Record of Observation or Review of Teaching Practice

Session/artefact to be observed/reviewed:
"**Introduction to The Internet of Things (IOT): A Beginner's Workshop**"

Size of student group: **2-12 (Depending on Turn-Out)**

Observer: **Dr Sidney Hope**
Observee: **Elliott Hall**

Note: This record is solely for exchanging developmental feedback between colleagues. Its reflective aspect informs PgCert and Fellowship assessment, but it is not an official evaluation of teaching and is not intended for other internal or legal applications such as probation or disciplinary action.

Part One

Observee to complete in brief and send to observer prior to the observation or review:

What is the context of this session/artefact within the curriculum?

The session to be observed is none curriculum based and is open access to students from all around LCF. Regardless I offer nine different workshops with this one specifically engaging on the topic of IOT or Internet of Things.

This is what students see when booking the workshop:

"**Please bring a laptop, this is required, if you don't have a computer, turn up and we will find a solution.**

This workshop, Introduction to The Internet of Things (IoT): A Beginner's Workshop, unravels the captivating world where everyday objects converse and collaborate through the vast expanse of the internet. Participants are introduced to the foundational principles of IoT, demystifying the often-nebulous concept of 'the cloud' and shedding light on both its transformative potential and the pressing concerns surrounding data collection. As the workshop progresses, attendees will transition from theory to practice, diving into the creation of their very own IoT devices. Leveraging the simplicity and robustness of microcontrollers, paired with the user-friendly Adafruit IO platform, participants will gain hands-on experience in breathing digital life into physical objects. This workshop is ideal for those eager to understand the fabric of our interconnected digital future, wishing to grasp both its opportunities and its challenges. By its conclusion, participants will emerge with a comprehensive understanding of IoT and the confidence to create interactive devices that tap into the immense potential of the internet."

How long have you been working with this group and in what capacity?

This will be a unique students, and can consist of students I have never met before, students who have attended previous workshops or students I work closely with to assist to degree

work. The group attending tomorrow (due to low January/February numbers) will be a mix of sign-up and invited students whom I have worked with prior – I will make this clear on the day to the Observer.

What are the intended or expected learning outcomes?

By the end of the session, the idea is just to get students curious about the area of physical computing. I personally am looking for some Ah-Ha moments when they learn about how consumer devices work, along with hopefully some satisfaction in having their own working prototype to play around with. This particular session is a bit more 'follow along' compared to my other sessions that have more predefined activities. Essentially, I am trying to peak students interests into how physical compute is useful in the hopes they will choose to implement these techniques into their own work if suitable. My ideal scenario is to get students engaged, asking questions – I expect a little less of that during this session though depending on if it is just my invited students.

What are the anticipated outputs (anything students will make/do)?

Within the session, there will be an introduction to the area, alongside a physical task where they will create either their own/or in groups a working IOT prototype. Within this task they will create two devices, one with a sensor and the other with a light. The sensor should take readings, send it to a remote IOT service and then control the light on the other device depending on the readings (i.e low temperature would set the light blue, and high red) they can blow on the sensor to show how this works in real-time.

Are there potential difficulties or specific areas of concern?

My main areas of concern are technical issues, sometimes it goes very smoothly sometimes, it does not. Although my goal is to make the activity as simple to follow – there is a lot of work in the backend to do this and unfortunately things do go wrong that are both in and out of my control. From issues with the hardware, code, laptops, wifi, access to online resources – however I do my best to circumvent this… but any suggestions are always welcome. I have no problem with things going wrong, I just want to make sure that I resolve this issue quickly and smoothly as to not disrupt and disengage the rest of the group.

How will students be informed of the observation/review?

At the start of the workshop, I will introduce myself and Sidney, and will give a brief explanation explaining that I am being reviewed for my PgCert – most are aware already. Critically though I will reassure that it is me being observed and not the students as I do not want this to lead students to feel embarrassed or judged on asking questions. There are no stupid questions.

What would you particularly like feedback on?

My main interest I suppose is making sure the content is relevant, easy to follow, and most importantly that I am keeping all students engaged. I do my best to make sure I address

everyone and not just those who participate more than others – but also not forced into the spotlight.

