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ASSESSMENT COMPONENT: A1

Practical Teaching Session

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Use of Generative AI in Assessment

(Lecturer to indicate Yes or No against each element)

RESEARCH	For this assessment, you can use Generative AI to support you in research, including searching for bibliography, using tools to summarise, compare and interrogate materials.	Yes ☒ No ☐
STRUCTURE	For this assessment, you can use Generative AI to support you in structuring your submission, including creating a draft argument structure, identifying parts and headings, etc.	Yes ☒ No ☐
PROOFREADING	For this assessment, you can use Generative AI to check your own text/creation for grammatical and syntactical mistakes, including rephrasing of your own work within specific standards.	Yes ☒ No ☐
WRITING	For this assessment, you can use Generative AI to create text for submission.	Yes ☐ No ☒
CREATIVE	For this assessment, you can use Generative AI to create creative materials, such as images.	Yes ☐ No ☒
PROGRAMING	For this assessment, you can use Generative AI to create and check code.	Yes ☐ No ☒
NONE	For this assessment, you are not allowed to use **any** type of Generative AI support. This includes research support, structure support, writing/proofreading support and creative support.	Yes ☐ No ☒

AI Acknowledgement

I confirm that I have not used any AI tools in the research and creation of this assignment.

I confirm that I have not presented any AI generated materials as my own work.

I confirm that I have copies of my drafts, notes, and other resources I used, which I may be asked to provide in evidence.

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Introduction

This essay will be a reflection on a 30 minute microteach that was delivered on the 24th of November 2025 as per the requirements of The Teaching Toolkit 1 module for the Part Time PCET qualification. The topic of the microteach was an *Introduction to Laser Scanning Technologies*. The Boud reflection model (Boud, Keogh and Walker, 1985) has been chosen as it consists of 3 simple stages to the reflection process: experience, reflection and learning.

Boud Reflective Model – Stage One: Experience

A 30 minute microteach session was prepared and delivered on the topic an *Introduction to Laser Scanning Technology* to 6 other PCET students and 1 lecturer (acting as observer). The session material was carefully designed for audiences that have zero prior knowledge on laser scanning principles or applications and was structured in general adherence to the *Instructional Design Process* (Carraway, 2014).

The session starts by *laying the foundation*, by previewing the learning objectives and then linking to existing knowledge by providing an overview of more familiar methods of measuring.

The session then progresses into the *knowledge construction* stage by introducing a specific laser scanner device with a live demonstration of the laser scanner data being generated in real time. The main development, or *reconstruction* phase of the lesson then heavily utilises visual media, particularly video animations that demonstrate key applications of the technology contextualised with real projects. The main assessment strategy (or *reflection stage)* of the lesson was a series of open questions to be asked to the class at the end of the delivery on some of the key concepts of laser scanning and its applications.

Initial feelings at the beginning of the session were ones of slight nervousness, primarily concerns that the equipment wouldn't work for the live demonstration and that the media embedded in the PowerPoint presentation wouldn't play properly, thus detracting from the overall delivery of the material. There was a realisation during the session that the volume of material planned may have been too ambitious for the length of time allocated for the session, this unfortunately was the case as the primary assessment strategy couldn't be completed due to lack of time at the end.

Stage Two: Reflection

Positive feedback

Personal reflections on the session were positive, it was recollected that all learners appeared engaged throughout and were particularly attentive during the live demonstration of the scanner, and the subsequent media demonstrating applications. All learners at some point during the session asked pertinent questions. This demonstrated that they had grasped the concepts being relayed and affirmed that they themselves were building a knowledge base of the technology by asking related questions that expanded that developing knowledge and created links between key concepts. Learners appeared relaxed and comfortable, often interjecting to ask these questions which indicated that they were comfortable with the delivery and confident that questions and comments would be welcomed and not rebuffed. Learners written feedback also mirrored this sentiment with comments that described the delivery as '*calm', 'friendly', and 'enthusiastic'*. Learners' comments all seem to reference the clarity of session structure and delivery; specifically, the clear explanation of key concepts and appreciation of the visual imagery used throughout the session.

Feedback from the session observer was also overwhelmingly positive and recognised the considerable effort and planning that had gone into the preparation of the microteach session. It was noted that the lesson aims and objectives were clear and measurable (also echoed by the learners), the structure and sequencing of lesson knowledge was well considered with good supporting material that would allow a third person to deliver effectively. Specific feedback on delivery was complimentary with classroom presence being described as confident and enthusiastically responsive to learners. Excellent knowledge of subject matter and industry applications was recognised to have been well demonstrated throughout the session.

