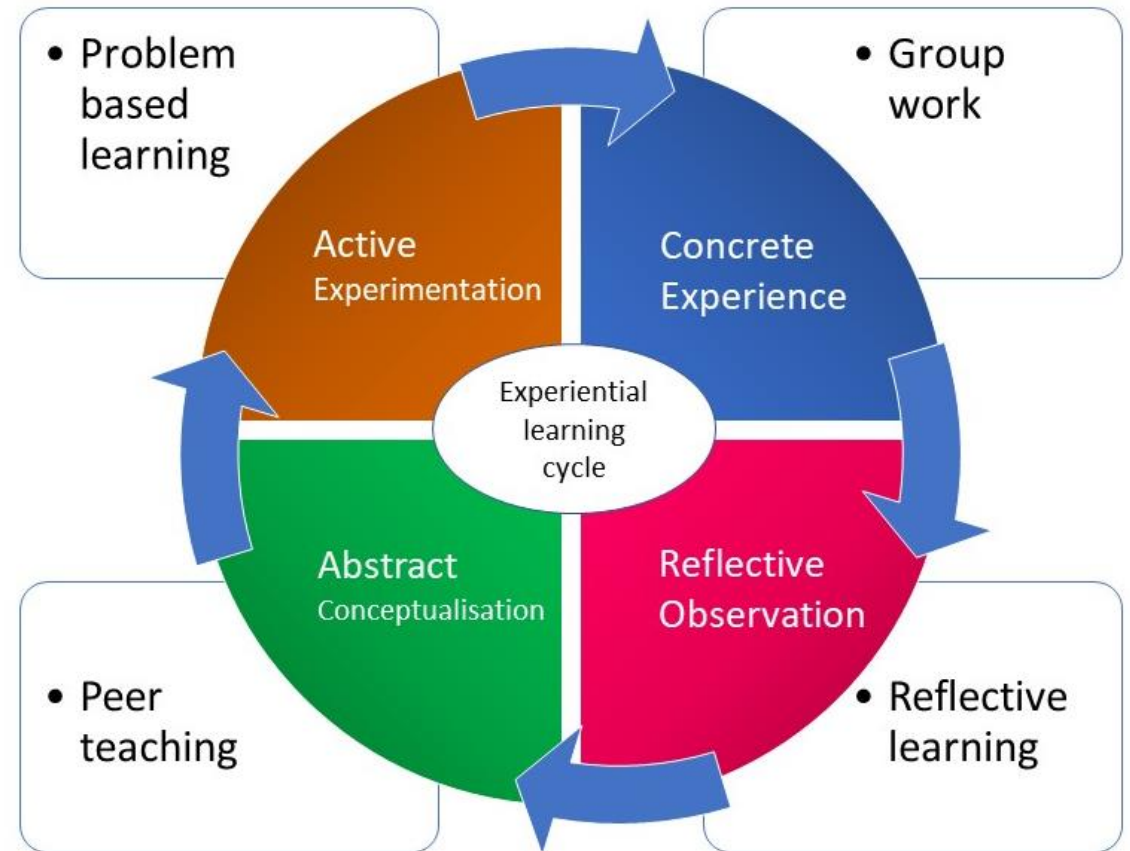
<http://ovalhistory.co.uk/cranworth-gardens/part-9-cranworth-gardens-on-the-1911-census-in-statistics-and-numbers/>

DeKay and Brown, 2014

Deep student learning (Blooms Taxonomy)

