

This is an electronic reprint of the original article. This reprint may differ from the original in pagination and typographic detail.

Speaking and thinking about crosscurricular teaching

Mård, Nina; Harnow Klausen, Søren

Published in:

Developing a didactic framework across and beyond school subjects

DOI:

[10.4324/9781003367260-3](https://doi.org/10.4324/9781003367260-3)

[10.4324/9781003367260](https://doi.org/10.4324/9781003367260)

Published: 22/12/2023

Document Version

Final published version

Document License

CC BY-NC-ND

[Link to publication](#)

Please cite the original version:

Mård, N., & Harnow Klausen, S. (2023). Speaking and thinking about crosscurricular teaching: Terms, concepts, and conceptions. In S. Harnow Klausen, & N. Mård (Eds.), *Developing a didactic framework across and beyond school subjects: Cross- and transcurricular teaching* Routledge. <https://doi.org/10.4324/9781003367260-3>, <https://doi.org/10.4324/9781003367260>

General rights

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

Take down policy

If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

2 Speaking and thinking about crosscurricular teaching

Terms, concepts, and conceptions

Nina Mård and Søren Harnow Klausen

Introduction

Crosscurricular teaching is an approach traditionally characterized by terminological unclarity. A bewildering variety of terms and concepts are used, partly to express different conceptions or describe different types of teaching, partly reflecting different traditions and terminological habits. It is neither realistic nor desirable to establish a single uniform terminology. However, it is important for everyone involved in crosscurricular teaching practices to know the most widely used expressions and underlying conceptions. Thinking clearly about teaching across the curriculum requires a coherent conceptual framework, and planning and carrying out such teaching requires a language for addressing it.

Crosscurricular teaching is about work across different domains. The approach was first developed and has been most discussed in research and disciplinary fields, and accordingly, the terminologies addressing such activities are derived within disciplinary structures. This is why concepts of multi-, inter-, and transdisciplinarity have gained ground and are utilized also in domains of school teaching. In this chapter, we will problematize the use of concepts referring to academic disciplines when addressing school teaching. Although having their epistemological basis in academic disciplines, school subjects are knowledge domains with their own aims and rationales. Teaching across and beyond school subjects has other preconditions than teaching in higher education or working together in interdisciplinary scholarly teams, and hence there is a need for a specific conceptual framework for school teaching, which specifically considers the conditions of teachers and school subjects.

The conceptual framework presented in this chapter is centered on the concepts crosscurricular and transcultural. Crosscurricular teaching refers to integrated teaching situations where subjects are visible or recognized, whereas transcultural refers to teaching approaches of deep integration between subjects. When addressing the approach without further clarifying the intensity or depth of integration, we suggest crosscurricular teaching to be used as an overarching term. A taxonomy based on the two concepts is presented and elaborated on in the last section of the chapter. We argue for the feasibility of

the two concepts with respect to the existing school realities. Crosscurricular and transcurricular teaching refer to work that goes across curricular subject areas. Curricula across nations are structured around the division of subjects and therefore crosscurricular teaching, regardless of its realization, will always relate to subject areas and initiate negotiation and planning by teachers with different subject affiliations (see also Chapter 5). Hence, the terms reflect the school reality and are comprehensible for teachers and students.

Mapping the conceptual field

Crosscurricular teaching in school education has been an advocated approach for many decades. This is due to several reasons, relating to beliefs about which knowledge should be taught in school to address contemporary problems and issues in society (Lam et al., 2013; Lenoir & Hasni, 2016). Since the Western intellectual tradition has traditionally classified knowledge into specialized domains within a larger system of disciplinarity, crosscurricular approaches to knowledge exploration are generally perceived as opposites to subject-based activities (Klein, 2017). This is reflected in the terms and concepts developed for speaking about crosscurricular activities as the most popular of them, multi-, inter- and transdisciplinarity, refer to academic disciplines and the disciplinary structure of knowledge. The prefixes multi-, inter-, and trans- indicate that two or more disciplines are connected in different ways, in attempts to benefit from the collaboration of distinct disciplinary perspectives.¹

In the literature, the approaches of multi-, inter-, and transdisciplinary teaching are distinguished by their degree of integration between subjects and/or the degree to which subjects as such are transcended or ignored. Traditionally, multidisciplinary teaching is understood as an approach with a low degree of integration, while inter- and transdisciplinary teaching refer to more integrated teaching (Klein, 2017). According to Drake and Burns (2004), *multi-disciplinary approaches* focus primarily on the disciplines and imply organizing of standards from the disciplines around a common theme. Lam et al. (2013) describe multidisciplinary as the juxtaposition of subject areas according to a theme identified in two or more subjects, with the organizing theme subordinated to established subject areas. Multidisciplinary teaching can include features of collaboration between teachers, but is often implemented either by one teacher who includes perspectives from other subjects into his or her own teaching or by several teachers who all deal with aspects of one topic or theme at the same time (Lam et al., 2013; Klausen, 2011).