How will feedback be exchanged?

Preferably via written feedback. However if Sidney would prefer I can do in person feedback.

Part Two

Observer to note down observations, suggestions and questions:

NB: these notes were written in real time so my perspective shifts as I go along – I've left the notes like this as I think it makes more sense to do that.

Very interesting session thematically, lots of engaging information.
It's a good idea to send the presentation early as students could familiarise themselves with the content in advance – this could help comprehension.
One student attended who Elliott knew already, they have come to previous sessions.
Elliott was going pretty fast with delivery – is Elliott assuming knowledge in the student? The student may be international, or have English as a second language, is the delivery a bit fast for them? Are there ways of evaluating whether the student understands the content, could Elliott ask the student, or find ways of checking whether the student understands?
How much knowledge does the student have? Does Elliott know this?
Alexa workflow…this is complex, it might need more accessible detail to understand this more fully.
'If you're not paying for the product, you are the product.' – good, memorable, simple point.
Visually engaging presentation
Levi, Jaquard with Google collaboration video example is useful for explanation.
I was a bit lost with the introduction of Adafruit IO, I was unsure what the dashboard was for – this wasn't explained fully. Is this session for students with prior knowledge or not?
Microprocessor/board (BME280) seems quite complex, I didn't fully understand its use.
Should I understand what's happening as a non-specialist? Pace is a bit fast for me.
'You already know all this but I'll go through it anyway.' So Elliott is delivering the session with the knowledge that this student has knowledge about the content. To what extent is this the case?
Are there ways of students learning some of the instructive content by doing activities, Elliot has a lot of verbal delivery. What are the ways of engaging the students, or enabling them to find out the answers for themselves? In a specialist workshop of this kind, how can this be done?
Egg slicer is a nice analogy.
I don't fully understand the function of the microprocessor, how it works. I think I'm someone for whom comprehension is tied to understanding how something works. Might this be the case for students, i.e. there are lots of short acronyms on the microprocessor – what do they stand for?
The student is following along on their computer and Elliot makes sure they are so the workshop functions as a demonstration to a large extent. I would understand the content more if I was following along practically too.
Elliott has a lot of specialist knowledge, the question of how to convey this knowledge so students can apply it themselves is key. Learning through doing is really valuable for something quite complex like this. Can Elliott assess, during the session, whether the student understands the meaning of what they are doing, i.e. the context of each action.
Elliot has a nice approach with taking students through specific activities.
Elliot said, 'does that make sense' but he didn't usually ask this – he could ask this more. He didn't really say, if you don't understand anything do say.
The student's work is apparently the most complex Elliott has seen in a student – this seems to contextualise his delivery that seems to assume knowledge.
I had a go with the activity but felt I was too slow and was taking Elliott away from his student. Should I have found it asier to participate? Elliott told me that this is a more advanced workshop and students at this point in the academic year usually know about the subject. Again, this contextualises Elliott's delivery although I still find it too fast. I don't really

understand what's happening, I think the session is aimed at technically-minded students overall. I'm not technically-minded/familiar I think.
The wifi went down and Elliott managed well just shifting to supporting the student.
I think following along with the activities is critical to aid comprehension – hence the design of the workshop. I think the session could enable greater meaning to be gained in relation to the different technical processes.
It's great to see the set up working, the colour of the light changing in response to temperature.
It was an encouraging point the benefits of Github student developer pack.
Says 'very basic introduction' in the slides – I would say it isn't very basic.
Would the student have felt like they could ask questions? I think so.
It's really nice to have how the sensor behaves explained – I think more of this knowledge would be good. I would like to understand more about what the boards do.
The student seemed very pleased (clapped and smiled) at the end of the session. They offered no specific feedback.

