

Recommendations for interdisciplinary collaboration

The following recommendations are meant to provide suggestions for promoting interdisciplinary research and research collaboration. They are based on the experiences of the “College for Interdisciplinary Education Research – a Joint Initiative of the BMBF, the Jacobs Foundation and the Leibniz Association” (CIDER, <https://ciderweb.org/>). Examples from the College for Interdisciplinary Education Research are used to illustrate each point.

Recommendation #1: Define a common field of research, limit the number of disciplines involved, and make sure that disciplines are represented in roughly equal proportions

Defining a common field of research helps **structure the search for overlap and shared interests with respect to joint research**. It facilitates the search for suitable topics and makes the mutual benefits arising from interdisciplinary collaboration more visible. In that field of research, it is helpful to **identify a set of thematic areas** along which the interdisciplinary work can evolve. These thematic areas, however, should by no means be assigned to any one discipline. Rather, make sure from the beginning to highlight the specific contribution that each discipline can make to each thematic area. Moreover, the prospect of doing research on **issues that are relevant to society** may boost the motivation of (early-career) scientists to contribute to scientific and societal discourses.

Example: Research in the College for Interdisciplinary Education Research was guided by three overarching themes within the research field “education”: “Educational inequality and success against the odds,” “Competence development as an educational and social process,” and “Returns to education.” Researchers belonged to the disciplines of psychology, education, sociology, and economics, which were represented in the College in similar proportions.

Recommendation #2: Involve excellent scientists at various career levels

For interdisciplinary research to be productive, the researchers involved must have a high level of expertise and methodological competence in their own discipline as well as basic competence in the other disciplines to command respect and to be able to recognize the value added by the other disciplines. Involving senior scientists enables young researchers to reduce their uncertainties when it comes to interdisciplinary research and to receive support with making productive use of interdisciplinary work. Interacting with young researchers challenges established scholars to question their views, and involving the younger generation guarantees sustainability, empowering them to adopt interdisciplinary perspectives in their later careers as well.

Example: Collaboration between outstanding early-career scientists and leading senior education researchers from the Leibniz Institutes was a hallmark of the College. Aside from working together on content-related matters, the seniors served as mentors for the young scientists.

Recommendation #3: Promote methodological expertise as a basic element of interdisciplinary research – Avoid overload

Methods are a basic element of productive and high-quality interdisciplinary research. For that reason, it is essential that researchers acquire advanced **methodological skills** in their own discipline early on as a basic prerequisite of interdisciplinary collaboration—beginning in their undergraduate education and continuing in their doctoral training. Furthermore, interdisciplinary research requires the **creation of a “shared” methodological repertoire**. It is important, therefore, to create opportunities for sharing the methodological approaches that have proven to be useful in each discipline. Individuals who lack some of the required skills may then acquire them in concrete projects or by attending suitable methodological trainings. At the same time, the researchers involved should agree on the basic methodological principles of their research. After all,

interdisciplinary work already means having to develop a shared vocabulary with respect to other issues (see below). Having to negotiate fundamental epistemological principles on top of that may lead to overload and frustration.

Furthermore, it makes sense—if possible—to use well-established datasets, especially if these already incorporate constructs from various disciplines. In this way, no extra time is needed for extensive data collection when pursuing joint projects.

Example: Research in the College was empirical and quantitative in nature. Workshops frequently included lectures or courses covering methodological issues that were relevant across disciplines. Moreover, in an effort to improve methodological expertise among future generations, the College organized two summer schools for university students featuring courses on methodology taught by members of the College. If fellows needed further training in these methods, they attended the summer schools as well.

Recommendation #4: Create meeting spaces – Develop a shared language and capacity to act

Promoting interdisciplinary research requires **sufficient spaces** for the participating scientists to meet. These meetings should be used to present and discuss key theories (basic knowledge) and each discipline's specific perspective on the research areas. This serves the purpose of **establishing a shared language**. One key prerequisite of being capable of interdisciplinary action is to discuss any **reservations and fears** that may exist among the researchers involved and to work on solutions for any challenges that may arise. Interdisciplinary research can only have a positive impact on people's careers if the quality of their disciplinary research does not fall behind that of researchers without an interdisciplinary profile.

Example: Fellows came together for workshops multiple times per year and on a regular basis. At these workshops, they presented their own work and the work they had done together. Contributions from a single discipline were discussed by an interdisciplinary audience. These discussions also highlighted the fact that identical terms and concepts sometimes mean different things in different disciplines (e.g., sociologists and psychologists mean different things when they talk of “non-cognitive abilities”). Furthermore, participants explored the potential and challenges of interdisciplinary work and developed solutions.

Recommendation #5: Understand discipline-specific publication strategies – Develop joint publication strategies

Interdisciplinary research requires an **understanding of publication strategies**, which on the one hand are specific to each discipline and on the other vary widely when it comes to publishing in interdisciplinary groups. As long as there are no established interdisciplinary journals, a good interdisciplinary strategy is to preserve and refine disciplinary perspectives while at the same time being sensitive to beneficial connections. Accordingly, a publication strategy to accomplish that goal is to *place innovative and outstanding papers enhanced by interdisciplinary input in the leading journals of one's own discipline*. This helps increase the visibility of research findings from other disciplines while also promoting the careers of (young) scientists. Moreover, this publication strategy reduces fears of interdisciplinarity (see recommendation #4). Interdisciplinary research must not stand in the way of young researchers' disciplinary publications; it rather serves the goal of improving them. Furthermore, **quality standards** may vary between disciplines. That is why it is essential to disclose and discuss these standards.

Example: As publications are key for scientific communication and careers, fellows compiled a list of journals in the field of education research that are known to be open towards interdisciplinary

contributions. The outcome of interdisciplinary collaboration may be a paper published in a disciplinary journal. In that case, the lead author is the person who represents the discipline in which the journal is based. That person is responsible for ensuring proper disciplinary terminology and contextualization. The other members of the research team are listed as co-authors.

Recommendation #6: Learning by doing – Concrete research projects

Making interdisciplinary research productive and recognizing its added value requires **concrete research collaborations**. Here, it helps to think not only of “big” projects but also of smaller projects and experimentation, from which permanent collaborations and larger research projects may eventually emerge. In such low-threshold projects, in which expectations regarding the outcomes are not too high, both success and failure can be appreciated as something positive (in terms of shared learning).

Example: In the College of Interdisciplinary Education Research, the “micro work group” format proved to be an excellent means: A micro work group is a research project initiated by the fellows and, if necessary, funded by the College, in which fellows work together on self-selected issues in education research. It is a flexible format that can be applied to a wide range of contents; at the same time it is designed to produce output, which however may vary widely in terms of size and results. The goal of most micro work groups is to produce joint scientific publications, but they may also be used to prepare grant applications, surveys, or symposia at conferences. As micro work groups are made up of fellows from different disciplines, they encourage an intensive exchange of methods and contents between the disciplines.

Recommendation #7: Create free spaces – Enable interdisciplinary research through scientific coordination and financial support

Interdisciplinary research projects are time-consuming, and postdocs need to be given sufficient free time for such pursuits by their supervisors. That is why both junior and senior researchers should be freed as much as possible from the additional administrative efforts involved in interdisciplinary networking to preserve the time available for joint research. Likewise, the extra activities in an interdisciplinary network require financial support for postdocs, as most of them do not yet have a budget of their own to cover research and travel expenses.

Example: The College employed an organizational team to support and coordinate the research and workshop activities. Fellows were eligible to apply for grants to support their research (e.g., their micro work groups) and to attend interdisciplinary conferences.

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