

Governance and administration

CASE 6: A CHALLENGE-BASED COURSE ACROSS INSTITUTIONS

Annet van Royen-Kerkhof and Rianne van Lambalgen

I am the coordinator of a challenge-based course that I organise for an alliance in the Netherlands, a collaboration between Wageningen University and Research (WUR), Eindhoven University of Technology (TUE), University Medical Centre Utrecht (UMCU) and Utrecht University (UU). In this course, we bring together master's students from medicine (medical research master SUMMA master, UMCU), biomedical sciences (UU), students with a technological background from TUE and students with a food sciences background from WUR, and we have students working together on a broadly defined problem from a patient's perspective. The initiative for this course started in collaboration with TUE (biomedical engineering) because we already had a connection with them through the technical courses we offered as part of our SUMMA programme at UMCU. After the alliance between WUR, TUE, UMCU and UU started to take shape, WUR (nutrition and health) got involved as well. I found that coordinating an interdisciplinary course like this, which spans across different universities, brings up different challenges as a result of the different worlds that operate in the universities. We came across differences in the credit system for students, in scheduling and in the payment of staff, which we aimed to solve by looking at different creative solutions as a team. Because we, as a coordinating team, were very motivated and felt the need for this course, we put in the time and effort to make this work.

At UMCU and UU, we recruited teachers for this course by looking at different researchers with a relevant background who would have the expertise and be enthusiastic to teach this course. At WUR and TUE, I did not know that many people depended on the coordinators at the other institutions. We found that there was a difference in reward for teaching between our institution and WUR and TUE, which made it more difficult to convince teachers from these institutions. Eventually, we applied for seed money at the alliance and used

that money to compensate the teachers. After the first edition of the course, it became easier to promote teacher enthusiasm because we were able to show student output and communicate earlier successes through the alliance.

As a result of organising a course with different institutions, we were also presented with challenges regarding the credits for regular courses within the institution and because of the scheduling regulations at the universities. The TUE was used for courses with 2.5 or 5 credits, our courses at UMCU were 3 or 6 credits, and WUR could be more flexible in terms of credits. Then established the course as a 3-credit course and offered extra 2-credit assignments so students from TUE could more easily fit it into their programme. However, because of the differences in the credits system and the way the courses are usually organised, it proved to be difficult to schedule the course to make it fit within the programmes of all three universities. The solution we came up with was to abandon the regular schedule and have students working on the course for a number of months, organising a meeting at the start, in the middle and at the end of the period. In between, student groups collaborated either online or in person.

Organising this interdisciplinary course with these different institutions worked for us because of our motivation and effort to come up with creative solutions for the challenges we faced. In addition, we could cover the costs for the additional time spent (including additional travelling costs) with the seed money from the alliance. Currently, we are talking with the different institutions to contribute to this course for a more long-term coverage of the costs, but this will also depend on their priorities and whether they see the added benefit of the course. We hope it helps to continue to have a motivated team and enthusiastic students. However, interdisciplinary and interinstitutional educational projects are elaborative and require continuous attention for in order to be sustained.

COMMENTARY 8.1

Elaine Brown and Beatriz Acevedo

In 2021, Anglia Ruskin University (ARU) rolled out interdisciplinary breadth modules ('Ruskin Modules') to undergraduate students in their second year of study. We approach this case from the perspectives of the institutional lead of the scheme and as the earlier academic developer and current Ruskin Module leader.

Main challenges of the case

We identify two main challenges from the case study: 'people' and 'perspectives on interdisciplinarity'. Within people, we identify two themes: the sustainability of the team and the recruitment of educators.

People: The team

The case study describes a small team leading and managing this interdisciplinary course, organising alliance stakeholders and finding and recruiting researchers to teach on the course; that's a lot for a small team!

Although the introduction of an additional university in the case study suggests the interdisciplinary course is attractive to students and to the institutions involved, it is not clear if interdisciplinary curricula are a strategic priority for these institutions. The need to source additional funding to compensate teachers and the need for creative solutions could indicate that the course and its coordinators might be standing alone and managing this course themselves. This potential lack of integration makes us question the support the team has and, therefore, whether their continued leadership and management is sustainable.

People: The educators

The coordinating team describe recruiting educators by finding researchers with the right expertise and enthusiasm. However, it is clear that it is difficult to convince researchers from partner institutions to teach the course; colleagues are persuaded to join the course only when success has been demonstrated.

Perspectives on interdisciplinarity

The case study describes the home institution in alliance with different universities and a university medical centre. Bringing together experts from different institutions risks different interpretations of interdisciplinarity and successfully evidencing interdisciplinary learning outcomes. Collaborating on curriculum design, particularly evidencing interdisciplinary outcomes through assessment, can make explicit different interpretations while enabling further discussion. Additionally, the input from different disciplines needs to be valued equally such that one discipline not regarded as 'in service' to another when integrating disciplinary approaches to challenges.

Our experiences of planning and running interdisciplinary curricula**People: The team**

The design of the project, management and coordination of interdisciplinary modules by a small team resonate strongly with us. Our Ruskin Modules were led strategically by a small team comprising an institutional lead and project manager supported by an academic developer and a learning technologist seconded briefly to support the implementation of the modules through the virtual learning environment. In common with the case study, these individuals were intrinsically motivated, seeing a clear need for the modules.