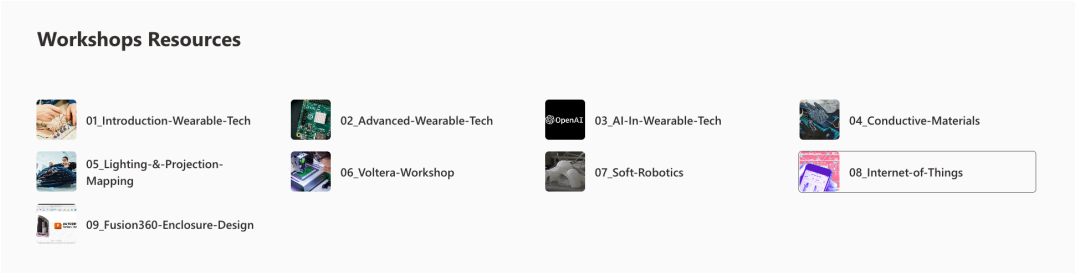
Part Three

Observee to reflect on the observer's comments and describe how they will act on the feedback exchanged:

As acknowledged by Sidney in the feedback above, unfortunately the attendance of my workshop fell completely through – fortunately for me my most dedicated and well-versed student offered to attend my workshop knowing that I had teaching observations on that day. Unfortunately, this low attendance is being felt across my technical area (Digital Learning Lab, LCF) and is being put down to the move to Stratford, Visibility and Advertisement as numbers prior to Stratford were high and growing. Unfortunately, this made the session difficult as Sidney acknowledges that the student attending already has a level of understanding within this field already – this in real world effects meant the delivery was much faster than usual lasting around 1.5hrs to 2hrs – whereas the session usually lasts between 3 to 3.5 hours. I thought I would preface this for anyone reading.

- I am glad that Sidney thought the theme of IOT was interesting and normally is one of my highest sign-ups.

- Regarding the preparation, allowing the students to see the information ahead of time. I completely agree as this is something I always appreciate as a student also, a copy of the presentation including all resources were/are openly accessible at wt.lcfdll.com under the 'Workshop Resources' and by clicking on the workshop of interest. However, I appreciate that this is not necessarily obvious/known to any one new to the area. Going forward I will link the corresponding documentation in the ORB sign-up page to allow all the information to be in a clear and concise place.



Further the DLL is in the process of implementing a 'ASYNC' system. This system will create a pipeline for students signing up for the workshop, an example being that if a student were to sign up to the IOT workshop they would then have a series of relevant online pre-tasks to complete before attending the workshop, allowing everyone to attend with the same level of base knowledge. Hopefully this will further improve one of Sidney's other observations, that of specialist knowledge delivery.

The IOT workshop was the 8th workshop in a series of 9 that I offer, but quite rightly as Sidney points out this workshop is labelled as 'A Beginner Workshop' which is not clear in communicating the base level of information required. In general as my numbers are low, I tend to assess the students attending to see if they have attended the Introduction workshop – and deliver content accordingly but on reflection when numbers do increase this solution may not be viable and could hold others back creating a less engaging classroom environment.

- I very much appreciate Sidney's feedback regarding student feedback, as discussed with Sidney on the day it was very unlikely that this student would give negative feedback as we have a well-established repour within the technical environment – however it is crucial for me to be able to gauge student interaction and feedback better and within reflection of my case studies I do talk about this as something that would be of great significance to be able to capture accurately as to be able to improve the student experience in response.

- I very much agree of the observation of the importance of following along and is something I do in all my workshops, I too often make mistakes and believe it is reassuring to students that no matter your knowledge level in the area, this is often complex problem solving (which can be part of the enjoyment). It also helps to give a working example but also for me to diagnose any issues that can arise and allows me to update the physical resources such as making diagrams easier to follow or equipment easier to plug in.

- As mentioned, technical issues do arise that often just has to be circumvented – but I have a responsibility to keep the session going in the right direction. I appreciate Sidney's acknowledgment to my handling of the WIFI going down on staff devices which meant I had to promptly pivot to working directly with the student on their machine which worked out well for the rest of the session.

- Lastly, I appreciate the acknowledgment of the analogies and comparisons that hopefully make things easier to digest and relate to. Such as the egg slicer or the 'You already know all this but I'll go through it anyway.' I do believe that in this area it is important to relate to things that can be understood as there is a large amount of information to take in, and by stacking it directly this can cause issues if the foundational knowledge was never fully understood and so will make a more conscious approach to implementing this more where applicable.