Cooperative Education

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Definition

Cooperative education programs are a learning practice inspired by the dual education system of the German-speaking countries. They seek to combine theory and practice, academic and professional knowledge, reflection and application. A consensus about a precise definition of cooperative education is still lacking, and many countries and higher education institutions implement these programs individually (Eames and Coll 2010, 182). A study program can be defined as 'cooperative' (lat. *co-operare* 'to work together, combine, unite') if the university and a practice partner (e.g. company, business, or social institution) are structurally intertwined, i.e. content and program organization are aligned so that whenever students apply knowledge practically the same knowledge is then reflected theoretically within the university. This requires a conjoined coordination policy between practice partners and university personnel.

In most cases, practical elements comprise from one-third to one-half of a cooperative education program. Depending on the design of a program, practical elements may be integrated at various times: before, during (most commonly), or even after the theory-oriented learning phases at university. The involvement of the practice partner is not necessarily limited to the practical elements but may also include content, methodology, and assessment. Therefore, students are continuously challenged to combine academic expert knowledge with hermeneutics, situational understanding, and reflections on the contradictions between theory and practice. This is also true for study programs which are not part of the humanities, such as engineering or health professions. Cooperative programs require students to meet the academic standards of university education while simultaneously fulfilling the expectations of an economic business or social institution. Their academic training has to satisfy the demands of two addressees.

International higher education uses a variety of descriptors to identify study programs that combine theoretical coursework with relevant practical experience. All these approaches have in common that they demonstrate intersections with

cooperative education. Among these are experiential learning (Kolb 2015), practice-based professional learning (Kennedy et al. 2015), work-integrated education (Jackson 2015), work-based learning (Cunningham and Dawes 2016), Youth Participatory Action Research (Anyon et al. 2018), professional development (Webster-Wright 2009), extra-occupational doctoratea (Kaiser 2020), and degrees combining studies with work (Eames and Coll 2010, 185–88). Options between these forms can provide different access points, ranging from vocational education offered at upper-level secondary schools, employer-centered placements with curricular collaboration between universities and industry, to academically comprehensive programs integrating practice throughout. Depending on the regulations and preferences of a country's educational system, cooperative education can carve out a niche to thrive. It can offer opportunities to those students best suited to benefit from a balance of learning outcomes.

While cooperative learning is a pedagogical practice that promotes learning in groups (as opposed to individualized and competitive learning), cooperative education and transdisciplinary learning refer to a specific understanding of learning that is grounded in experience and reflection on one's doing (Gillies 2016, 39; Kolb 2015, xviii). The latter, therefore, is utilized in work-related learning (Beard and Wilson 2013, 18).

Background

Cooperative education is an attempt to offer a study degree at the interface between academic and vocational training. The concept and origins of cooperative education derive in many countries from the increasing demand for a specialized workforce, the expanding academization of professional activities, and growing criticism of the low practical relevance of academic curricula. In view of the various structures of these programs, work-based learning is increasingly considered to encompass a meaning broader than cooperative education, as it refers to a spectrum of opportunities both inside and outside the workplace. However, it also becomes so broad that didactics and learning structures are difficult to define or examine. Cooperative education that integrates co-curricular elements provides a valuable feedback loop from the world of work back into higher education.

Research and literature on cooperative education consist strongly of region-related empirical analyses, case studies, and position papers (Graf et al. 2014; Jacobs and Renandya 2019; Newhook 2016; Schiller and Leisyte 2020; Tanaka and Zegwaard 2019; Zegwaard et al. 2022). Empirical research on cooperative education focuses on student populations' previous education and socio-demographic characteristics, selection and access criteria, and expectations and motives for career choices (Hemkes et al. 2019). Analytical reflections on the interplay between sci-

entific claims, the logic of the labor markets, the postulate of the practical turn (Stern 2003), the material culture of knowledge production, and the liberal ideal of integral education are still rudimentary (e.g. Davidson 2021).

Debate and criticism

A central challenge of cooperative education programs arises from the conflicting interests of the two learning venues: While practice partners, on the one hand, are usually focused on profitability, on fast, cost-effective, and practice-oriented training, and thus on the knowledge that can be utilized in the short term, universities, on the other hand, are focused on sustainable academic education and on developing individual, holistic, and long-term knowledge resources. This leads to a multitude of further problems. On an institutional and organizational level, divergent interests and opposing positions raise questions like: How do (implicit) ideas of practice partners, professional interest groups, chambers of commerce, and ministries impact the curricula? What influence can practice partners exert on financing and quotas for programs? On an individual or personal level, dependencies, power structures, expectations, and involving supervisors from the practice partner come into focus and lead to questions such as: To what extent is grading affected if employees of practical partners are involved in assessments, e.g. a thesis or a dissertation? What measures are taken to address conflicts of interest? Comparing public and private universities mainly gives rise to a considerable need for analysis and further research. Transdisciplinarity must be a clear part of the curricula for universities and their practice partners to work together.