On review of the positive feedback, it is felt that a range of professional standards were met during the microteach delivery. These standards namely being:

- Demonstrate commitment to learners, their learning, safety and well-being

- Demonstrate dignity, courtesy and respect towards others

- Maintain and update knowledge of my subject(s) and how best to teach and assess them

- Plan and deliver effective learning, teaching and assessment

Critical Feedback

Critical feedback identified a few specific areas for consideration, firstly there was comments regarding my opening in which I assumed that none of the learners were likely to have any previous exposure or knowledge of laser scanning technologies. This assumption was a mistake, and it would have been more appropriate to have probed the class on their knowledge of the technology instead of assuming anything – this criticism has been duly noted.

Minor critique around the choice to use light text on dark background, this is thought to be potentially problematic and taxing on the eyes. Design of presentation material will be amended to rectify this.

The most significant criticism related to the lack of interactivity with the learners and opportunities for them to get involved with an activity of some kind. The only tangible interactive element planned was the recap questioning at the session's conclusion, as previously mentioned time ran out and there wasn't an opportunity to critically engage and assess the learner's knowledge.

Stage Three: Learning

The lessons learnt from the microteach experience, and both the learners & observers feedback help to inform the creation of a clear action plan and support professional development. The positive feedback helps to identify existing strengths and affirm existing good practices. The critical feedback forms the basis of the action plan to improve professional practice in a constructive way using SMART objectives. The key elements in the action plan (detailed in *appendix 2*) pertain to the critical feedback summarised above, with the most important actions being the need to improve perception of lesson timings and incorporate more learner engagement throughout the session. This process of reflection and subsequent action plan implementation will ensure that the professional standard to **Critically reflect on own values, knowledge and skills to improve learning** is met.

Appendices

Appendix 1 – Action Plan

Target	*Specific* Steps	Measurable *What*	Achievable *How*	Realistic *Why*	Time-bound *When*	Professional Standard
Incorporate Active Learning	Limit information delivery and allocate more time for active learning/engagement/discussion.	Create more time in session for learner engagement.	Specifically allocate time earlier in the session for active learning.	Allocating active learning time earlier will minimise risk of session over-run and guarantee enough time for activity.	When preparing next teaching session implement this step.	Plan and deliver effective learning, teaching and assessment.
Improve Perception and Control of Session Pace	Better plan session content to ensure all material can be comfortably delivered in the session time.	Develop better awareness of time needed to deliver specific material	Carry out dry runs prior to actual delivery and allow additional time percentage for issues, questions and other interruptions.	To ensure that all important material is comfortably delivered without rushing or omission of content.	When preparing next teaching session implement this step.	Critically reflect on own values, knowledge and skills to improve learning.

Ascertainment of Prior Knowledge	Implement a *Tuning In* strategy to establish baseline knowledge of topic at the start of a session.	Probe learners existing knowledge of subject matter at the beginning.	Ask open questions to the class about the material planned for the session and be attentive to responses.	Better appreciation of students existing knowledge can help direct the delivery of material and strengthen learners outcomes.	To be implemented at the start of next session.	Critically reflect on own values, knowledge and skills to improve learning

Appendix 2 – Lesson Plan

Lesson Plan Template

Lesson Plan

Topic: Introduction to Laser Scanning Technology	**Class**: P/T PCET Teaching Toolkit 1 2025/2026	
Date: 24/11/2025	**Length of lesson:** 30 minutes	**Number of students:** 6
Resources required: Power point presentation + presentation notes <u>Props and demonstration equipment</u> Tape measure, disto, ruler, pencil, gridded paper & clipboard Leica BLK2GO Leica RTC360 iPad HDMI-to-usb C connector		

Aim of Lesson

To introduce learners to the core concepts, components, and practical real-world applications of laser scanning technology.

Learning Outcomes – The Learners Should Be Able To:

Learners should be able to summarise the basic principles of laser scanning technologies and be able to explain the advantages of laser scanners over traditional measuring techniques.

Learners should be able to distinguish between the two basic scanners and explain their basic advantages and disadvantages.

Previous student knowledge required for the session:

No previous knowledge of topic required.

Anticipated difficulties (if applicable):

1) Technology difficulties with power point presentation, specifically problems with the playback of videos embedded within the power point.
   Backup plan: use backup presentation that uses select screenshots instead of presentation that uses videos.

2) Issues during demonstration of scanners, specifically connection of ipad to presentation screen or a complete failure of either the scanner or ipad to function as needed.
   Backup plan: showcase data generation directly from ipad by walking around with ipad closer to learners so they can see.
   If devices fail to function, then abandon demonstration and move onto next slides.