Conceive
Apply

Analyse
Evaluate



Make space for experiential learning

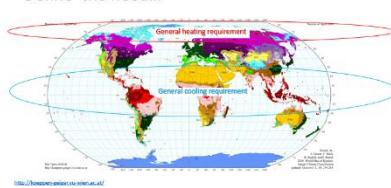

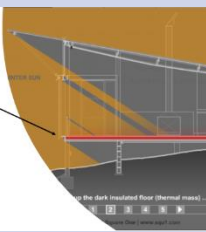

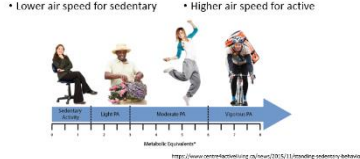

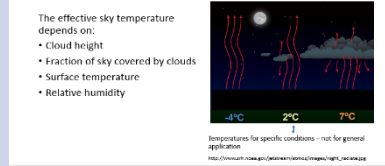

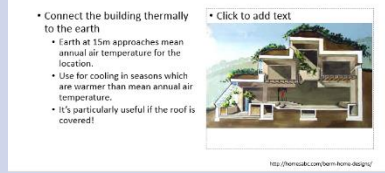

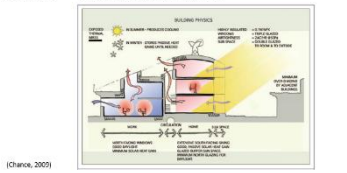




Flipped learning



Make space for experiential learning

Lecture Podcasts

4 hours and 20 minutes total

Intro & Heating	Ventilation	Cooling	Multiple Strategies	Building Application
<ul style="list-style-type: none"> - 9 presentations (pre-recorded) - 1h 18 min 	<ul style="list-style-type: none"> - 7 presentations (pre-recorded) - 41 min 	<ul style="list-style-type: none"> - 6 presentations (pre-recorded) - 1h 17 min 	<ul style="list-style-type: none"> - 3 presentations (pre-recorded) - 23 min 	<ul style="list-style-type: none"> - 6 presentations (pre-recorded) - 41 min
<p>Define the need...</p>  <p>Icehouse, Iran (Bwh – arid, winter dry, hot arid)</p>  <p>Direct solar gain</p> 	 <p>Air speed – consider typical activity in area</p>  <p>Window types</p> 	<p>How radiant cooling works</p>   <p>Earth Cooling - Aim</p> 	<p>Daylight and Ventilation – Earthship</p>  <p>BedZED – capturing solar gains</p>  <p>Passivhaus principles</p> 	<p>City plan to facilitate higher air speed</p>  <p>Need identified as heating</p>  <p>What sources address the need?</p> 



Lecture Podcasts / written notes

- Student choice:
 - How / when they prepare
 - Breakup the information to fit into their own schedule
 - Format
- Benefits of presentations:
 - Less than 15 mins / natural breaks
 - Language issues taken offline
 - **Contact sessions free for other learning activities!**

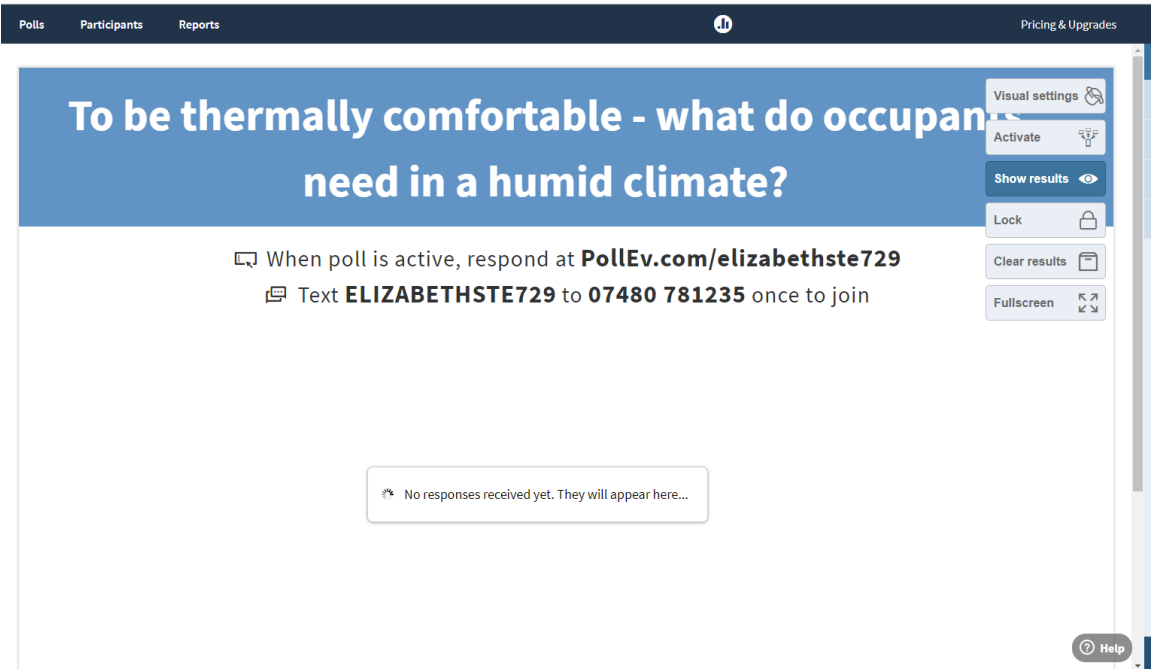


Cohort communication:

“any questions?”


Audience Response Systems

- PollEv



The screenshot displays the PollEv interface for a poll titled "To be thermally comfortable - what do occupants need in a humid climate?". The interface includes a navigation bar with "Polls", "Participants", "Reports", and "Pricing & Upgrades". A right-hand sidebar contains controls: "Visual settings", "Activate", "Show results", "Lock", "Clear results", and "Fullscreen". The main content area shows instructions: "When poll is active, respond at **PollEv.com/elizabethste729**" and "Text **ELIZABETHSTE729** to **07480 781235** once to join". A message box at the bottom states "No responses received yet. They will appear here...". A "Help" button is visible in the bottom right corner.