People: The educators

In our initial research (ARU, 2019), we found that interdisciplinary modules were commonly designed and led by three types of educators: those for whom the module had been designed centrally, those who were approached to develop an idea based on their subject expertise and those who volunteered with an idea for interdisciplinary curricula. Successful interdisciplinary endeavours are typically led by inspirational individuals (Lyall et al., 2016), and we wanted these individuals to self-identify to design and lead each of our Ruskin Modules. Educators were recruited by calling for expressions of interest, and a group of motivated and passionate individuals volunteered.

However, in common with the case study, volunteers were not recruited evenly from disciplines across the institution. In line with the ‘diffusion of innovations’ (Rogers, 1995), some colleagues volunteered only later in the innovation process (Baregheh et al., 2009) when the benefits of interdisciplinary learning and teaching were observable.

Innovative curriculum design need not solely be for the brave—the activities of such individuals can be articulated within institutional programmes and corporate goals (Hasanefendic et al., 2017). These individuals go beyond the institutional constraints or reward systems because their motivation is intrinsic and personal. Harnessing their motivation and energy is crucial for the successful introduction of interdisciplinary curricula. We wanted this group of individuals to feel recognised and their curriculum innovation made explicit within the institutional narrative, so the institutional lead termed the group ‘Trailblazers’.

The challenge was to take the initial enthusiasm of Trailblazers and make it institutional. This was done by recognising their role in performance evaluations, career paths and (perhaps most important) giving innovators space to experiment (and fail) within a supportive institutional system.

A cycle of adaptative and developmental learning is driven by contradictions and tensions between implicit and explicit dimensions of work processes. Institutional support, here in the sense of offering incentives or flexible ways of working, can activate the potential for innovation among academic staff to engage with interdisciplinarity (Ellström, 2010).

Perspectives on interdisciplinarity

Our Ruskin Modules brought together colleagues with diverse perspectives from our faculties and professional services, each motivated and passionate to lead change. We have found that interdisciplinarity (integrating disciplines, methods, approaches to synthesise more holistic perspectives) was commonly confused with multidisciplinary (working alongside) and cross-disciplinarity (applying from one discipline to another).

A series of continuing professional development (CPD) sessions from workshops to Ruskin Module Open Studios, accompanied by regular voluntary meetings, supported the Trailblazers to realise their designs for interdisciplinary learning, teaching and assessment. The Ruskin Modules Open Studios used a design thinking methodology adapted for the needs of the Ruskin Modules development. Fourteen sessions delivered over 9 months provided a playful learning space for developing questions such as the following: Why are we doing this (using visual metaphors for sense making and empathy)? Who is our student (utilising puppet making in user-centred design)? Why are the Ruskin Modules important (using storytelling for creating 1-minute pitches for students)? A clear rationale for the modules enabled diverse perspectives to be multi-aligned with the interdisciplinary learning outcome without stifling the creative design of the module.

A key aspect in the support and design of the Ruskin Modules was co-creating and continuously revisiting perspectives of interdisciplinarity with our Trailblazers. We acknowledge that notions of interdisciplinarity can change and mature, especially in the ways in which interdisciplinarity can be implemented. A clear and commonly held ‘why’ (definition underpinned by the literature) empowers educators to focus on the ‘how’ using curriculum design strategies such as those suggested by [Jacobs \(1989\)](#) and integrating techniques such as contextualisation, conceptualisation and problem-centring ([Nikitina, 2006](#)) or the ‘broad model’ ([Repko et al., 2020](#)).

Suggestions for this situation

People: The team

The motivation and foresight of the coordinator and coordinating team resonate strongly with us, because these people are necessary to get interdisciplinary schemes off the ground ([Lyall et al., 2016](#)). However, as previously articulated, this may be unsustainable without strategic institutional support (not least as interdisciplinary curricula often sit outside faculty, school or department boundaries that may be unable to share resources).

People: The educators

We have found that educators are more likely to volunteer when they understand and can connect personally with the rationale of the scheme. Joining a community of like-minded educators can support thinking, design and facilitation of the module. Involving teams of educators can relieve the pressure and responsibility, yet the workload is difficult to coordinate, administer and manage.

We have found that communication is a crucial part of any interdisciplinary project, and the Ruskin Module Trailblazers met (and still meet) regularly to discuss ideas, concerns and practices that work. Listening to perceptions and adjusting communications helps encourage more educators to volunteer to lead interdisciplinary learning and teaching.

Perspectives on interdisciplinarity

To sustain and expand the transformative approach of the course, we would propose and consult with the institution(s) on a sustainable model supported by a future-focused rationale linked to institutional strategies and supported by student outcomes. Discussion at an institutional level raises awareness of the demonstrated success of the course and, hopefully, processes and resource to support it.

