FACULTY OF BEHAVIORAL AND SOCIAL SCIENCES, UNIVERSITY OF GRONINGEN
IMPLEMENTATION PROPOSALS STRATEGIC PLAN 2016-2020
DOMAIN: PROFESSIONALIZATION OF LECTURERS

Vacancy Assistant Professor

TEACHING TRANSDISCIPLINARITY
The TETRA-Initiative

Rafael Wittek[1], Russell Spears[2], Ellen Jansen[3]
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Executive Summary

A professionalization initiative for lecturers is proposed. Its main purpose is to develop a didactical trajectory and toolbox supporting instructors (individual or teams) to develop courses (or course modules) with inter- and transdisciplinary content, and which achieve the desired learning outcomes for students. Proposed activities include the development of online course material for students, didactical support material, training and a support platform for instructors, and dissemination events (2-day workshops) for interested faculty. Deliverables include a *case example* in the form of a full-fledged 2-semester course on *Sustainable Cooperation: A Transdisciplinary Approach*, a course specific *didactical toolbox,* containing related educational support material, and a general didactical *design template* for the creation and implementation of courses or modules with inter- and transdisciplinary content. Impact on lecturers and students will be assessed as part of the process evaluation. In order to implement the initiative, recruitment of an assistant professor (4 years, 1.0 fte) is proposed. The suggested research component of the appointment (40%) consists of an empirical study of the obstacles and facilitators of interdisciplinary cooperation and its effectiveness, thereby connecting the research program on *Sustainable Cooperation* of the interdisciplinary SCOOP-Consortium with the research program *Determinants of Effective Higher Education* of the Department of Teacher Education. The proposal is a joint initiative of the Departments of Sociology, Psychology, and Teacher Education.

[1] Department of Sociology, University of Groningen (r.p.m.wittek@rug.nl).
[2] Department of Psychology, University of Groningen (r.spears@rug.nl).
[3] Department of Teacher Education, University of Groningen (e.p.w.a.jansen@rug.nl).

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1 BACKGROUND AND RATIONALE

There is an increasing awareness within the academic community that collaboration between disciplines constitutes one of the next big challenges not only for the University of the 21st century, but also for society at large. This collaboration can vary in intensity, ranging from lighter forms like *multidisciplinarity* (shared topic, juxtaposition of perspectives, autonomy), to more intense *interdisciplinary* cooperation (integration of disciplinary insights, interdependence), to the most challenging level: *transdisciplinarity*. The latter strives for interdisciplinary problem-solving implementations (consistent with modern agency-focused teaching methods), among other things through collaboration between academic institutions and other actors.

Interdisciplinarity – which itself requires explicating its disciplinary foundations – is a precondition for all forms of transdisciplinary problem solving. Consequently, in a compelling recent white paper, the League of European Research Universities (LERU) puts interdisciplinarity at the top of the upcoming agenda for European Universities (Wernli, D. & F. Darbellay, 2016, *Interdisciplinarity and the 21st Century Research-Intensive University.* Leuven: LERU).

The LERU-paper explicates a range of concrete measures that Universities may take to create an environment that, in addition to fostering high quality disciplinary work, is also conducive to interdisciplinarity in research *and* teaching: "(1) establish interdisciplinarity as a core business of the University, (2) identify and support areas where interdisciplinary collaboration is likely to create new knowledge, (3) prepare the terrain for interdisciplinarity in education, (4) create the next generation of interdisciplinary researchers, and finally (5) promote a culture of interdisciplinarity and continually improve the system" (p. 4).

Indeed, during the past decade, many educational programs and individual lecturers have attempted to incorporate multi-, inter- and transdisciplinary elements into their teaching, for example by improving student exposure to multiple theories and multiple methods[4], as in our Research Master, or in the specialization projects in the Sociology program. These efforts notwithstanding, we currently lack a sound didactical framework and the related educational material to guide efforts of designing, implementing, and evaluating activating forms of teaching with inter-, still less transdisciplinary ambitions. Nor do we have systematic evidence about the effectiveness of such attempts. Simply bringing together a team of lecturers from different disciplines around a specific topic, or letting students read texts from different disciplines will most likely not be sufficient to get us there.

