HE Bioscience Teacher of the Year 2018 Application Form

Dr Dominic Henri – University of Hull

1. **Individual excellence in the development and implementation of teaching bioscience**
   In not more than 500 words please outline, with evidence (references are not included in the 500 word limit), how the candidate displays individual excellence in the development and implementation of approaches to teaching that have proven successful in promoting bioscience student learning and achievement

At the University of Hull (November 2014 – present) Dr Henri has succeeded in providing innovative and excellent teaching and in 2017 was the inaugural recipient of the University of Hull's Teaching Excellence Award. His personal philosophy emphasises the importance of both disciplinary and extra-disciplinary competencies to Biology students. As a lecturer and Zoology programme director, Dominic is focused on developing teaching that ensures each graduate develops critical, environmentally-aware thought processes and has the self-confidence to succeed as graduates. While he delivers these aims at all undergraduate levels, he also provides guidance for colleagues to take up these ideals through his 'Assessment Therapy' scheme. Through his involvement in local and national pedagogic research conferences and groups, he has disseminated his 'self-efficacy-based' teaching philosophy beyond the institution.

While Dominic is developing pedagogy at a range of scales across the sub-disciplines of ecology, here I highlight a particular finalist module embodying his particular teaching ideals. Our finalists have an optional applied-conservation module *Environment & Society* spanning two semesters and split into two distinct parts. The module challenges students but promotes engagement and results in high satisfaction and high achievement. During semester one, Dominic organises up to 7 fieldtrips with local environmental organisations (e.g. Yorkshire Wildlife Trust). During each, students perform a conservation or public-education activity and discuss with the organisation staff about an important issue that organisation faces (e.g. human-wildlife conflicts). Across the semester students write blogs about the importance of the site and the work undertaken there and encourage the general public to join volunteering efforts.

During semester two, each student organises a series of volunteering days with a community group of their choice. At the end of the partnership, the students present evaluations of the work they undertook to their peers, academics, and the placement partners. The brief places the students as consultants and combines an academic appraisal (supported by relevant literature) and recommendations for how the work should progress. Recommendations are returned to the partner to help them with their on-going work with the aim of creating a

continuous dialogue.

"I think those were the best, most confident student presentations I have ever seen" School Academic Manager.

"I was very impressed with all the students and the range of ideas they came up with" Industry Partner.

While evaluation of the module is ongoing, it is already clear that this learning opportunity has anticipated the call made by Lina Norlund [1] in her recent paper by highlighting the importance of providing a professional environment for ecology teaching. Dominic is committed to providing bioscience students with an opportunity to see themselves in their chosen career path and develop a sense of confidence in their ability to succeed.

"Innovative, real-world assessment strategy... High academic achievement indicative of very good engagement" Biology Course External Examiner.

All the students responding to the module evaluation strongly agreed that the module provided opportunities for personal and skills development:

"This was my favourite module."

"…no other module offers the same experience"

"I enjoyed the chance to actually learn how to put my degree into practice"

2. Involvement in scholarly and professional development activities

In not more than 500 words please describe all scholarly or professional development activities that the candidate has undertaken, which have influenced and enhanced the learning of bioscience students

Dominic has recently completed a Professional Certificate in Academic Practice (PCAP) and with it accreditation as a Fellow of the Higher Education Academy (he achieved Associate Fellow status during his PhD). He now helps teach on the University's PCAP by giving talks on engaging with pedagogic research to staff during the research project aspect of the certification. Dominic's own pedagogic research focuses on our tendency to assume that students develop skills as a result of their completion of disciplinary practice when in reality students too often exhibit below optimal improvements in non-tangible learning outcomes. Here I focus on his innovation at a range of scales to address this issue among bioscience students and beyond.

Student Autonomy

As part of a grant won from the university Pedagogic Development Fund, Dominic has led an investigation into student autonomous learning across our School of Biology. The study found that students struggle to perceive the development of their autonomy as they progress through their undergraduate studies. This work has been published in *Higher Education* [2], presented at internal and international conferences (HEA STEM 2016 and SEB Annual 2017), and won the Irene Manton poster prize at the SEB Brighton 2016 conference. Dominic is building on this research by

evaluating teaching methods that best develop learner autonomy and is currently compiling a report on the relationship between autonomy and perceptions of 'good' teaching practice among students. Further collaborative work within the institution is highlighting the particular benefits of residential field-courses for independence among ecology-students.

Critical Thinking
During his first year at Hull, Dominic led a short intervention aimed at improving student critical thinking skills in second year bioscientists. The project was published in F1000Research [3] and at the time of writing has 143 downloads and 371 views. The work was well received at the 2016 HEA STEM and Society of Biology conferences and was highlighted as a case study at an international meeting of the Society of Biology in 2015. Students were tutored to "ask (and answer) a question" as their behavioural ecology essay title, and subsequently achieved higher marks, as well as exhibiting increased evidence of critical thinking. We have found that students continue to use this technique in the years following the workshop of their own volition.

Time management
This year, Dominic has applied for a research grant from the Society of Research in Higher Education to develop his tutorials on self-regulated learning into a large scale intervention aimed at students with a high risk of non-continuation (across STEM students). This collaboration with the University library's student skills team and Student Support Services aims to develop a peer-based discussion group to help guide these students to effective self-regulatory strategies and provide key academic support. The study builds on recent external research suggesting that lack of self-regulatory skills is a key predictor in non-completion and is disproportionately evident in students under 'widening participation' categories [4].