Explore together with stakeholders the rationale for the course and understandings of interdisciplinarity. For example, we can discuss the scheme with senior management to appreciate the time required and complexity to set up and resource appropriately; listen and support educators to appreciate the complexity of facilitating interdisciplinary learning in a safe, discursive environment; and 'onboard' students to appreciate that interdisciplinary learning may be less didactic and more problem based.

One of the challenges in this type of project is to move from working together (multidisciplinary) toward interdisciplinarity; for example, discussing how the combination or merging of perspectives might be evidenced and the impact of this experience in the modification of curricula and/or practices. Coming to an understanding of interdisciplinarity can involve a state of liminality (Land, 2012) as stakeholders realise the complexities of thinking, and this realisation can be threatening.

In the experience of the Ruskin Modules, we created a supportive environment, accessible information and informal forums to discuss current issues and emotional aspects of teaching new innovative modules. For example, the Ruskin Modules Open Studios further facilitated a creative and scaffolded approach to come to a personal appreciation of interdisciplinarity. The sessions in the Ruskin Module Open Studios usually began with an open question, such as how to represent in 3D or through a drawing the participants' understandings of interdisciplinarity, hence approaching this complex topic from a lateral thinking perspective and allowing different interpretations as the starting point of the team understanding of this key topic.

Advice for similar challenges

To handle similar challenges, we would advise that the rationale and outcomes for interdisciplinary learning, teaching and assessment be clear and supported explicitly by the institution at the outset.

It is important to contribute by researching, designing, consulting on and agreeing on a model for implementation, whether that model is a single course or an institutional-wide module. Being clear about the rationale allows for flexibility in the implementation and local ownership because different educators, courses, departments, schools and institutions can participate as best fits their context.

Lead the scheme passionately and communicate the rationale clearly and consistently. A wide consultation in the design of the scheme helps raise

challenges in its implementation that can be considered at the start; a consultation also raises awareness and enthusiasm to support the scheme.

In the model, it is important to be clear how educators will be involved and what is in this experience for them (e.g., flexibility, payment, recognition, career progression). In our own experience, calling for expressions of interest to design and facilitate the module leader's own curriculum works well because this passion spills over into the experience for students.

Support and systematically recognise the innovation and passion of these educators and carefully consider balancing their existing role so that the interdisciplinary learning and teaching is not in addition to the current workload. We would also recommend that support include a set of CPD sessions, where a consistent understanding of interdisciplinarity can be explored and agreed on as a clear basis for learning activities and assessment. CPD can include more playful and creative approaches such as those in Ruskin Modules Open Studios to facilitate liminal experiences and transformation in a safe space (Brown & Acevedo, in press).

As the case study articulates, the number of volunteers is likely to grow as colleagues become more familiar with the scheme and outcomes become visible. While encouraging further participation, we have found that supporting educators through regular informal spaces to share experiences, concerns and insights fosters connection and community and can facilitate further multidisciplinary encounters. These spaces can be useful to recognise and normalise innovation systematically rather than as 'one-offs'; incentives, support and resources are important for sustainability.

Finally, we would advise carving out a space for reflection alongside the administration of the project and have an action research framework on hand to learn from and be able to share with others what works.

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COMMENTARY 8.2: INTER- AND TRANSDISCIPLINARY TEACHING EXHILARATES AS WELL AS EXHAUSTS US

Iris van der Tuin

There is something about challenge-based teaching and learning: organising it is always presented as a challenge. However, what *is* a challenge? Mobilising my disciplinary perspective from the humanities, I turn to etymology to find out the word's dynamic history. In the *Online Etymology Dictionary* (2024), a *challenge* is defined as a 'difficult task', and it is said that this definition only stems from the 1950s. Before that, both within the domain of law and outside of it, the word challenge meant someone accusing someone else of something—for example, something deviant. Obviously, the difficulties of the task of organising a challenge-based course originate from that course deviating from business as usual in staffing, scheduling and crediting academic teaching and learning. It is precisely these deviations from how things are regularly done, besides the specificities of organising a challenge-based course across multiple institutions, that cause the most pressing problems that arise in Case 6.

The irregularities and problems reported in the case are certainly recognisable because I work in my dual role as both educator and course coordinator in interdisciplinary bachelor's and master's programmes in the Faculty of Humanities at a broad research-intensive university in the Netherlands and as central-level dean for interdisciplinary education at the same institution. I, too, know what it means to work through differences in calculating the hours for teaching tasks, in course planning and teacher and student logistics and in the distribution and value of credits. However, is it only *difficulties* that we can glean from the case or, in general, from developing courses across disciplines and institutions? What I also notice in the reported case—and this most certainly also resonates with my own experience—are the *joys* of creatively collaborating in a multidisciplinary (and, in this case, multi-institutional) team of dedicated educators and administrators, of finding local solutions within the team and of developing a framework for a new and innovative course that

works for all institutions, teachers and, hopefully, many learners. Oftentimes—and this is what I would push for more—such a framework can be applied elsewhere in a slightly adapted form. We, as inter- and transdisciplinary, are coming up with educational formats! However, we appear to be too modest to claim them consciously, to deliberately push for them institutionally and to communicate about them through publications and on social media.¹ I will discuss the latter aspects more in depth in my comment but not before I have unravelled the supposed disjunction between negatively connoted challenges and the joys of creative collaboration across differences.