Four central questions determine the further development of cooperative education. (1) In addition to financial resources, time is a scarce resource that is indispensable for successful implementation. As higher education institutions coordinate a large number of different practice partners and, in addition, are responsible for quality control, workload poses a particular challenge. Additionally, in curricular terms, transdisciplinary learning depends on appropriate reflection phases to permit students to process their experiences at the interface between science and society. In most study programs, however, transdisciplinarity is more of a phenomenon of application than reflection. Time for a systematic evaluation of transdisciplinary experiences is lacking. (2) Cooperation between universities and companies requires extraordinary efforts in coordinating the plurality of involved actors, managing the necessary participation forums, and discerning the knowledge resources needed to solve a given problem. (3) From a student's perspective, it is imperative to assess whether the practical relevance, the high probability of employment, and the salary during the program outweigh the increased demand for self-organization and efficiency. Cooperative education will remain

attractive to employers if employability is its primary goal, but it will deter students from developing a learning biography that reflects their particular interests. Two of the qualification goals of a study program are in question: the ability to engage in social activities and personal development. Nevertheless, cooperative education can hardly meet the objective of enabling contextualized thinking or interdisciplinary perspectives. Cooperative education requires commitment and motivation of all participants to test, reflect, and integrate transdisciplinary techniques. (4) In terms of expansion, cooperative education programs thrive in application-driven STEM disciplines, health, social, and educational professions but seem less attractive to the humanities, arts, and social sciences. Most of these disciplines are oriented more towards theory, but also show potential for integrating practical components. Examples include empirical social research, museum studies, and teacher education. Practices of transdisciplinary learning in situ could be a promising teaching innovation when expanding into application-driven fields because they tend to be solution-focused. It seems likely that cooperative education will grow to meet the needs of regional business ecosystems and large-scale political programs like the Sustainable Development Goals (Mazzucato 2018).

From the perspective of transdisciplinary learning, cooperative education is an ambivalent issue. The concept and claim of cooperative education parallel transdisciplinarity as a collaborative, society-oriented learning experience involving experts and practitioners from different disciplines. In either case, the aim is to bridge the gap between academia and a critical public, enhance participatory processes, introduce case-specific practical expertise into abstract deliberation, promote fluidity between communities, and thereby overcome boundaries between academia and society. Cooperative education can be a means to generate knowledge inclusively, make decisions in a participatory way, and foster an understanding of the differences between everyday, practical, and scientific knowledge resources. As in all transdisciplinary practices, cooperative education can thereby contribute to encounters with or avoidance of crises in science legitimacy. However, essential hindrances arise from limited opportunities for reflection, critique, and contextualization of disciplinarity in cooperative study programs; in many cases, a narrow view of disciplines in their value for the labor market aggravates contextual awareness, openness, and perception of the plurality of scientific questions within, beyond, and across disciplines (Eames and Coll 2010, 184). The potential inadequacy or absence of reflection on disciplinarity highlights the challenge for universities to integrate transdisciplinary reflection in their curricula – instead of leaving it to the students.

Cooperative education programs offer a symbiosis between vocational and academic education. At the same time, they remain a compromise between the liberal ideal of integral education and the capitalist logic of labor exploitation (see Milley 2016). In genesis and essence, they are a product of Western educa-

tion concepts, and their applicability to differing cultural systems and knowledge traditions is questionable. Although there are established practices, e.g. in Latin America (Zamora-Torres and Thalheim 2020) and Russia (Lešukov et al. 2018), and initiatives to introduce cooperative education in other world regions, e.g. as part of a "new engineering education" in China (Shen et al. 2020, 890–91), research is conducted almost exclusively in English and German. This implies that local adaptations strongly rely on Western publications. It remains to be seen whether local forms of cooperative education will prevail independently of the hegemonic discourse and address local needs as well as develop innovative approaches. In general, academic institutions should be aware of their risk of being reduced to factories to produce a trained workforce. Cooperative education, then, contributes to a general tendency of realigning the education sector along with market principles and economic purpose rationality. Even though cooperative education grew out of the world of work and gave students a practical connection to it, the implicit criticism aims to give students chances to develop deeper critical and holistic thinking.

From a student's perspective, critical assessment is also essential when deciding for a cooperative education program, as it may include different forms and degrees of practice. Not all programs advertised as cooperative education or under one of its many synonyms offer genuine cooperative education, as described above. For example, a mandatory internship would not qualify as cooperative education. While there is no binding definition, we suggest two minimum criteria that must be met: (1) An academic study program that includes practical elements encompassing one-third to one-half and awards credit points for them. (2) student, practice partner, and university have all signed a contract agreeing on obligations and funding.