- Mentimeter



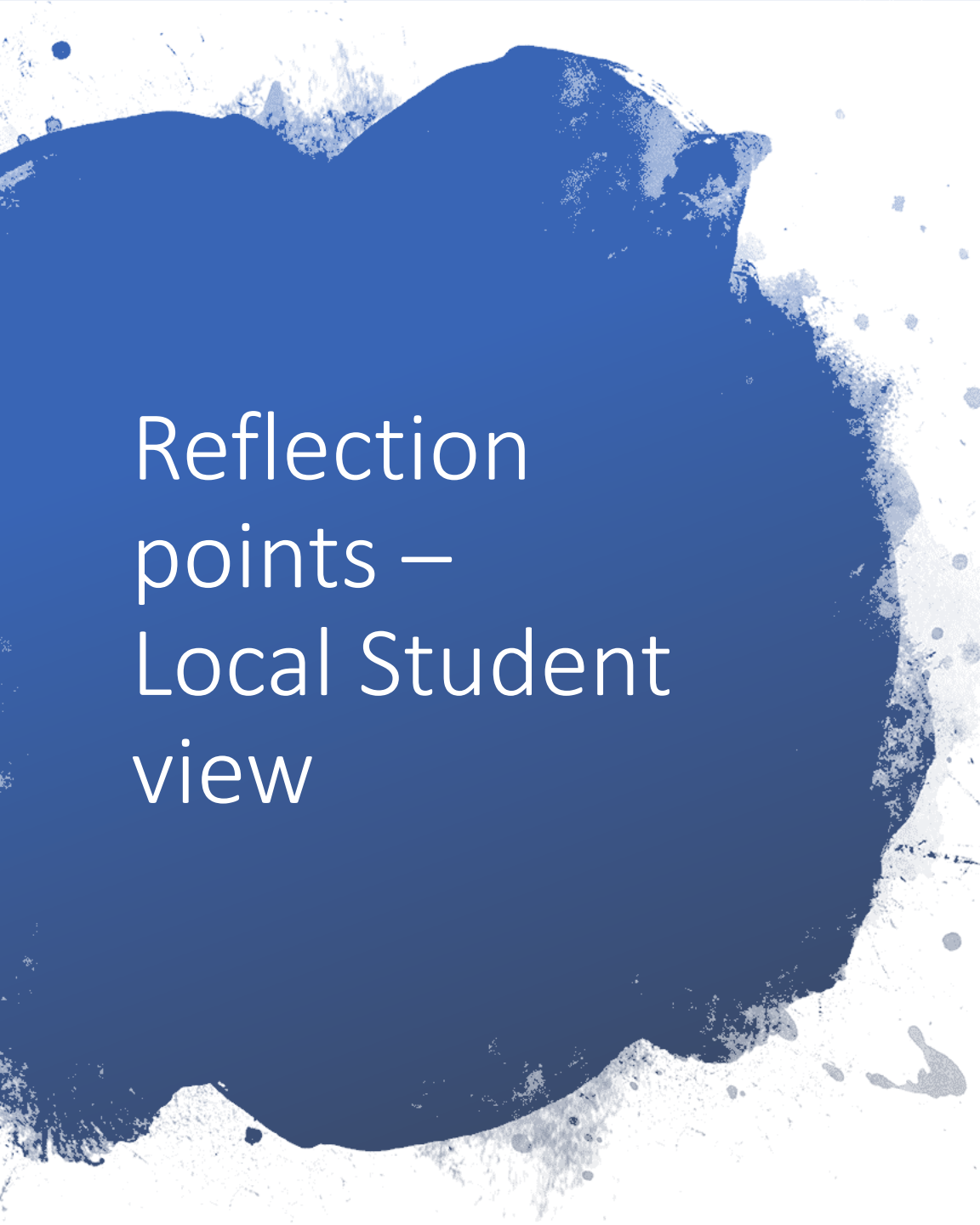
Distance Learner Provision

- **Activities**
 - Not able to participate in local group activity sessions
 - Activity briefs adapted for independent use
- **Tutor contact**
 - Not present at contact sessions
 - Forum on VLE (peer to peer & peer to teacher)
 - Direct email to tutor