> **The main purpose** of the TETRA-Initiative is to develop a didactical trajectory and related toolboxes that support instructors (individual or teams) in developing courses (or course modules) with inter- and transdisciplinary content, and which achieve the desired learning outcomes for students.

[4] See for example the new UCLA *Master of Social Sciences Program* at the University of California, Los Angeles (http://mass.ss.ucla.edu), which starts this academic year.

2 ACTIVITIES FOR THE PROFESSIONALIZATION OF LECTURERS

In order to achieve effective interdisciplinary teaching, we propose three general classes of activities.

2.1 Case Example: Transdisciplinary Course on Sustainable Cooperation

The first class consists in the development of a full-fledged *case example* for an interdisciplinary two-semester course for students. This includes the development of online teaching material (lectures, diagnostic questions, tests, assignments etc.). We propose to use the problem of *Sustainable Cooperation* as the first substantive topic for this case, for three reasons. First, cooperation is a central issue that cuts across all social- and behavioral science disciplines and beyond, and therefore lends itself as a topic for inter- and transdisciplinarity. Second, the theoretical groundwork for such a framework has already been laid by the interdisciplinary SCOOP initiative (www.scoop-program.org), an ongoing inter-faculty and inter-university cooperation between psychologists, sociologists, philosophers, historians, economists, management scholars and statisticians initiated in 2011[5]. Finally, cooperation issues are also key to current societal challenges, as evidenced in the *Dutch National Science Agenda*.

2.2 Course Specific Didactical Toolbox

The second class of activities, carried out in close interplay with the first step, consists in the development and validation of a course specific *didactical toolbox*, including related training material and support platforms, underlying this case example. A toolbox explicates the various challenges (epistemological as well as practical) that any (team of) instructors will face once attempting to set up a course on one substantive topic (e.g. cooperation) simultaneously from different disciplinary angles. It also provides guidance for solving these challenges in designing the course and implementing it in the classroom. The case specific toolbox will be related to the content of the first case example (cooperation).

2.3 General Didactical Course Design Template

Third, abstracting from the case example and its didactical toolbox, a general didactical *design template* for developing and implementing courses with inter- and transdisciplinarity content will be developed. It offers general ("meta") templates (e.g. kinds of diagnostic questions to ask, types of learning objectives, types of teaching strategies to combine disciplinary traditions, and adequate forms of testing, e.g. using a "serious game") that can be adapted and applied by individual instructors (or teams) to new substantive topics they would like to tackle in their own courses. For example, one problem of interdisciplinarity refers to how to deal with diverse theoretical as well as methodological paradigms when modeling a phenomenon, like cooperation. There are different meta-theoretical strategies scholars can use to deal with multiple paradigms (e.g. synthesizing vs. splitting)[6]. The general didactical toolbox provides example questions helping to identify these strategies, and apply them to specific substantive problems.

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[5] The Faculty of BSS is the commissioner of this project, which has recently received an 18.8 Million Euro grant from the Dutch Government in the context of its *Gravitation* program. The project started September 1, 2017, has a duration of 10 years, and is led by Rafael Wittek.

[6] See e.g. Lichbach, M. I. (2003). *Is rational choice theory all of social science?* University of Michigan Press.

3 RESEARCH COMPONENT OF THE REQUESTED ASSISTANT PROFESSORS

The research component of the requested assistant professor(ships) would consist in implementing (a part of) the interdisciplinary *Sustainable Cooperation* (SCOOP) research program by applying it to the problem of interdisciplinary cooperation and its effectiveness, thereby connecting SCOOP to the research program *Determinants of Effective Higher Education* of the Department of Teacher Education in which more research is related to assessing complex learning outcomes and graduate capabilities. More specifically, the assistant professors would be embedded in the ongoing SCOOP research line on the behavioral micro-foundations of sustainable cooperation, which was established as a joint endeavor by professors Spears, Flache and Wittek in 2013. The project would consist in designing and implementing an empirical study on (the obstacles and facilitators) for interdisciplinary cooperation and its effectiveness.