Professional Standards (where are these being met within the session)

1) *Demonstrate dignity, courtesy and respect towards others* by being courteous and polite to all attendees and attentive to learners needs and requirements throughout the session.
2) *Plan and deliver effective learning, teaching assessment* by diligently preparing session material appropriate for a first introduction to laser scanning, particularly leveraging explanatory images and video to visually explain concepts and applications. Delivery to include a live demonstration of the technology in use and video media to demonstrate applications of the technology within real world projects.
3) *Critically reflect on own values, knowledge and skills to improve learning* by obtaining session feedback from learners and assessors, reflecting on the feedback, identifying areas for improvement and determining specific action points to work on in my professional development.

Lesson Detail:

Stage	Focus	Strategy	Time
Introduction	Introduction to Laser scanning technology and the basic principle of how they work.	Using images and video media in power point to provide a simple overview of the basic operating principles of a laser scanner.	5 mins
Development	Live demonstration of laser scanner.	Using an actual laser scanner, conduct a live demonstration of data being collected in real time – leveraging the Leica BLK2GO and the Field360 app on the iPad to showcase the data being generated in real time.	5 mins
	Explain key difference between scanner types.	Using visual media to showcase the difference in visual quality in the output of different scanner types and elaborate more on respective scanner specifications and 3D accuracies.	5 mins
	Demonstrate applications of laser scanners.	Showcase example laser scanning projects using visual media to highlight the key advantages of using laser scanners, the information that can be extracted from their data and examples of the process to derive more accessible and useful data types from their datasets.	10 mins

Plenary/ conclusion	Session wrap up and review of core elements of the session.	Finalise session with an overview of the material delivered and reiterate the key learning points from the session.	5 mins

Assessment Strategies: when and how are they included within the lesson?
Assessment strategies for this particular session will be limited to a few minutes of open questioning to the class at the end of the session to evaluate comprehension key principles covered during the session. Session feedback from each learner will also provide insight into how well learners understood the material delivered during the session.
Informal reflection (to be completed after the session)

Overall I felt as though the microteach session went well. Learners appeared engaged with the material, particularly the scanner demonstration and the video examples.
Time was quite tight and I was quite ambitious with the amount of content I tried to deliver within the slot, this meant I ran out of time to do a recap with the learners and ask them questions to assess their comprehension of the material I had delivered.

Appendix 3 – Teaching Observation Record

PGCE/ProfGCE/PCE (PCET)

Teaching Observation Record

Guidance on the use of form

This form is intended to be used to record feedback from formally observed teaching sessions including micro-teaching. The trainee teacher should complete Section 1 in advance of the teaching session and forward the completed form to the scheduled observer. They will then provide feedback to the trainee based on the headings indicated in Section 2 and suggested areas for feedback. However, this is not intended to be prescriptive in nature, but rather to promote dialogue on the quality of the teaching that has been observed in order to provide guidance and to inform targets for future professional development for the trainee teacher. Section 3 should be completed by students following receipt of the observation feedback as a reflection on the feedback obtained and the suggested points for development.

Section 1

Trainee teacher: Matthew Drummond	**Observer**: Marion Phillips
Date: 24/11/2025	**Time**: 5pm
Topic: Intro to Laser Scanning Technologies	**Group**: PCET
Setting: classroom	**Number of learners**: 6

Trainee Teacher notes

Please note here any information you feel would be beneficial for your observer to be aware of prior to the start of the lesson, such as your rationale for a particular teaching approach, how this lesson fits into the wider curriculum for the learners etc.
I have opted to utilise a lot of visual imagery to help explain and demonstrate the basics of laser scanning technology, using examples of real projects and the learning from those to demonstrate some of the key applications of the technology and how it can be superior to traditional surveying/measuring methods.

Please note here any specific areas that you would like to request feedback on from your observer, for example delivery style, planning and preparation, teaching strategy used.

Delivery style, timing and teaching strategy and all things I feel I want specific feedback on.

Section 2

Observer Feedback:

1. Lesson planning and preparation:

For example (but not limited to)

- *Lesson plan (structure, detail provided, variety of activities, appropriateness)*
- *Resources prepared (clarity of any slides used, handouts provided, are resources accessible)*
- *Learning outcomes (suitability of outcomes for learning group and subject)*

- A very well considered Lesson Plan Matthew.
- Excellent consideration of planned for resources, you have planned to include industry standard equipment to help learners appreciate the subject area.
- Clear aim and well considered measurable objectives.
- Very well considered range of anticipated difficulties and contingency measures planned for.
- Very good consideration of a range of professional standards appropriate to your session.
- Good build-up of learning evident in your lesson detail – excellent detail to support delivery by a third person.
- Good consideration of timing.
- Assessment strategies planned for.
- Opportunity missed here to increase learner engagement, this may be possible by weaving questioning into your delivery, or by including a group activity possibly?