The pressure to perform

It is fortunate that there is more to any educational challenge than having a few ambitious inter- and transdisciplinary academics severely tested in practice for wanting something that deviates in or from their institutional context(s). For an immediately *productive* take on challenges, I turn to performance studies scholar Jon McKenzie, who writes more and more about transdisciplinary teaching and learning in his current position at Cornell University in Ithaca, New York (see, e.g., McKenzie, 2019). In his 2001 monograph *Perform—Or Else: From Discipline to Performance*, McKenzie argued that, in the 21st century, the word *performance* is not just used to refer to the cultural efficacy of theatrical and dancing performances. In today's era, performance is also—and often at the same time—used for organisational efficiency and for technological effectivity. McKenzie said, 'Perform—or else: there is no performance without challenge, without claims and contestations, demands and accusations, field tests and identity checks, as well as the occasional untimely dare' (2001, p. 171). The figure of the contemporary academic is a fitting example here. Not only are they teaching as a way to follow their vocation and for positive student evaluations and researching to add to what the giants before them have produced and for publications in highly ranked journals, but they are also tweeting and tooting about their work on social media. In addition, they are trying to collaborate with policymakers, activists, artists and other societal experts, as well as trying to change the institution from within by coming up with ideas and networks for didactic and pedagogical innovations, often across disciplines and with the help of educational information and communications technologies. Such an academic is the prototypical interdisciplinarian about whom colleagues always wonder, slightly in awe perhaps, if they ever sleep at all.²

1 For the link between modesty as 'epistemic humility' and interdisciplinarity, see, for example, Gardiner (2020). *Integration and Implementation Insights* is a great sharing resource that mixes peer-reviewed publications and low-threshold publishing on social media; see <https://iinsights.org/>.

2 The number of formal and informal comments about the time-consuming nature of setting up interdisciplinary courses and programs abound. See van den Beemt et al. (2020) for a call for more research on this topic.

With McKenzie (2001, p. 17) we come to understand academics as being shaped by and giving shape to the ‘performance stratum’. This day and age requires a certain functioning of everything we find around us: organisations, technologies, cultural expressions, and all those working in, with or on them must accomplish or achieve something. We have lost fixed structures and hierarchically structured, identifiable agential relations and the narratives we tell about them and about their uses. It is hard to say whether this loss is good or bad and whether we rightly or wrongly act within this new situation. At most, we can say that we are being kept busy on the performance stratum and that this stratum has the potential of exhilarating and exhausting us. It becomes a matter of ‘lifelong learning’ and ‘continuing education’ indeed:

On the performance stratum, education is no longer something one undertakes as a child and completes as a young adult: it is fast becoming a lifelong activity. [...] As universities expand their continuing-education curricula, high performance companies strive to become learning organizations in which individuals and entire organizations continually reinvent themselves in response to changes in their environment. [...] Perpetual learning, high performance living: this is yet another way of reading the term ‘lecture machine’.

(McKenzie, 2001, p. 185)

It is hard not to recognise our daily activities as educators in this description of the post-Foucauldian paradigm. However, what lessons do we learn from it about developing a challenge-based course?

Tackling the struggle for time

Now, I want to turn to what I find the most fascinating and important aspect of the case I was asked to respond to: the solution that was found. My colleague writes the following:

The solution we came up with was to abandon the regular schedule and have students working on the course for a number of months, organizing a meeting at the start, in the middle and at the end of the period. In between, student groups collaborated either online or in person.

(van Royen-Kerkhof and van Lambalgen, this volume, p. 147)

So the challenge-based course was designed according to a *blended* format with alternating on- and offline activities and according to a *frame* that required both a lengthier schedule of a couple of months (not a standard number of weeks), and as markers for the learning trajectory, a clear beginning, middle and end was decided upon. I intuit that both the blended format and frame are potentially transposable to other contexts under the umbrella of

‘open pedagogies’.³ I also assume that borrowing from an existing format and frame could be a timesaver for colleagues working on a similar course development challenge in the future.

As dean for interdisciplinary education, I often recommend that colleagues work this way. Little research has been done on the governance of inter- and transdisciplinary education.⁴ However, the publications that do exist transpose what consolidates in the insight that there is never *more* time for educational innovations. There is always the *struggle* for time because all parties involved have differing pressures to perform, so they experience differing temporalities. This complexity was nicely put in words by a group of colleagues reflecting, in a recent issue of *Sustainability Science*, on how effective leadership for inter- and transdisciplinary institutions may look given the urgent sustainable development challenges. The following is what they concluded:

Inter- and transdisciplinary work must operate on various timeframes. Some participants may require near term actions, while other organizations may desire medium- to long-term outcomes. All participants should be aware and informed about the long-term implications of their sustainability decisions. Accordingly, inter- and transdisciplinary work must link multiple time scales.

(Boone et al., 2020, p. 1729)

The seed monies that are often available for innovations, as also observed by environmental scientist Christopher G. Boone and his colleagues (2020), do perhaps transmit the wrong message. Yes, it takes time to set up a new challenge-based or otherwise inter- or transdisciplinary course. However, this does not imply that it is institutionally savvy to build a course that requires, for example, a double teaching load after the course has been piloted and undergone a few iterations (provided that there is the funding for a few testing iterations). Such extended temporalities simply do not compute with institutional time.