4 PROCESS MONITORING AND OUTCOME EVALUATION

4.1 Deliverables

We distinguish five types of deliverables.

4.1.1 Course Material for Students

The first concrete deliverable of this initiative would be a full-fledged case example in the form of a course on *Sustainable Cooperation: A Transdisciplinary Approach.* We develop (digital) teaching tools (modules) that address three parts of the interdisciplinarity problem. These modules will take the form of video-recorded classes (MOOCs or SPOCs), or related forms, and will be complemented with additional learning materials (diagnostic tests and guided readings).

1. *Theory:* Since interdisciplinarity requires a disciplinary foundation, a first set of modules consists of introductions to the problem of cooperation from different disciplinary perspectives. These introductions would provide an overview of key theories as well as state of the art developments (empirical and theoretical) on cooperation. In a second set of modules, the interfaces between two or more disciplines regarding sustainable cooperation are addressed. Here, experts from different disciplines inquire into complementarities and contradictions, as well as into the opportunities for theoretical unification. We will draw on SCOOP's extended interdisciplinary network of scholars for contributions to these modules.
2. *Method:* One set of modules provides short introductions into different (disciplinary) methods used to collect and analyze data on (sustainable) cooperation (e.g., experimental, modeling, field studies, case studies, and qualitative research *inter alia*). A second set of modules introduces examples for the appropriate use of different "mixes" of methods. For example, one module could focus on the question how qualitative and quantitative research can be combined and how a proper expert interview can be developed and conducted by persons who have no experience in this. To build these modules, we will reach out to the statisticians and methodologists of our Faculty.
3. *Policy:* This third part makes the step towards transdisciplinary problem-solving. In collaboration with real stakeholders from society (i.e. business firms, public administration, non-governmental organizations), an inventory

of "cases" will be developed. These cases will again be documented in the form of video material, as well as other (digital) case material. Each case addresses a specific and concrete problem of sustainable cooperation, and documents how this was tackled by the team of researchers and stakeholders. It illustrates which theoretical and methodological approaches have been chosen, how they have been combined, and why. It discusses the added value, but also the limitations and challenges that a transdisciplinary approach had for solving the stakeholder's problem. For the development of transdisciplinary policy cases, we will involve societal stakeholders from SCOOP's extended network.

The proposed level of this course is the Research Master, but note that the level can be calibrated up (to PhD-level) or down to other levels (BA, MA, honors program), by adjusting the didactical toolbox and its educational support material to the desired level.

Depending on whether or not funding for a second position is available, a second case example could be developed on a relevant topic that lends itself to transdisciplinary teaching. Explicit attention will be paid to the problem of how to identify suitable topics that meet the criteria of cross-disciplinary scope, feasibility (expertise available in the Faculty), and societal relevance (see section 2.1).

4.1.2 Support Material for Instructors

A second major deliverable are two *didactical toolboxes*: a specific one, that is tailored to the course *Sustainable Cooperation: A Transdisciplinary Approach,* and a general one, that contains guidelines, templates and educational for instructors who want to develop their own interdisciplinary course (or course module) and assessment tools.

4.1.3 Training for Instructors

The use of online teaching tools constitutes a key element of the TETRA-Initiative. One reason for this is that input from and interaction between real life instructors from other disciplines is pivotal for bringing interdisciplinarity to life. Professionally prepared video-recordings (MOOCs, SPOCs, interviews, graphical animations etc.) are a suitable means for this purpose, because they can be used both in the classroom to instigate debate, and for self-study. However, these tools will only work if they are adequately embedded in a high quality "offline" environment, and if the instructor in question has the required expertise to use these tools effectively. The TETRA-Initiative will therefore train participating instructors in the use of these tools. For that purpose, we will use the *e-Tutor* tool, an "open educational resource created for the professional development of faculty members on teaching online" (http://e-tutor.sml.zhaw.ch).[7] We are aware that expecting junior academics eligible for such a position to already have a true interdisciplinary background is not feasible and that true transdisciplinary teachers at any level hardly yet exist. Therefore our model would involve close team-teaching involving the senior mentors (i.e. from psychology, sociology, and teacher education) to supply extra-