2. Teaching and delivery:

For example (but not limited to)

- *Lesson start/conclusion (timing, sharing and reflecting on outcomes, were outcomes met?)*
- *Classroom presence and presentation skills (appropriateness of teaching strategies used)*
- *Pace of lesson and use of time (inclusiveness of lesson for all students, overall workload expectation on students and impact on well-being)*

- You outlined the aims and objectives at the start of your session.
- You introduced the equipment you intend to use in the session.

- Good use of visuals to help you to explain the information that you are delivering, e.g. measuring distance and angles.
- Confident, clear classroom presence, you spoke clearly and moved around your presentation to highlight key points of note.
- Excellent use of technology to share the equipment visuals on the whiteboard – excellent strategy to support inclusion.
- Generally well-paced session, attempting less coverage would have allowed you to focus on key areas in more depth.
- You responded very well to questioning, excellent subject depth to your explanations.
- Excellent enthusiasm clearly evident and infectious!
- Consistently rewarded questioning, "excellent question" – excellent energy.
- Well planned for range of digital resources included – example scans.

3. Professional knowledge and skills

For example (but not limited to)

- *Subject or vocational knowledge (familiarity with the subject being taught, responding to questions)*
- *Clear expectations for learning and behaviour (formative and summative assessment, checking on student knowledge)*
- *Identification of and engagement with professional standards (which standards are evidenced and where)*

- Excellent subject knowledge evidenced.
- Excellent working knowledge of the equipment evidenced through demonstration.
- Excellent industry knowledge, good links of equipment (mobile and stationary scanner) and theory to relatable examples.
- Professional standard achieved in the quality of your resources.
- Learners feel comfortable questioning to clarify their understanding.
- Range of professional standards evident throughout your session.

4. Points for future development (no more than 3 or 4). Where possible these should be identified in negotiation with the trainee teacher.

- Better to assess entry behaviour rather than assume your learners know nothing about what you are about to deliver – you never know who may have previous experience!
- Take care to avoid light writing on a dark backgrounds – this can be very tiring for learners.
- Your students were largely passive during your session, using questioning would have increased their active engagement – it is better to cover less in more depth with active learner engagement to help consolidate what they have learnt.
- Good to see you using a re-cap, it is good to ask your learners to tell you what they have learnt.

Very well done Matthew! 😊

Section 3

Student teacher reflections:

Note here your reflections on the lesson itself, the feedback obtained and any plans you have to address the development points notes.
Feedback from my microteach on the whole is positive. Key critiques being that 1) I was ambitious with amount of material I tried to deliver, which didn't leave much room for deeper class engagement. This was evident when I ran out of time to ask recap questions at the end to affirm the learners knowledge. This was also noted within feedback from the learners. 2) I made an assumption at the beginning that learners would have no knowledge on the topic, that was too presumptive and I should have instead probed the learners to ascertain their knowledge of the topic instead of assuming they had no previous exposure to or knowledge of laser scanning. I will also take note of comments related to presentation display and review my use of text & background colour schemes.