A call for institutional savviness

The important lesson that can be learned from the case pertains to the very possibility of building a course frame that requires the same number of teaching hours as regular courses. Institutional savviness means being pragmatically agnostic about the teaching load given one’s desire—the setting up of a course that deviates from business as usual—and being successful in demonstrating the very possibility of teaching outside the box. What we see here is a case of

3 See, e.g., <https://openpedagogy.org/open-pedagogy/>.

4 Examples are Cai and Lönnqvist (2021), Lindvig et al. (2019) and Vienni-Baptista and Thompson Klein (2022).

performing alternatives while sticking to the financialised time management structure that, for most institutional stakeholders, is set in stone. The latter structure is complied by being technologically effective in the application of a blended format and by setting up the course with the regular number of teaching hours available according to ‘organisational efficiency’. Thus it is that we come a bit closer to making our didactic and pedagogical dreams come true. Remember that there is no easy political or ethical stance regarding McKenzie’s performance stratum. It is just that, without blended teaching and learning and without compliance with technological effectivity, it simply will not be possible to teach (and therefore to learn) across disciplines and institutions in a postpandemic world that is highly in flux. Without the requirement of ‘more teaching hours’ that has become habitual and, therefore, unreflected on the part of inter- and transdisciplinary educators, it will not be possible to make innovative courses a long-lasting reality because our institutions currently lack the financial resources and financial and temporal flexibility for that (cf. Lindvig et al., 2019). It is for these reasons that I call for institutional savviness, an attitude that I saw reflected in the case of my colleagues. I am grateful for their work and for their insights.

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COMMENTARY 8.3*Manuela Dahinden*

In my role as the managing director of a large academic research network—the Zurich–Basel Plant Science Center (PSC)—I initiate and implement inter- and transdisciplinary research programmes within different disciplines of plant, environmental and social sciences and in collaboration with stakeholders in governmental organisations, in industry and in civil organisations and associations.

Our research programmes benefit from various educational formats for graduate students⁵ such as courses, summer schools and career mentoring workshops that are offered by the centre and developed by a team of three to four experts with backgrounds in research and didactic. We invite a variety of researchers and practitioners to co-design the courses with us. In addition to coursework for master's students, PSC offers two structured PhD programmes with fully accredited curricula, leading to training certification and a diploma supplement that become part of the PhD degree issued by three partnering universities.

From the perspective of our experiences, we fully understand that organising this challenge-based course with different institutions turned out to be quite elaborative because of different understandings regarding scheduling and awarding interdisciplinary teaching efforts. The chosen solution to run the course in smaller units for several months was certainly the most reasonable solution here.

Negotiation and stakeholder management during course design

In our experience, it is easy to motivate scientists to develop interdisciplinary courses. Most scientists see the demand and value and come up with plenty of ideas. The implementation of interdisciplinary courses in existing curricula, however, is difficult because of restrictions on time and resources. It demands a negotiation process at the institute, department and sometimes university levels.

In our negotiation process, we find the *Users' Guide for European Credit Transfer and Accumulation System (ECTS)* (European Commission, Directorate-General for Education, Youth, Sport and Culture, 2015) helpful. The *Users' Guide* offers guidelines for implementing ECTS among universities, joint mobility schemes, quality assurance and learning agreements. ECTS credits enable the expression of the volume of learning based on the defined learning outcomes and their associated workload. Also, using credits makes it easier to create and document flexible learning pathways, thus allowing students greater autonomy and responsibility.

We have developed interdisciplinary PhD courses under the framework of joint research and education programmes, such as EU-funded Marie

5 <https://www.plantsciences.uzh.ch/en/teaching.html>

Skłodowska-Curie Innovative Training Networks (e.g., IDP BRIDGES, EID PlantHUB, RESPONSE DP). The disciplinary backgrounds of our course participants are various; for example, plant sciences, ecology, biochemistry, earth sciences, geography, sustainable land use, food sciences, climate sciences and energy sciences. Although the students do not work together, they benefit from the mutual exchange during the course work. The course content is consciously evolved to accompany the case studies for different disciplines.

To master the course work, the graduate students enrol in structured PhD programmes that have been negotiated and accredited with different departments at three universities.

The PhD programme ‘Science and Policy’, for example, offers a 3-year curriculum of 12 ECTS with more than 20 different trainers from academia and practitioners. Its thematic pillars are the following: concepts and tools for evidence-based policymaking, carrying out stakeholder engagement, communicating with the media as important actors in the policymaking process, dealing with risks and uncertainties linked to scientific data, models and technologies, building scenarios for policymaking, building political support and understanding decision-making in Swiss and European contexts, carrying out policy evaluation with logic models and change theory and applying systemic thinking to policymaking. The case studies include topics such as regulation of genome editing, trade-offs in land use change, energy transformation and climate change mitigation. For more insights, we refer the reader to our workbook series⁶ and blog.⁷

In a transdisciplinary fellowship programme funded by the Mercator Foundation Switzerland, the selected research projects dealt with socially relevant issues from the perspective of two academic disciplines and in collaboration with at least one relevant stakeholder. Experiential learning or real-world practice during fellowships enables early-stage scientists to understand the policy environment and how research can be applied to policy and societal questions. PhD students receive co-supervision from academic supervisors and representatives of policy institutions, including governmental, non-profit and international organisations. Fellows can complete policy internships of 1 to 10 months at their partner institution.

