Review of Teaching Practice

Session/artefact to be observed/reviewed: Intro to Electronics Bench
Size of student group: 6
Reviewee: Agnes Cameron
Reviewer: John O'Reilly

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
Reviewee to complete in brief and send to reviewer prior to the review

What is the context of this session/artefact within the curriculum?
This is an introductory session to the soldering bench. Students should come having already completed a mandatory online safety induction, but there are otherwise no prerequisites. Students will be coming from a range of courses and backgrounds. This session is not mandatory to have access to the equipment, so students in attendance will have opted to be here.

How long have you been working with this group and in what capacity?
Most of the students in attendance will be in their first year at the CCI, though some may have been here for longer. I have worked with these students in my capacity as a technician, though it's possible that some may not have used the workshop before.

What are the intended or expected learning outcomes?
The aim of this session is to introduce or reinforce foundational electronics knowledge, and to get students to the point of being able to use the soldering equipment, bench top power supply and hand tools safely and more confidently. A secondary aim is to familiarise students with electronics schematics, and introduce how to interpret these in prototyping circuits. Many students will have only encountered pictoral representations of circuits up until this point, so the intention is to extend their knowledge in introducing this new modality.

What are the anticipated outputs (anything students will make/do)?
Students will solder a piece of strip board (a common electronics prototyping medium), with an LED attached. They will power this using the bench top power supply.

Are there potential difficulties or specific areas of concern?
When there are more than a few students in attendance, it can become challenging to ensure that everyone has a good grasp of the material, which can be very new for

many students. Some small formative assessments are made during the session, such as requiring students to reproduce their own circuit from the diagram, without being able to see mine, and being supported to identify issues on their own boards. Another area of concern is ensuring students can make use of the material after they leave the workshop. I have worked with the electronics technician to develop some small extension tasks.

How will students be informed of the observation/review?
They will be informed in advance by email, and verbally at the start of the session.

What would you particularly like feedback on?
I'd particularly like feedback on how well I make the material accessible to students, and tactics for ensuring that everybody feels properly supported by the workshop and encourages to continue.

How will feedback be exchanged?
In written form, and ideally verbally if possible too!

Part Two
Reviewer to note down observations, suggestions and questions.

What is most tangible throughout the workshop was the ongoing checking-in with students, helping them understand the wider teaching and learning contexts (such as materials provision which is noted further down in the documents), the spatial arrangement of the teaching where they gather round you.

The approach to all the different teaching elements was both professional and friendly. In terms of tonality it was exemplary in how to walk this line of being professional and friendly with students in a situation with different registers of teaching around: materials and their properties; safety issues; conceptual mathematics and physics; how to visualise and understand information.

There was a high degree of skill in moving between all of these as you shifted the focuses during the lesson, making sure you brought the students with you. The only measure I have of how successful you were, comes from seeing the different students' interactions, from the answers they gave to your questions, to the individual questions and concerns they raised connected to the topic at hand, adding to the learning for everyone.

The high-level of teaching preparation was tangible, from the induction process on the web with videos and theory to the arrangement and provision of materials.

During the lesson you made them aware of being mindful of the space for themselves and for others, whether that was keeping the floor space clear of bags, or keeping the desk and floor clean from the cuttings produces in the soldering process, to informing the teams when the spinner is running low of materials. Perhaps there is something you could do around the ethics of space and materials, bringing all these elements within a circuit-diagram of care and ethics? The university is continually concerned with issues of student community and belonging, and you thread through the lesson the care and responsibility students have for themselves and for others. The most touching and resonant example of this (among many) was when you advised the students: "The most important thing is that you feel safe. Don't worry about breaking things, we can fix it." As you introduce yourself, and before the students introduce themselves, you emphasize that any CCI staff will be able to answer questions, "there will always be someone around"

All through the different parts of the lesson you involve the students with a question: "has anyone used a stripboard before?" "Has anyone seen a circuit diagram?" "What will we need to make an LED light up?" "Why do we have the resistor?" You expand on the student answer to each question, and all the student answers contribute to the learning.

The issue of care and ethics comes up again when a student asks if it is ok to use an LED bought on an online shop, and you advise to buy from a specialist electronic shop, there is a problem with the unregulated marketplace for example something that might be a fire hazard: "we may have the item you need and can lend it, or get at cost much cheaper." All the students are very engaged throughout, different students respond to the questions you ask and raise questions themselves. At one point you note for the students about using a European way of picturing a component rather than the US one and I also wondered if it is worth flagging up if it is the same or different in Asia. The students seemed prepared when I left, and I would love to hear how they managed their own circuit boards and diagrams. I got a strong sense that students felt at home in the space.