Appendix 4 – Microteach Presentation

Introduction to Laser Scanning Technology

TEACHING TOOLKIT 1 ASSIGNMENT 1 – MICROTEACH 24.11.2025

UNIVERSITY OF WALES TRINITY ST. DAVID

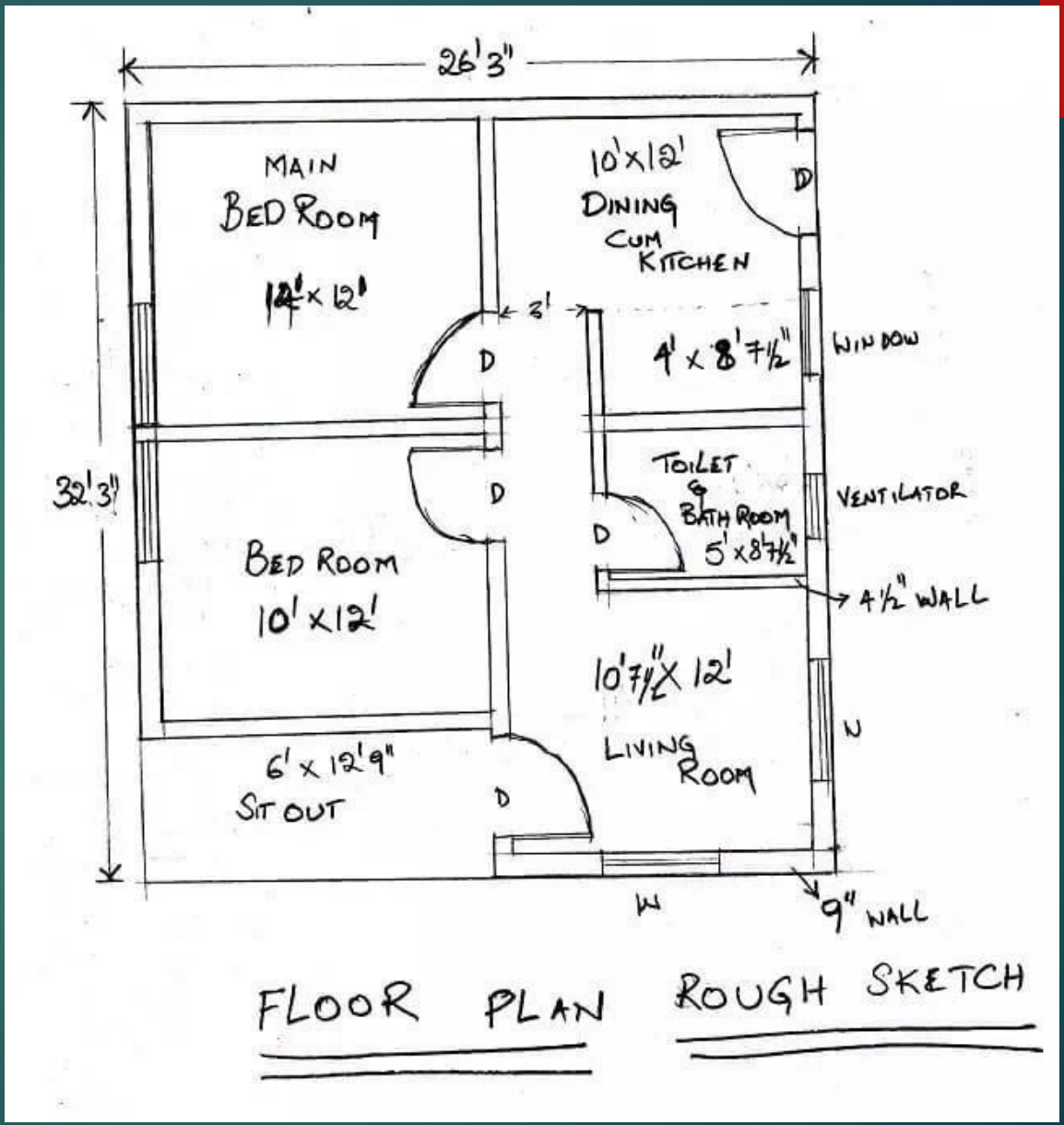
MATTHEW DRUMMOND - 2014426

Session Overview

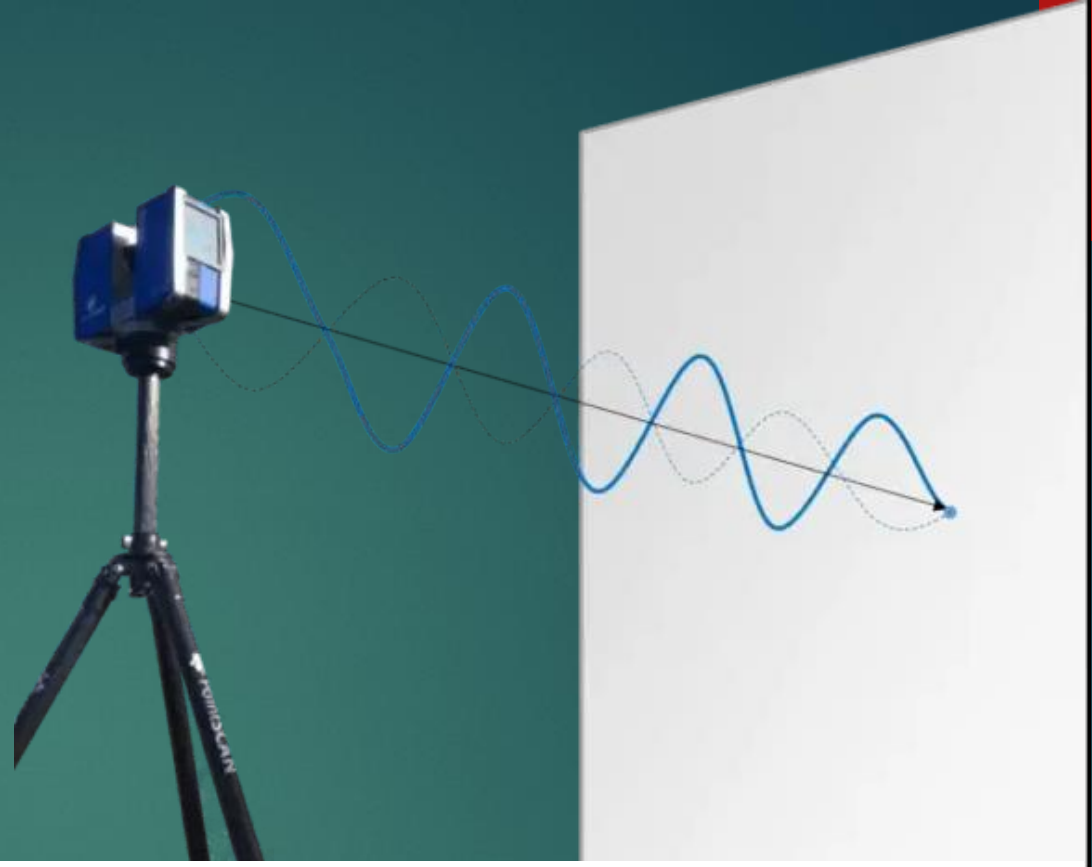
- Overview of conventional methods of measuring building spaces
- Introduction to Laser Scanners – What they are and how they work.
- Demonstration of Laser Scanners – Live capture of data and differences between scanner types.
- Applications of Laser Scanners – Examples of situations where Laser scanners are advantageous.
- How is Laser Scan Data used – Examples of how the data from laser scanners is used.