As in the presented case study, different timetables are a limiting resource. Both the co-supervision arrangements and educational demands of the PhD programmes are time-consuming and need to be well structured and negotiated case by case. Often, discipline-specific procedures and working patterns are inadequately clarified, leading to incompatible planning (Di Giulio & Defila, 2017). We have found that joint agreements between students, supervisors and the involved stakeholders facilitate the negotiation process before the project starts. The agreements include supporting documents such as a joint

6 <https://www.plantsciences.uzh.ch/en/publications/sciencepolicyworkbooks.html>

7 https://blogs.ethz.ch/Science_and_Policy/

course catalogue, learning agreement, transcript of records, work placement certificate and diploma supplements.

Governance of inter- and transdisciplinary education programmes

The lack of adequate support for inter- and transdisciplinary education programmes is still a much discussed topic in the literature (Klein & Falk-Krzesinski, 2017). These are usually built ad hoc and tailored to each research programme (Rogga & Zscheischler, 2021). As part of a qualitative assessment of our inter- and transdisciplinary research and education programmes (Dahinden et al., 2022; Paschke & Zurgilgen, 2019), we asked the principal investigators what support structures they would like to have.

They emphasised the need for reasonable time frames in view of coordinating and accompanying required inter- and transdisciplinary education, as well as training in competencies for interdisciplinary work (e.g., tools and methods for coproduction of knowledge).

For the governance of inter- and transdisciplinary education programmes, we would like to make the following recommendations:

Capacity: Sufficient organising capacity is vital. Organisers and educators of interdisciplinary course work need to be trained in competencies for interdisciplinarity such as encompassing tasks like developing common goals, arriving at a shared problem framing, implementing methods of knowledge integration, developing a common language, settling conflicts of interest and handling team dynamics (Di Giulio & Defila, 2017).

Visibility: Successful course programmes and their collaboration need to be visible. Evaluation on how competencies shape individuals' abilities to engage in interdisciplinary knowledge integration (Horn et al., 2022) might strengthen the communication efforts. These tasks require more resources to be allocated to course programme coordinators and educators.

Incentives: Universities should reflect on reward incentives for inter- and transdisciplinary teaching. Incentives could include the following: (a) Establish career paths for scientists who engage in inter- and transdisciplinary curriculum work. (b) Establish financial incentives for scientists and grant-awarding mechanisms.

Long-term institutional support: Best practice examples of inter- and transdisciplinary education formats are generally project funded. However, institutions should commit sustained financial support to course and curriculum development. This is critical for the development and maintenance of exchange mechanisms and establish branding and reputation.

We agree that it is crucial to break down institutional silos. Cross-departmental course programmes not only increase the visibility of inter- and

transdisciplinary research, but they also broaden interdisciplinary and transdisciplinary approaches, experimental know-how, framings and education formats. Identification of success factors, as well as barriers, brings continuous improvement to training and mentoring and the creation of environments for productive engagement of early-stage scientists.

The students' point of view

In general, our graduate students highly appreciate inter- and transdisciplinary course programmes. The courses enable them to think outside the box and learn how to communicate between different disciplines and terminologies. They learn how to deal with uncertainty at different levels (Paschke & Zur-gilgen, 2019). In a video,⁸ current and former students from the Science and Policy PhD programme talked about their experiences of inter- and transdisciplinary research and education, including key challenges and lessons learned. The video became part of the SHAPE-ID Toolkit.⁹ This toolkit aims to provide guidance for policymakers, funders, research performing organisations, researchers and research partners to help make better decisions and promote change in policymaking, funding and educational institutions.

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INTEGRATION PIECE: GOVERNANCE AND ADMINISTRATION

Bianca Vienni-Baptista

The challenge of institutionalising interdisciplinary experiences

The case addresses a particular challenge on the sustainability of interdisciplinary (or transdisciplinary) courses. These initiatives face pervasive challenges because they usually need to be self-sustained to be embedded in an institution and find pathways to be sustainable in the long term. The challenge the case shows is how to make these teaching formats sustainable in the long term while sorting out the administrative hurdles that are present in some universities that still do not fully support inter- or transdisciplinary teaching formats.

In her commentary, Manuela Dahinden rightly points out how institutionalising processes impact the roles of interdisciplinarity and transdisciplinarity within universities. There is a misalignment between the institutional understanding of these terms and what the incentives are to push them. Some authors have pushed for policymakers and funders to recognise and acknowledge the nuances and different understandings of these terms because inter- and transdisciplinary research and teaching take place for a wide range of reasons and with partners playing a variety of roles. To encourage greater arts humanities and social sciences participation in funding programmes, funders and policymakers need to engage more substantively with interdisciplinary and transdisciplinary experts when defining, designing and evaluating inter- or transdisciplinary calls (Vienni-Baptista, [Lyll et al., 2020](#)).