Undeniably, cooperative education's innovative achievement is to synthesize the dichotomy of the education system of Western industrialized countries and to increase social mobility: In addition to the binary options of higher education and vocational training, between which it was almost impossible to mediate in the past, cooperative education provides a third – hybrid and integrating – alternative. It strengthens the education system by meeting the needs of different learning biographies, including educational and vocational profiles. It thereby anticipates the plurality of knowledge resources, participation forums, involved actors, and educational biographies that form the core of transdisciplinary learning. Moving beyond criticism and encouraging expansion into new learning approaches that include learners of all backgrounds, cooperative education programs clearly hold the potential to be holistic and reflective or to address specific societal problems. By combining practical and academic elements, transdisciplinary learning is possible, and is a natural part of application-oriented education.

Current forms of didactic implementation

The number of cooperative education programs has grown steadily since their introduction. As a result of increasing state funding, programs have become more diversified. Specific transdisciplinary study programs have not yet been established in cooperative education. There is, however, potential in methodological and didactic reflections on practice.

A multifaceted and long-institutionalized culture of cooperative education has developed mainly in German-speaking countries, where the demand for employment security, a qualified workforce, and the advanced integration of plural forms of learning during the 1970s were significant incentives (Faßhauer and Severing 2016; Graf 2015). Several European countries, such as France, Spain, and the United Kingdom, offer comparable degree programs (Schmees et al. 2019, 8). In the United States, cooperative education was introduced as early as 1906 and has increased in demand since the 1960s. In Canada, work-integrated learning expanded in the 1970s and is institutionalized today in many universities (Angerilli et al. 2005; Bowen and Drysdale 2017; Milley 2016). In Australia, one-third of the university students, on average, undertake an experience in work-integrated learning (Zegwaard et al. 2022, 1).

In this context, it is possible to distinguish not only individual countries but also educational systems, which can be divided into three ideal-typical systems based on their "institutional distance", i.e. their respective institutional frameworks (Graf et al. 2014). (1) Germany is a federal system with standardized education and vocational training systems involving chambers of commerce and social partners. (2) The US is also a federal system, but hardly standardized. Education and training take place in market-oriented environments. (3) France, on the other hand, is comparatively centralized and school-based. However, vocational education is not highly valued in secondary education. Therefore, vocational orientation has assumed a more prominent role in higher education since the 1960s (Powell et al. 2012, 410). Regardless of the institutional framework, cooperative education is considered a means to link the world of work to academic training and education (see Maassen et al. 2019).

Despite these differences, the general development shows that learning outcomes that are important to the learner, the university, the employer, and other stakeholders are possible through experiential learning with academic support and critical thinking in a higher education setting. Costley (2015) makes a strong case for applying a transdisciplinary approach to work-integrated learning in the design, facilitation, and evaluation of work-based initiatives and programs. Transdisciplinary learning in a cooperative education setting can be facilitated as the field defines its body of knowledge, researches distinctive phenomena such as learning through experience, and expands the expertise of its practitioners. The enhancement of life-

long learning skills, contributing to people's working lives, and the economy can all be linked to cooperative education. Thus, it can position itself to meet students' needs for experiential learning and society's needs for transdisciplinary thinkers.

Proper planning and curricula development in cooperative education programs can integrate transdisciplinary learning with some of the following aspects: (1) Clear learning agreements between students and placements that reflect authentic and world-relevant learning outcomes. (2) Access to superiors in reflective dialogue so students may shadow higher-level thinking. (3) Project work that requires concentration on socially relevant topics rather than commercial profit. (4) Mechanisms for personal reflection on learning in group or mentor–student settings. (5) Building program teams representing a variety of disciplines and roles. As transdisciplinary research and developing practice unfolds while society's challenges transform and emerge in a new form, so should teaching and learning evolve parallel to these real-world processes.

A university can transform the student work experience into potential transdisciplinary learning when institutions and employers enable engagement with the complex and emergent real-life challenges naturally present in genuine work experience. Cooperative education will continue to move towards more transdisciplinary learning as Stern's practical turn intertwines with the growing need for industry and education to tackle significant global challenges. If binding quality standards succeed in combining academic knowledge production with practical expertise and theoretical approaches by including experts from civil society, industry, politics, public administration, the cultural sector, etc., then cooperative education can unleash its transdisciplinary potential (Carayannis and Campbell 2009; Gibbons et al. 1994). Including educators from all parts of society in higher education and guiding students in their reflections and analyses with experience from practice will contribute to bridging the gap between academia and society. Thus, cooperative education may initiate a process of universities becoming more open and socially responsible, thereby contributing to an overdue change of attitude in higher education.

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