Measuring Spaces the Traditional Way

- Traditional methods of measuring spaces involve simple tools.
- When reconstructing spatial data this way from simple measurements many assumptions are made.
- Simple reconstructions will mostly assume that:
  - rooms are perfectly square or rectangular.
  - Walls are perfectly plumb and straight.
- In many situations these assumptions are problematic and/or building geometry is not simple.

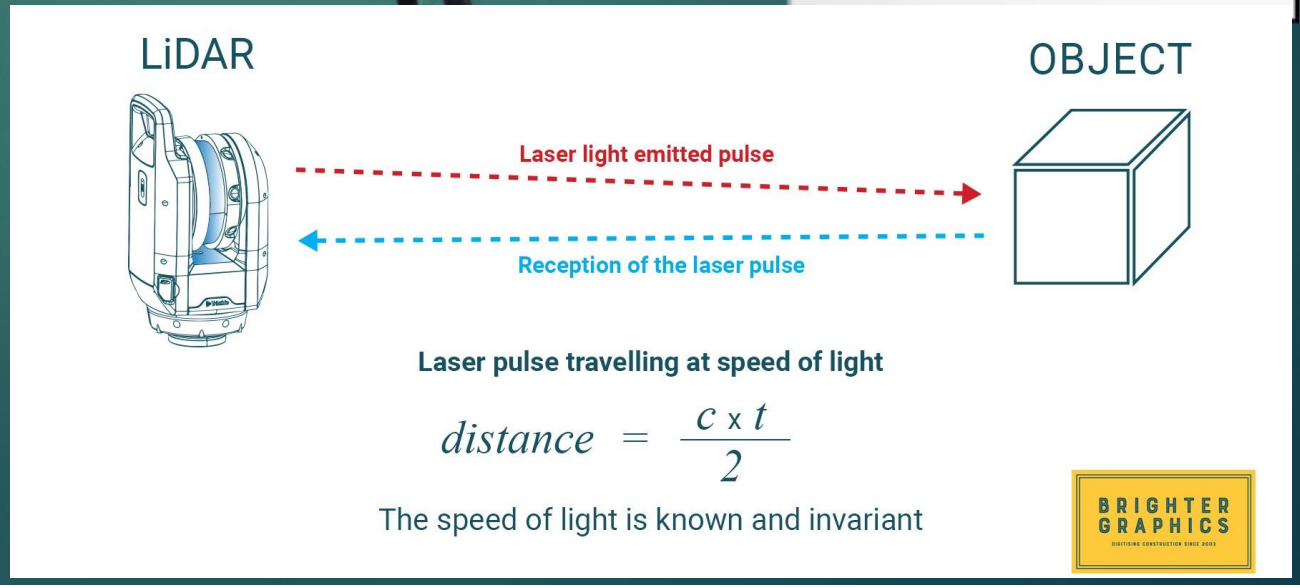


How Laser Scanners Work



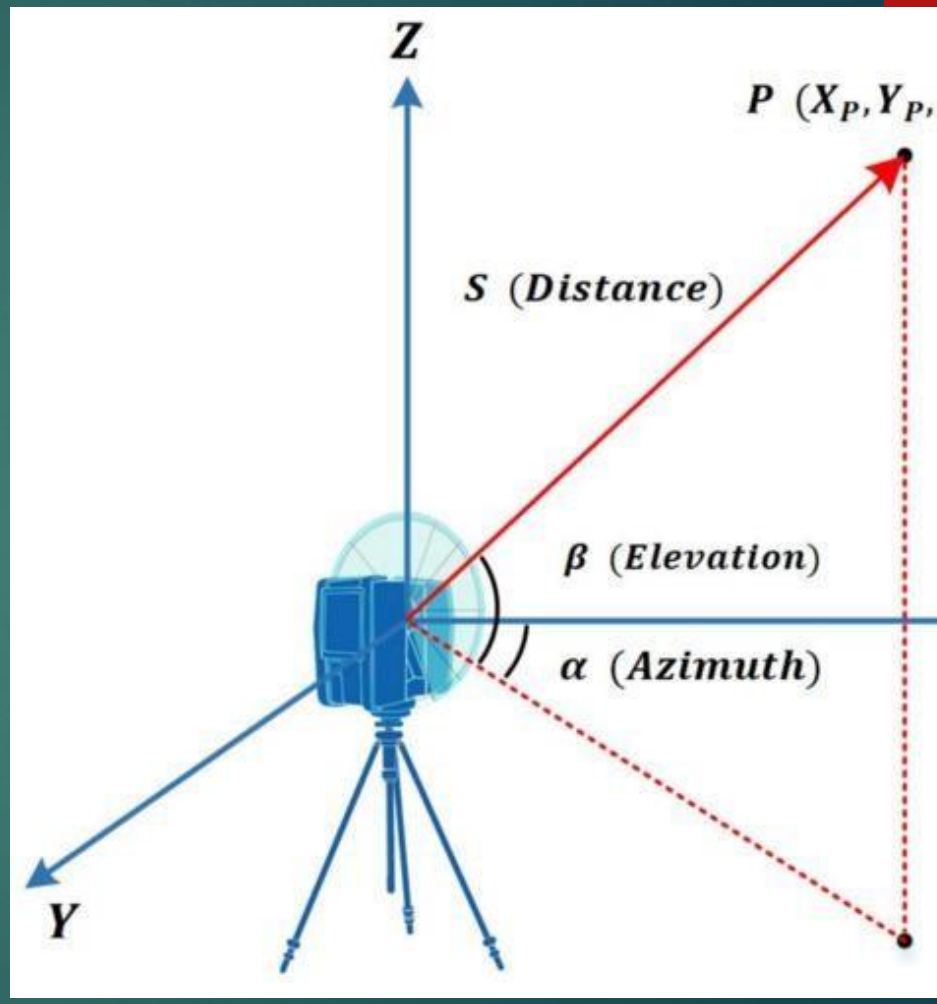
- Laser Scanners fire out laser pulses that are then reflected off surfaces back into the device.