3. Supporting colleagues and influencing learning

In not more than 500 words please provide evidence of how the candidate supports colleagues and influences bioscience student learning beyond their department and institution

Engagement within the pedagogic research community
Dominic is a key member of our STEM Education Research group, which is fast establishing itself as centre of research into bioscience pedagogy and has two past winners of this award and a runner up as members. Through his involvement with the university PCAP program, Dominic has worked hard to bring in academics from beyond our school to help create a community of STEM academics who perform pedagogic research. Dominic is always happy to lend his expertise in measuring student learner traits (such as self-efficacy) and in big-data statistical analyses, and is currently supporting colleagues in collaborations on critical thinking in chemistry students and 'edutainment' enhanced learning in midwifery students. Within the research group, Dominic is a co-supervisor of a PhD student (funded by the Higher Education Academy) researching 'maximising the benefits of field work for a diverse student body'. He is also a co-supervisor for a post-doc, funded by HEFCE, investigating the use of learner analytics to promote undergraduate achievement and retention. Dominic regularly presents his work as part of the group at international conferences, as well as disseminating what he learns there through our research group blog.

Influence and support with external biological communities
Dominic sits on the Royal Society of Biology's Early Career Lecturers forum as a voice for teaching-focused biology academics. The group has clearly identified that early career

bioscience lecturers often perceive a lack of training in the development and delivery of teaching, leaving them unprepared for one of their key roles. Dominic is developing short action point materials to help early career lecturers with key pit-falls in higher education teaching modalities; e.g. incorporating 'active-learning', and properly structuring group-based learner strategies. Further to his duties with the ECLF, Dominic sits on the college review board of the British Ecological Society specialising in reviewing 'outreach' grant applications. Dominic is a strong proponent of engaging students with outreach programmes. His past outreach projects are entwined with his Environment & Society module (highlighted earlier) which aims to help local communities and providing opportunities for students to gain teaching and outreach experience. Previous projects have included: teaching biodiversity sampling techniques to Duke of Edinburgh candidates, visits to local schools to teach about biodiversity, and volunteer education at our local aquarium (The Deep).

Support and leadership of the Biology subject group teaching strategy
Dominic has recently accepted the role of programme director for the zoology course and sits on the biology programme directors' board. In this position, Dominic runs his 'Assessment Therapy' scheme, in which he provides individual support sessions for Biology & Geography academics to talk about issues on their own modules and consider ways in which challenges can be overcome.

"*Dr Henri was extremely helpful in identifying which components of assessments could improve student performance, learning and experience, as well as saving staff time and reducing workload. Likewise, given his expertise in scholarship, I was reassured that Dr Henri supported my proposed new assessment strategy for the final year research projects*"
Dr Isabella Capellini – Senior Lecturer in Evolutionary Biology

4. Exhibit innovation that has proven to improve their teaching practice to enhance student learning

In not more than 500 words please provide evidence of how the candidate exhibits nnovation in their teaching practices to enhance student learning

Dominic's research and the wider literature highlights the need for active- and student-focused learning activities to be embedded within discipline specific content [3, 5]. His drive stems from his perception of the inadequacies of the passive lecture-based experience of higher education he received as a biology student, and that still prevails today. Dominic works hard to incorporate active, authentic, student-led pedagogy into his own teaching and that of his bioscience colleagues

"*Dom has been extremely helpful and instructive in helping me formulate my new module, bringing valuable experience and insight on module structure, practical design and assessment strategies*."
Dr James Gilbert – Lecturer in Behavioural Ecology

Student-led learning
Dominic's teaching always contains a student-led component revolving around student-choice. For example, in an innovative module that brings independent research experiences to foundation-level bioscience students, group research projects are supported by a mentor and undertake the scientific research process from project inception to write-up in an autonomous manner.

"*it was good that we had free reign of the whole project, which again allowed the development of vital skills for my degree*"

In other modules, students get to choose their own line of enquiry. We find that by giving students regular opportunities to pursue their own biological interests, as opposed to imposing our own, we improve student motivation and engagement with more difficult learning outcomes, such as critical thinking [3].

Authentic learning experiences

Providing students with learning experiences that mirror student perceptions of what they will be doing when they graduate improves motivation, satisfaction and self-efficacy in students [1]. Dominic always strives to incorporate these into his teaching, even given the barriers of working in a discipline where experiences cannot be provided with a lab or lecture theatre. Students on Dominic's modules can guarantee what whether by educational media or fieldwork they will be able to experience what it is like to work in discipline-based careers. Particular examples include practical experience of management of crested newts in Humber Bridge or creating a nature documentary on a species of their choice.

Active learning strategies

Active-learning is a key strategy in boosting student engagement and learning outcomes. For example, since trialling the method during his first lecture on 'Biomes' at Exeter, Dominic ends his lectures with think-pair-share question sessions, encouraging students to review content and identify sections they have and have not understood.

"Questions at the end of Dom's lectures are useful in helping understanding and keep attention in lectures"

Formative assignments

Dominic has championed the importance of formative assignments to provide a space where students can develop their skills without anxiety over grades or failure. Using a module that was highlighted by the external examiner for its excellent use of assessment, Dominic has created a teaching strategy that encourages even low autonomy students to engage in a feedforward dialogue with their supervisor in the creation of a book addressing current global-issues facing biologists. The module received particular positive reviews of feedback, a notoriously poor aspect of the National Student Survey.

"It was all brilliant. Helped me with my writing skills – much more critical in my essays and helped with my formatting"