Interdisciplinary approaches refer to organizing the curriculum around common themes across disciplines, with identifiable disciplines but they are assumed less important than in the multidisciplinary approach (Drake & Burns, 2004). Lam et al. (2013) define the interdisciplinary teaching content as blended, as disciplines speaking in separate voices become tools to focus closely on an organizing theme, problem, question, or idea. Within

interdisciplinary teaching, the idea of teacher collaboration becomes evident since shared planning and instruction in two or more subjects are central components. Usually, fewer subjects can be involved in interdisciplinary teaching compared to multidisciplinary teaching, due to the need of resources for common planning time and the restructuring of teachers' schedules (Klausen, 2011).

Aside from this notion of a middle degree of integration, the term interdisciplinary is perhaps the most commonly used concept, employed in a large amount of literature, to address the issue of crosscurricular teaching in general (see, e.g., Klein, 2017; Lenoir & Hasni, 2016; Wilson, 2010; Wineburg & Grossman, 2000; St Clair & Hough, 1992). In addition, terms like curriculum/subject area integration, integrated/integrative curriculum or teaching/learning, and crosscurricular teaching/learning are frequently used as general labels of teaching across and beyond different school subjects (see, e.g., Barnes, 2015; Drake & Burns, 2004; Haapaniemi, 2022; Hammond, 2017; Lam et al., 2013; Nollmeyer et al. 2016; Rennie et al., 2012; Savage, 2010).

In a *transdisciplinary approach* to integration, the teaching is organized around student questions or real-life problems, with disciplinary skills used in authentic situations without being recognized as such (Drake & Burns, 2004). Subject boundaries are blurred and connections are magnified in a new organizational framework, resulting in teaching that does not thematize subjects explicitly as subjects (Lam et al., 2013). The potential of this approach is that the schoolwork comes to exhibit coherence and the students are often given more responsibility for regulating their own learning processes (Barnes, 2015; Lenoir & Hasni, 2016). However, there is a risk of identity loss and anxiety among teachers, if they are forced to lead transdisciplinary teaching processes that include many aspects outside their subject expertise (Klausen, 2011). A common characteristic of the transdisciplinary-related concepts is that they usually are combined with the verb "learning" instead of "teaching," indicating approaches that focus on student work and in which teaching is transformed into a process of guiding students' independent learning progression (Lonka, 2018; Silander, 2015).

As already indicated, the concepts of multi-, inter-, and transdisciplinarity have come to form the terminological basis for speaking and thinking about teaching across and beyond subjects (see Klein, 2017). Although they offer a way of classifying different approaches as discussed earlier, their references to academic disciplines are problematic in a school context. While school subjects derive from academic disciplines, there are significant differences between the two. According to Deng (2012), a school subject refers to an area of learning within the school curriculum, constituting an institutionally defined field of knowledge and practice for teaching and learning. An academic discipline, again, is an area of learning affiliated with a university, formulated for the advancement of research and scholarship, and often related to a specific domain of research or specific investigating methods. An academic discipline

thus involves the concept of research, and addresses scholarly and certified knowledge, while a school subject involves the concept of teaching and education and it not only addresses academic knowledge but also involves diverse pedagogical, moral, political, cultural, and economic components (Lenoir & Hasni, 2016).

The teaching of school subjects, regardless of grade or students' maturity, is done through didactic considerations in a process where disciplinary knowledge is didactically transferred to a suitable teaching content (Klafki, 2000). According to Chevallard (1989), the didactic transposition of knowledge is realized in a process of several stages. First, the enormous amount of disciplinary knowledge, produced through scientific research, needs to be delimited and defined as educational content in curricula and policy documents. Second, the teacher transforms the curricular content into actual teaching. In this process, she reflects on appropriate aims and methods for teaching the content to the students at hand. Third, the students interpret and attribute meaning to the content based on the received teaching. Ongstad (1999) introduces the concept of didactization, which addresses the didactic reflections, transformations, and communications of a knowledge domain. Through didactization processes, a school subject's didactic form, content, and use are negotiated in ongoing processes.

In many cases, both the content and methods of school subjects differ significantly from what would seem to be the corresponding academic discipline or disciplines. Teaching languages at school aims at fostering communicative competence, something different from work in academic linguistics (see Chapter 17). There are school subjects which, depending on the national context, do or do not have a corresponding academic discipline, such as crafting (see Chapter 12). There are also school subjects that integrate several disciplines, such as ethics in German schools, which relates to, inter alia, religion, philosophy, law, psychology, and biology (Bundesministerium, 2022), and social studies in Scandinavian schools, which relates to, for example, political science, economy, law, and sociology (Löfström, 2019). It is noteworthy that neither school subjects nor academic disciplines are static domains, but constantly changing in relation to societal and cultural demands.