[7] E-tutor was developed by the Center for Innovative Teaching and Learning at the Zurich University of Applied Science. The project leader, Dr. Rapp, introduced the tool to a task force of the Department of Sociology in mid 2014.

disciplinary expertise in the early phase of the position with teaching relief covered by junior appointees to offset the additional team-teaching of the seniors/mentors. This can also be addressed in the case of two appointments are from different disciplines, to allow for team- teaching. In this way we would not only to train the students in transdisciplinarity, but also the in-post academics including the senior mentors involved in the teaching thereof.

4.1.4 Support Platform for Instructors

A network of expertise for interdisciplinary teaching will be established. This participative support structure for instructors fosters exchange of ideas and best principles, and will be supported by an online platform.

4.1.5 Dissemination Workshops

At least one 2-day workshop will be organized in which lecturers from the Faculty learn about interdisciplinary teaching and research. During the workshop, case examples and best principles will be critically discussed, and hands-on applications of will be practiced, using participants' own course plans.

4.2 Process Evaluation

Process evaluation will be done with the help of impact assessment and milestones. Mapping of (changes in) instructor's cognitive and behavioral skills related to teaching inter- and transdisciplinary issues, as well as (changes in) the effectiveness of these skills related to student outcomes. The complementary team teaching provides an obvious route for reciprocal assessment in vivo. Milestones will be the realization of the several deliverables (sequential completion of) teaching modules and the didactical toolboxes (see timeline).

5 REQUESTED FUNDS AND THEIR ALLOCATION

Ideally, this project would be carried out as a joint project of two assistant professors (4 years, 1.0 fte each) from *two* different disciplinary backgrounds (which would allow for symmetrical yoking of senior involvement in team-teaching and corresponding in kind teaching relief). In addition to bringing interdisciplinary cooperation into practice, this would allow to develop more than one case example, i.e. applying the general template to a new topic. In case funding is limited to one position, the assistant professor would be in charge (under supervision of the applicants of the proposal) of designing and coordinating the implementation of the *Sustainable Cooperation: A Transdisciplinary Approach* module, as well as the related case specific and the general didactical toolboxes. The assistant professor would contribute 60% of her time to this teaching activity, and 40% to the research project *Sustainability and Effectiveness of Interdisciplinary Cooperation*. Given the complexities of these assignments, it will depend on the profile and level of experience of the potential candidate whether the applicants will carry out parts of the planned activities, and the assistant professor replacing parts of their teaching.

6 TIMELINE AND PROJECT OBJECTIVES

6.1 Preparation and Test Phase

- January 2018 – August 2018
- Formation of a project team, advisory structure and quality control procedures.
- Inventory of available didactical concepts and tools related to teaching multi-, inter- and transdisciplinarity.
- Elaboration of a draft didactical concept, learning outcomes and course plan for the first case course.
- Contact with participating lecturers from different disciplines, coordination of content.
- Research design for assessing and monitoring effectiveness of instructor professionalization.
- Production, review and evaluation of first informal pilot material.
- Finalization of content and didactical plan.

6.2 Production and Implementation Phase

- September 2018 – August 2019
- Content creation: production of online course modules and related educational material for the exemplary case.
- Elaboration of the course specific didactical toolbox.
- Instructor training (e-tutor).
- First implementation of the course in the regular course program.
- Identifying options for potential second case topics.

6.3 Refinement and Generalization Phase

- September 2019 – December 2021
- Evaluation of outcomes (teacher and student level).
- Identification of points for improvement.
- Adjustments to the course material and the didactical toolkit.
- Development of the general didactical design template.
- Dissemination workshops.
- Start applying the general didactical design template to a second substantive case.