The challenge has different components, which are also addressed by the authors in the commentaries accompanying this case. A useful tool to understand the interrelatedness is the concept of knowledge regime ([Felt et al., 2016](#)) to develop a comprehensive view of institutionalising processes. The notion of a regime refers to heterogeneous assemblages of three components: (a) ideologies and myths guiding interdisciplinary and transdisciplinary knowledge production, jointly with the accompanying prescriptions for producing and validating knowledge; (b) institutions and their institutional logics (i.e., shared beliefs and practices, broader imaginaries and values embedded in knowledge

generation); and (c) researchers, lecturers, partners and societal actors who govern research and teaching. A regime entails symbolic values, contradictions and expectations (Felt, 2009) around collaborative teaching practices.

I can identify these components in the case illustrated in this chapter. First are the beliefs and worldviews of the lecturers involved in the course but also those of administrative servants and authorities at each of the universities involved in the collaboration. Second are the institutional logics, which, in this case, imply more than one university posing the challenge to the main lecturer to align such logics in a coherent set that allows for the course to be implemented. The case shows how these challenges are embedded in administrative structures and requires lecturers to find creative solutions to overcome institutional barriers.

Third are the actors that work together and their motivations and interests. They also face pervasive challenges in their own careers. Inter- and transdisciplinary careers are still seen as risky for lecturers who are investing too much time in collaborative teaching that seeks to build inter- or transdisciplinary formats (Lyall, 2019). Moreover, the differences in rewards and time allocated for teaching risk creating a power hierarchy among the staff. For example, in the case, power imbalances are highlighted by differences in motivation between the course coordinator and lecturers.

The connections among commentaries

Examples from different world regions have shown the different constraints that scholars face when institutionalising teaching initiatives as mid- or long-term offers (see the cases in Vienni-Baptista & Klein, 2022). In a previous study, I identified a wide range of factors in the literature that can contribute to the success or failure of inter- or transdisciplinary efforts (Vienni-Baptista, Maryl et al., 2020). We then conducted a qualitative survey among European lecturers and scholars who confirmed that obstacles relate to career path challenges and institutional structures (Spaapen et al., 2020). A third set of obstacles was reported in relation to the difficulties associated with overcoming the assumptions, values and worldviews embedded in different disciplinary cultures and embodied by individuals and learning to navigate relationships within a collaboration. These include academic tribalism, communication skills, division of scientific labour, dynamics of power, how researchers handle change, mutual ignorance about collaboration and the motivations for fostering inter- or transdisciplinary initiatives (Spaapen et al., 2020).

These accounts of setting inter- or transdisciplinary courses or seminars share common features, even though the contexts are different. Authors have usually argued that inter- and transdisciplinary teaching is often more time-consuming than monodisciplinary teaching (Lyall, 2019). Institutions should allow for additional resources to enable development of these types of collaborative formats; for instance, to fund additional meetings and facilitators within projects and time to build mutual understanding and trust.

The sustainability of teaching activities within university settings is usually jeopardised by the lack of recognition of success. Teaching prizes and awards to innovative interdisciplinary educators are some ways to acknowledge efforts from lecturers (see, e.g., the KIT Award at the Swiss Federal Institute of Technology, ETH Zurich, Switzerland, or the Teaching Award at Wageningen University and Research in the Netherlands).

Strategies to overcome struggles in institutionalising processes

Finding creative solutions to administrative issues is a common challenge within institutional structures not usually geared at interdisciplinary or transdisciplinary efforts. One striking example of change is how the author found a way through the administrative obstacles and worked creatively to set up a course shared by different universities. However, these solutions are time-consuming because lecturers need to follow procedures that are not yet formalised at some universities. These types of solutions show the weak settings in which teaching collaborations are usually embedded at universities. On the one hand, teaching collaborative initiatives requires more time because of the need to articulate different goals and activities, as in any other collaborative setting. Challenges might appear later in the process of designing and planning such activities, which makes it difficult to foresee a suitable solution.

One way through this dilemma is thinking of the enabling potential these initiatives have. As mentioned in a previous study, we found that the same factors can often act as either a hindrance or an enabler. What can make the difference is being able to identify, acknowledge and address challenges at the right time (Vienni-Baptista, [Lyll et al., 2020](#)), which is coincidentally true of the case in this chapter. This highlights the need for time, tools, resources and expertise in teaching and learning processes to help establish and maintain shared understanding and purpose within the team of lecturers and between the team and the institution in which a course is embedded.

The commentaries in this chapter suggest harnessing the Trailblazers rather than reinventing the wheel each time. Manuela Dahinden points to a common challenge in her commentary:

In our experience, it is easy to motivate scientists to develop interdisciplinary courses. Most scientists see the demand and value and come up with plenty of ideas. The implementation of interdisciplinary courses in existing curricula, however, is difficult because of restrictions on time and resources. It demands a negotiation process at the institute, department and sometimes university levels.

