



## How can we develop an inclusive pedagogy for online teaching in atmospheric sciences to maximise student engagement?

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This research explores the experiences of students and staff who have been involved in online courses delivered by the National Centre for Atmospheric Science since March 2020, with a view to developing a pedagogic approach which will help to make online learning more engaging for all students.

I work for the National Centre for Atmospheric Science coordinating the training that we deliver in Atmospheric Science to postgraduate researchers. Over the last two years we have moved much of our training online and I have invested time in working with staff to understand the ways we can best support them to maximise student engagement. When students are attending a course virtually it is challenging to create an environment within which they feel comfortable speaking and sharing their experiences and also for them to feel engaged enough with their learning community to feel that their presence is valued and that they would be missed if absent. When looking to engage students throughout a programme, building a sense of community is a key factor (Boyle et al., 2010; Yates et al., 2014) and builds a sense of dependency amongst the students. Although generally, students are defined as being engaged if they are actively involved in doing something, whether that be activities, discussions or group work (Radloff & Coates, 2010), Kahu et al suggest a broader definition where students feel a connection to their studies (Kahu et al., 2014). As a result of the COVID-19 pandemic many courses have needed to be delivered online, and few teachers have the specific skills needed to develop and deliver high quality online training (OECD, 2020), meaning that delivering teaching that engages students has been challenging. This work unpacks the different approaches used to help students and teachers connect with online delivery, and then applies this to the experiences of those we have worked with in recent times. I then synthesise our experiences with others taken from literature to propose a best practice approach to creating an inclusive environment within our online teaching spaces and implementing it into future courses.

I define an inclusive pedagogy as an approach to teaching that is intended to engage all students (Florian & Black-Hawkins, 2011). So this is not about access for those with specific additional needs or protected characteristics, but developing a pedagogy which extends what is available for everyone to engage with, rather than providing access for all by differentiating for some. This work focuses on extending what the classroom community offers to all students and making them part

of that community, rather identifying some learners as having specific needs which must be met.