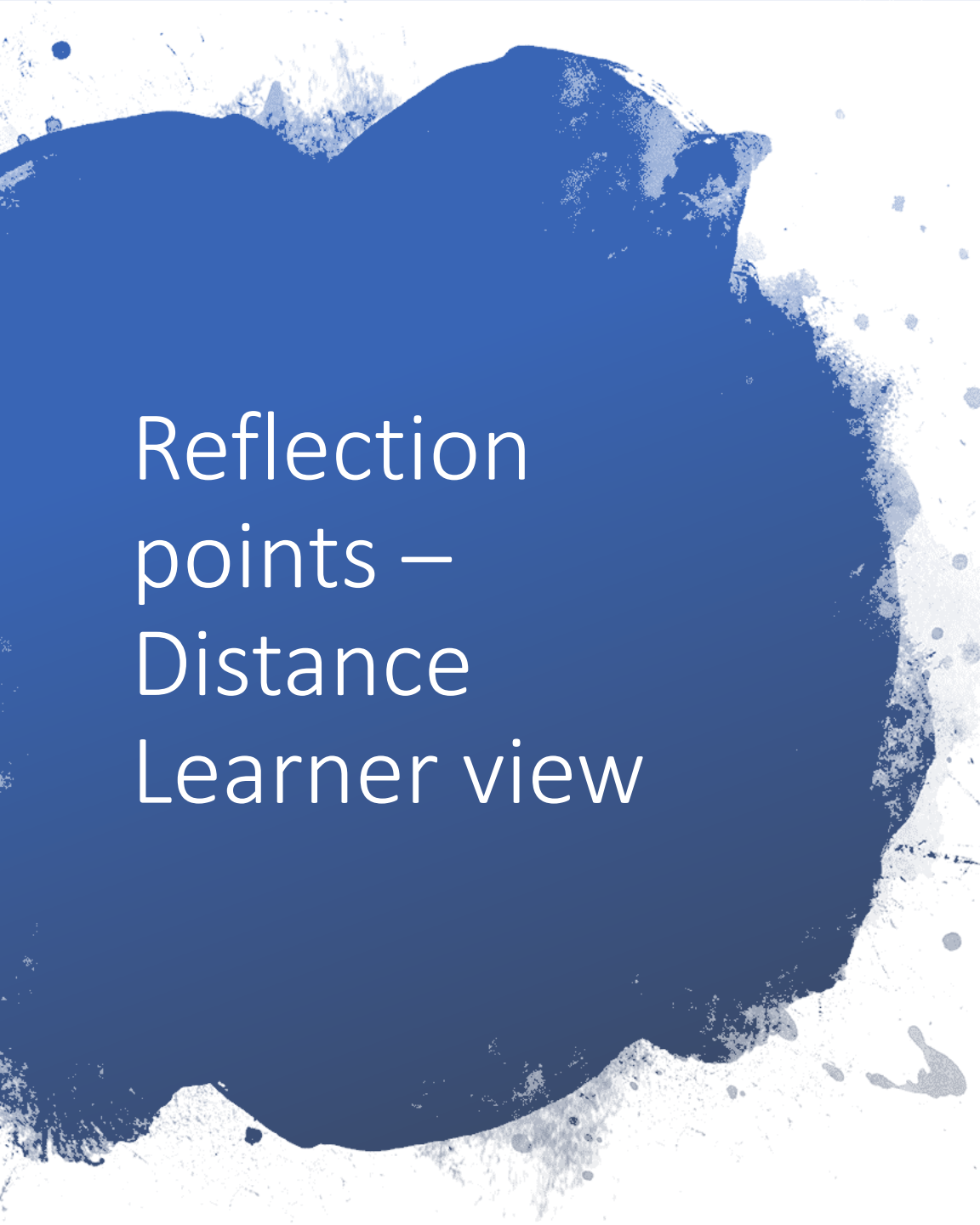
Student consultation

- Survey of time distribution (using PollEv!)
 - Right amount of time available for:
 - Quizzes
 - Discussion
 - Guest lectures
 - Even more learning activities wanted! (*local students*)



Reflection
points –
Local Student
view

- *“a number of activities help us to understand the reason of strategies”*
- *“Interactive class sessions. Reading first, applying later in the class was helpful and fun to learn the principles”*



Reflection
points –
Distance
Learner view

- “I **loved** how in-depth each short video was, and liked the fact all material had been uploaded for viewing weeks before the module had begun” (Distance student)
- “I really **enjoyed** the module, and found it a lot easier to digest the shorter presentations ... than the longer lectures in other modules” (Distance student)



Reflection points – My experience

- First delivery
 - *absolutely terrified, but increased student engagement gave me confidence to continue*
 - Cohort average mark - slight increase (4%)
- Second delivery
 - More confident – able to enjoy the activities and the student engagement

Experiential
learning



Ability to apply passive
design in realistic
scenario

No Questions!

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www.cardiff.ac.uk/people/view/1116829-stevenson-vicki

References

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