**Evaluation of The OpenScience Lab’s 3D Virtual Skiddaw application**

**Shailey Minocha:**

So Tom, why are we here?

**Tom Argles:**

We’re in a place called Coombs Quarry and to come and look at these lovely sedimentary limestones here and it’s a kind of classic field site that we’d visit for geology.

**Shailey Minocha:**

Do our Open University students come here for a field trip?

**Tom Argles:**

Actually they don’t and part of the reason is that this is more set up for local groups, maybe schools, local schools. And of course our students are scattered all over the UK and beyond. So for most of them it will be virtually impossible to get here any time. For us it was easy just to pop over from Milton Keynes.

And of course some of them would have family commitments perhaps, they’d have to get time off work so it’s very difficult for them.

**Shailey Minocha:**

That is right. And some may even have mobility constraints and to travel to such sites might be very difficult for them.

**Tom Argles:**

That’s true and even navigating around the site as well, very tricky. And that’s really what prompted us to make a virtual field trip, the Virtual Skiddaw field trip.

**Shailey Minocha:**

So remind me Tom why did we choose Skiddaw for our virtual field trip?

**Tom Argles:**

Yeah. Skiddaw was a location in the northern Lake District. We already had a kind of virtual field trip of sorts. We used to deliver it on DVD or CD ROM. But that was quite a simple affair. It was mainly photographs and a few sort of panoramic videos which were really tiny and mostly just words. So very simple sort of things. The key thing with that was that we already had the academic content. We had the teaching in place and so we could concentrate all our efforts on designing a 3D virtual environment, an immersive environment to base that field trip in. And of course that’s where your expertise came in.

**Shailey Minocha:**

Yes. I was very keen to have a 3D virtual environment because I had been working in Second Life and I’d been used to that avatar based environment. And I thought if we develop this virtual field trip having those characteristics of 3D environments like multi-user, avatar based and if you are able to bring in real data so that we can reconstruct the landscape exactly as it exists then that would be very useful for our students to have an experience of.

**Tom Argles:**

Yes, that’s the key thing isn’t it with the Open Science Laboratory is to have real data, base everything on real data for the authenticity for the students. So for instance we had satellite data for the sort of ten by ten kilometre wider landscape to make the digital landscape. But we also actually even took the developers up to the northern Lake District in I think possibly October or November in a howling gale to collect and scan outcrops rather like these to get that very fine detail on six of the detailed sites.

And I can remember watching four software developers in this howling gale hanging on to a 15 foot pole with a camera on top of it which was taking the photogrammetry data. And the pole was bending in the wind, absolutely hilarious. So that was how we captured the real data.

And we also had rock samples and in fact I have one here with me today under my hat. So this is a rock that featured in Virtual Skiddaw and we sent the photogrammetry guy away to scan this in excruciating detail so that the students could have the experience in the virtual field trip of picking up a rock and looking at it in very fine detail.

And then on top of that we also added in a link to the virtual microscope for a thin section of this rock so that they could get a microscopic view of it as well. So all the scales from tens of kilometres right down to the microscopic scale.

**Shailey Minocha:**

Yes, I think going from microscopic to microscopic view was very interesting and it’s very useful for students to have that view. But Tom do you remember we also had those non-realistic aspects as well. That is draping maps over mountains, like draping the geological map to see the geology of the six sites. But also the Ordnance Survey Map you could drape over the mountains. And then we had that piece of earth coming up to show you the geology underneath. So all those non-realistic aspects really add to students learning.

**Tom Argles:**

That’s right, yes. And we had another few facilities like we could fly, for example, the avatars could fly so you get a kind of overhead view. And they could teleport from site to site. So I said we had these six sites didn’t we and instead of walking laboriously when we actually go for the outdoor trip and take our students up there, it takes ages to walk from one to the other but they could just teleport from one to the other which saves a lot of time.

Because one of the limitations of course of Virtual Skiddaw was that you couldn’t really take it on the fieldwork, the actual outdoor field with the students because it was just a desktop application. And what would have been really nice to develop would have been a mobile app of some sort that you could take on a mobile device or a tablet, for example, and have that actually in the fieldwork. So instead of just Virtual Skiddaw you could use it before and you could use it after but you couldn’t really use it during.

**Shailey Minocha:**

That is right. I think Virtual Skiddaw has its applications before a field trip and after a field trip. So if you wanted to do a health and safety assessment before you go for a field trip, what if you wanted to learn sketching or if you wanted to familiarise yourself with the area, or what kind of equipment you would take on that field trip, you can all learn within the virtual field trip.

And today we’ve had very good weather Tom but if it was raining and if you had planned six sites to see in the Skiddaw mountains on a physical field trip then you’ll may be able to see only two of those sites or three of those sites. And in this Virtual Skiddaw you can come back and you can revise, you can consolidate, you can fill up the gaps of what you weren’t able to do on a physical field trip.

**Tom Argles:**

That was one of the things that our colleague from the Field Studies Council was saying. What he’s seen over the last few years with the schools that come to the Field Studies Council sites is that the time for their field trips has got less and less. There’s more and more pressure on that time. So what he was looking for was a way virtual field trips could contribute to that and make sure that the teachers could get much more out of the time they spend in the field by shifting some of the teaching before. And then also to give them time to reflect afterwards and revise what they’d learnt afterwards.

So after they’ve been on the visit they could come back to the school and actually revisit the virtual field trip and see what they’d learnt and reflect on that. So that was a really useful thing as well.

**Shailey Minocha:**

But Tom since we developed this Virtual Skiddaw now you have apps that are available on a smart phone, like the Google Expeditions app that has over 600 expeditions. And subsequent to our Wolfson Trust funded Open Science Lab and then we were funded by eSTEeM to do these evaluations of Virtual Skiddaw we were then funded by Google to evaluate their app in geography and science education in the UK schools. And we’ve been going all over to evaluate that.

And over the 600 expeditions you can experience places that you may never be able to visit like the coral bleaching in the Great Barrier Reef or the tropical rainforest. But you can also use it as a preparation if you were going perhaps to do some geological fieldwork at the London Olympic Park. There is an expedition for that also to prepare you for it.

**Tom Argles:**

So I think that will be a real growth area for virtual field trips in the future because there’s so much pressure on schools and universities now on outdoor fieldwork. And the time for that is becoming more and more limited. So I think the opportunities for virtual fieldwork and virtual field trips and the benefits of using those both before and after is just going to increase more and more in the next few years.