- The device measures the time it takes for these laser pulses to be reflected back.



How Laser Scanners Work

- The device also knows the angle at which it emitted these laser pulse received the reflected pulse back.
- With these two measurements it can generate a point representing a physical object.
- By emitting millions of laser pulses these points can start to accurately 3D model an environment – creating a *point cloud*.
- This is also broadly known as LiDAR [Light Detection and Ranging]



How Laser Scanners Work

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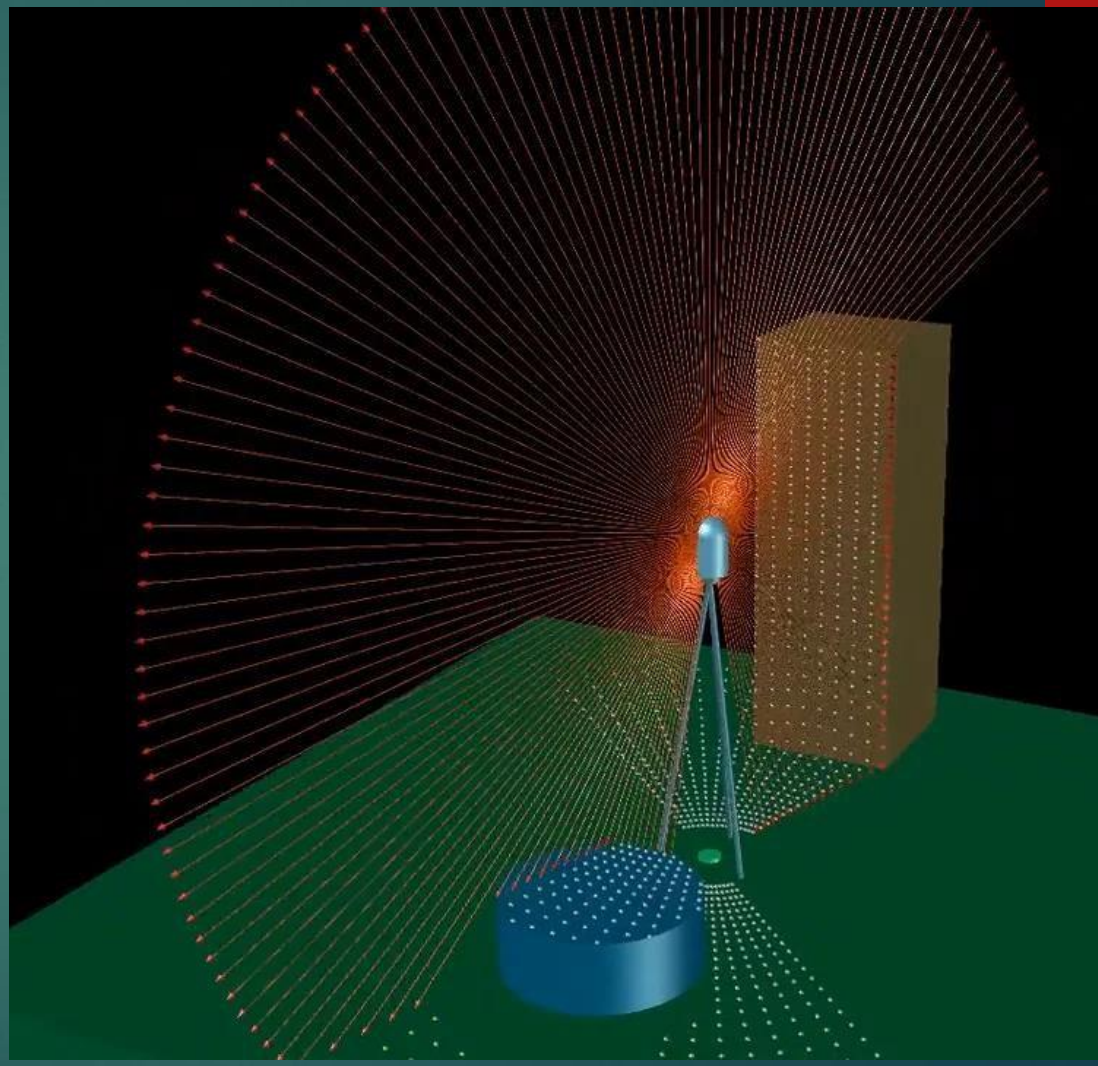