Readings you may find useful

"Belonging is both material and bound up with identity, it flickers and is in flux, it may stick, slip and slide in different times and spaces. Our findings challenge the stability of space for belonging, and the stability of belonging itself as a concept that can be measured in a single item at any one point in time. Belonging is not a fixed entity but instead needs to be considered in relation to the material, the temporal and the spatial."

'Belonging to and beyond higher education in hybrid spaces', (2023) Society of research into Higher Education. Dr Karen Gravett (University of Surrey), Prof Rola Ajjawi (Deakin University) and Prof Sarah O'Shea (Curtin University)

It was really helpful and reassuring to get this feedback. As technicians, we do not have many avenues to formally evaluate the effectiveness of our teaching, and it's good to hear that many of my intentions come across. It's interesting that you picked up particularly on issues of belonging. This has been something that's a concern to us quite consistently, and many of our efforts as technicians are often around a kind of community building.

I strongly believe that opportunities to connect to the department and to one another in person, not mediated by mandatory class time, can be really valuable for students, and making the workshops welcoming is a big part of that. As well as running inductions, technicians also run a program called the Technical Skills Workshops, which have an explicit goal of fostering relationships between different student and staff groups, and getting to know the students better. In a similar vein, we also maintain the kitchen space — day to day this often looks like putting all the mugs in the dishwasher, but my manager regularly buys biscuits to leave out in the space (particularly during deadlines), and has also made sure there are chopsticks as well as forks available, which many students really appreciate.

As technicians, we benefit greatly from having a strong social contract — students respecting one another, using the equipment safely and leaving the space tidy. This hasn't always worked out, and as student numbers have grown we've had to change tactics many times. For example, when student numbers were smaller it was desirable to have a large table in the electronics lab to make the workshop a nice place for students to come and work, as it was a way we would get to know them. Soldering inductions were a lot more informal, and normally happened organically when people spent time in the space. As it's got busier, this has become a hindrance: the table gets easily cluttered, and the lab becomes overcrowded and unsafe, with workstations ill-defined, and too many students for us to teach in an ad-hoc way.

It's interesting to think about this in the context of the (Gravett, 2023) paper you linked. In some ways, part of 'belonging' in the workshop involves students putting aside personalised objects and learning tools to focus on a specialised mode of work, and our job as technicians is to make that feel comfortable, calm and safe for as many students as possible, including making adjustments when students have different access needs.

Part of our strategy for accommodating the growth in student numbers and workshop use has been to put more structure in place, including formalising things like the soldering inductions. We are still working out what and what not to include in these — there's a balance between respecting students' energy levels and engagement, managing times of peak demand, and ensuring that students are able to feel relaxed

and ask questions. I've written a longer reflection about this for the PGCert blog, it's still an active area of consideration.

You are definitely right that we should formalise some kind of workshop agreement — we've drafted loads of these over the years but normally when we're annoyed after students have trashed the workshop, and none have ever made it onto the wall! We have a big emphasis at the moment on the workshops needing to feel like a calm and safe place to be, and I think this Easter might be a good time to bring in a guide like this before the space gets busy in the summer.

I also appreciated the point you raise about the resistor symbol. What I called the 'European' version is more correctly termed the 'International' ([IEC](#)) resistor symbol, and is now adopted by most East Asian countries. However, due to historic American influence, especially in Japan, older diagrams will use the American ([ANSI](#)) symbol. Like many standards processes, there's a great deal of history that can be read in to these symbols and their nicknames (Bowker and Starr, 1996). While I'll change my language to describe the rectangular resistor as 'international' (I'd not questioned this naming before!) it's also worth highlighting to students the contradiction that despite the vast majority of electronics being manufactured in East Asia (Trade Map, 2024), naming standards and conventions are still controlled by the US and Europe. In general, many conventions in how we talk about electronics can be racist, a racism reinforced by structures like this standardisation paradigm. This is why I was quick to point out that, while the Chinese distributor Aliexpress (the example a student asked about) is an unregulated seller, so is the American distributor Amazon.

Another project that we've talked about as technicians at the CCI is building closer relationships with Chinese open-source manufacturers — this is happening somewhat organically, as both students and technical staff have relationships with companies in Shenzhen like SEEED Studio and DFRobot, but formalising these more is an important acknowledgement of the current context of electronics manufacture.

References

Bowker, G.C. and Star, S.L. (1996) '*How things (actor-net)work: Classification, magic and the ubiquity of standards*', Philosophia, 25(3–4), Accessed here: https://ics.uci.edu/~gbowker/actnet.html

Gravett, K., Ajjawi, R. and O'Shea, S. (2023) '*Belonging to and beyond higher education in hybrid spaces',* Society for Research into Higher Education.

Trade Map (2024) *'List of exporters for the selected product: Electrical machinery and equipment and parts thereof; sound recorders and reproducers, television…*' [Online]. Available at: https://www.trademap.org (Accessed: 18 March 2026)