(this volume, p. 158)

The balance between the intrinsic motivation of an individual lecturer and the logic can allow for new spaces to be consolidated, even between scholars and the administrative teams (Dahinden et al., 2022). Joint agreement and discussion of challenges with senior management are ways of addressing the intrinsic problems that institutionalising processes entail. Although cases must be evaluated on a case-by-case basis, exchange with other lecturers and course coordinators is a means to build communities of practice that can support finding alternative solutions to administrative struggles. In the same fashion, a strong collaboration within the group of lecturers can allow for ‘joint agreements ... [to] facilitate the negotiation process before the project starts’ (Dahinden, this volume, p. 159). Thus, responsibility is shared during the process of learning how to navigate the institutional hurdles.

Elaine Brown and Beatriz Acevedo highlight the importance of ‘people and partnership’ to pursue interdisciplinary and collaborative teaching courses. As inter- and transdisciplinarity are yet not mainstream in some higher education institutions, ‘it is not clear if interdisciplinary curricula are a strategic priority’ (this volume, p. 148). This means that sketchy pathways might be delineated to consolidate an interdisciplinary curriculum, in which failed initiatives and lack of long-term integration in the curricula could also be included.

The authors rightly point out the urgent need to reward innovative curriculum designers:

Harnessing their motivation and energy is crucial for the successful introduction of interdisciplinary curricula. We wanted this group of individuals to feel recognised and their curriculum innovation made explicit within the institutional narrative, so the institutional lead termed the group ‘Trailblazers’.

(Brown and Acevedo, this volume, p. 149)

After experiences such as those described in the case are put in place, these need to be somehow institutionalised, not lost among administrative issues. To sustain this transformative pathway, Brown and Acevedo propose discussing a sustainability strategy with the university authorities to delineate a model supported by students’ outcomes and based on *future-focused rationale linked to institutional strategies*. The visibility of successful initiatives at the institutional level, the authors indicate, is a valid strategy to raise awareness of the course while demonstrating the value this type of effort can have for students and lecturers alike. This is a means to continue discussions surrounding processes and hopefully the resources to support it.

In a similar fashion, Iris van der Tuin advocates for lecturers to celebrate the success of designing an educational format, in this case a course. I like her idea of being less modest and acknowledging the effort that these formats entail. This celebration can also empower us to push for these formats to be

institutionally supported and to make them visible in publications and social media. This also relates to sustainability because we need to celebrate what works and why management and policymakers need to become vested in supporting and imbedding the activities, if necessary, changing the structures to accommodate for them. The author also indicates the following:

At most, we can say that we are being kept busy on the performance stratum and that this stratum has the potential of exhilarating and exhausting us. It becomes a matter of ‘lifelong learning’ and ‘continuing education’ indeed.

(van der Tuin, this volume, p. 155)

Further resources

As long as our activities are not embedded and self-sustained, they remain as specific performances to some degree. The misalignment between university policies, administrations and practices acts against inter- or transdisciplinarity’s effectiveness (Riveros et al., 2022). These hurdles can be overcome when collaborative initiatives are ‘situated’. This concept is defined by a relationship between a social demand external to the university and a set of collaborative teaching and research practices. These practices take place in ‘in-between’ spaces (Bhabha, 2012), transcend traditional disciplinary structures and work tightly with and for societal actors. Interdisciplinary initiatives, like the one described in this case, serve as a tool for the creation of these in-between spaces where scholars from different backgrounds find a common ground on to which design and develop educational initiatives. Situating these practices metaphorically catalyses a set of new relationships at the university, optimising the institutionalisation process (Riveros et al., 2022). In this transformation, situating inter- and transdisciplinarity not only describes a relationship but also serves as an instrument to construct a set of practices, legitimise those practices and create spaces that are not yet fully institutionalised. For this reason, we call these in-between spaces (Bhabha, 2012). In this way, interdisciplinarity or transdisciplinarity can be understood as adjectives—or descriptors—and verbs, representing how they are embedded in the practices carried out by the academic networks and programmes.

This conceptualisation of situating inter- and transdisciplinary initiatives allows us to advance the study of the institutionalisation processes because it offers a plastic and flexible framework in which policy and practice can be intertwined (Riveros et al., 2022). At the same time, it allows inter- or transdisciplinary knowledge regimes to be framed in the ongoing transformations of scientific timescales and spaces at universities (Felt, 2017).

To further foster the success of cases such as the one elaborated on in this chapter and their institutionalising processes, university administrators need to

apply a situated understanding of transdisciplinarity as a means to overcome the disconnection between policy and practice. Currently, many interdisciplinary initiatives that may not even be on the radar of university policymakers may disappear from a lack of support. At the same time, administrators need to be educated regarding what the hurdles for lecturers fostering interdisciplinary courses are and the role they can play in the university context. It is important to build greater understanding among researchers and university administrators through a long-term, sustained and participatory dialogue, together with training a new generation of students to increase awareness of societal challenges (Spaapen et al., 2020). Understanding the processes of integration into university policy of a new knowledge regime such as interdisciplinarity contributes to the discussion on institutionalisation and the future of higher education.

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