RTC360 vs. BLK2GO: Comparison

- 420,000 pts/s

- Relative error
~3mm @ 10m

Relative error -
~1mm @ 10m

Comprehensively captures complex geometry in a way that its extremely consuming to do using traditional techniques.

Laser Scanner Examples

The use of innovative Reality Capture technology can able the creation of highly de
and accurate 3D models.

Comprehensively captures complex geometry in a way that its extremely difficult an
consuming to do using traditional techniques.

Drone Mounted Laser Scanning

Laser Scanners can be mounted to drones to capture large areas quickly and accur
at higher resolutions than can be obtained from satellite data.

This point cloud of the Swansea SA1 and Marina areas was captured in less than 1.5h
flight time with a drone.

Combining Different Scan Data

Multiple point clouds from different laser scanner types can be combined into a singl unified point cloud.

This point cloud was created from the RTC360, BLK2GO and a drone mounted laser scanner (Zenmuse L2).

Reality Capture vs. Traditional Surve

A large and complex point cloud of a heritage building which has been 3D modelled in architectural modelling software (Autodesk Revit).

2D elevation drawings and floorplans can then be extracted from the 3D model.
A previous survey is shown to be inaccurate when compared against the laser scan derived d

Session Recap

- Overview of conventional methods of measuring building spaces
- Introduction to Laser Scanners – What they are and how they work.
- Demonstration of Laser Scanners – Live capture of data and differences between scanner types.
- Applications of Laser Scanners – Examples of situations where Laser scanners are advantageous.
- How is Laser Scan Data used – Examples of how the data from laser scanners is used and what can be produced.
- Recap Questions

Session Recap

- Recap Questions

Q1) what 2 measurements do laser scanners require to generate the position of a single reflected point?
A: distance and angle

- Q2) What other term are Laser Scanners also more broadly referred to? (hint: also begins with letter L)
A: LiDAR – Light Detection and Ranging

- Q3) What are the advantages but also disadvantages of Handheld scanners over tripod scanners?
A: Advantage – mobility/ speed and ease of data capture
Disadvantage – 'Lower quality' data visual/ less dense data
- lower accuracy
- more difficult to correct errors

- Q4) What types of situations are laser scanners more advantageous or superior to use than traditional hand measurements?
A: buildings with complex geometry and/or when a lot of measurements are required to both/or either a high accuracy.

- Q5) Can datasets from different scanning devices be combined into a single dataset?
A: yes

- Q6) What other data or outputs can be extract or derived from Laser scan data
A: simple measurements, digital 3D models, 2d CAD drawings, 3D print objects, and more!

References

Boud, D., Keogh, R. and Walker, D. (1985) *Reflection: Turning Experience into Learning*. Routledge

Carraway, K. (2014) *Transforming Your Teaching, Practical Classroom Strategies Informed by Cognitive Neuroscience*. Norton Professional Books