It is not just that school subjects are delineated differently from academic disciplines, that is, that the maps are drawn differently. The didactic transformations of the content, especially the very different aims and practical contexts of school subjects, make for an altogether different situation in terms of potentials and obstacles for working across and beyond them. For example, the fact that school subjects are not bound by specific research methods might make it easier to work with themes from other subjects. On the other hand, the obligation to provide students with a stock of basic knowledge and skills might make them less flexible than academic disciplines, which are expected to evolve and can move more quickly into new domains. Moreover, school teaching serves general aims of educating students and preparing them for

life, which may also provide rationales for teaching across domains that do not pertain to academic disciplines.

Cross- and transcurricular teaching in schools

In an attempt to acknowledge the unique nature of school subject and school teaching, Lenoir and Hasni (2016) distinguish between academic interdisciplinarity and school interdisciplinarity. We think, however, that this approach, despite its merits, does not thoroughly capture the school reality as it has too close connections to disciplinarity in a conceptual sense. We suggest that concepts of crosscurricular and transcurricular would relate better to the reality of schools and the integration of subject areas, compared to concepts with disciplinary associations. Although crosscurricular and transcurricular do not explicitly address school subjects, like terms of subject-transcending or subject area integration, they do reflect the ambitions of crossing curricular subject boundaries and serving the educational aims of doing so. Crosscurricular teaching, however, is to be understood more broadly. While subject-related concepts may address teaching across subjects more narrowly, crosscurricular teaching, in our understanding, implicates wider perspectives on teaching and educating for *Bildung*, including transversal competences and values (see Chapter 3).

Crosscurricular teaching is by no means a new concept. It has been used by several researchers during the years (e.g., Barnes, 2015; Rowley & Cooper, 2009; Whitty et al., 1994) and is defined by Savage (2010) as follows:

A cross-curricular approach to teaching is characterized by sensitivity towards and a synthesis of knowledge, skills and understandings from various subject areas. These inform an enriched pedagogy that promotes an approach to learning which embraces and explores this wider sensitivity through various methods.

(p. 40)

The sensitivity to both subject and student interests, and their mutual interdependence, lies at the core of crosscurricular teaching. It seeks to create robust links between subjects, links that consider the thinking processes of different subjects and relate them through the experiences of students (cf. Rowley & Cooper, 2009). Aiming at fostering *Bildung*, crosscurricular teaching, in our understanding, is sensitive to various approaches with different aims and topics to enhance the edification of students. While *Bildung* may require crossing curricular boundaries, it is quite compatible with, and may even require, teaching without such boundaries as well (see Chapter 3).

Even though we suggest using crosscurricular and transcurricular as the most appropriate terms for speaking about school teaching, we are aware of the complexities and controversies surrounding the term curricular. It has been associated with a particular Anglo-Saxon tradition of centrally controlled

education, with public agencies determining teaching contents and methods through detailed plans and standardized textbooks, and of educational research focused on such curricula (so-called curriculum studies). This has been contrasted with the German-Scandinavian tradition of *Didaktik* (and the related notion of *Bildung*), which emphasizes teacher's autonomy and sensitivity to students' interests and needs (Westbury, 2000). Since our framework is based on the latter tradition of *Didaktik*, we use the term curriculum in a broader and more neutral sense. We use it to refer to the totality of school subjects – for example, mathematics, history, English, foreign languages, music, arts, and social studies – in a given institutional context. Hence the terms crosscurricular and transcurricular designate different ways of teaching across or beyond the institutionalized or traditional school subjects. This is not only in line with a common usage of the term curriculum (Goodlad et al., 1979; Young, 2014), but also reflects recent developments within educational research and practice. For more than two decades, the two research traditions have been cooperating and converging (Gundem & Hopmann, 1998; Krogh et al., 2021). A convergence has taken place also on the level of educational policy and practice, as more detailed and centralized goals and plans have been introduced in schools in Germany and Scandinavia, accompanied by an emphasis on evidence-based approaches to teaching and learning. While this movement and its compatibility with the concern for *Bildung* has been contested, it has shaped the educational landscape in a way that makes the distinction between curriculum and *Didaktik* less pertinent, and we shall allow ourselves to set it mostly aside in this book.

A taxonomy for crosscurricular and transcurricular teaching

Most existing taxonomies of interdisciplinarity build on a typology adopted by the OECD for an international conference held in 1970 (Apostel et al., 1972; Jantsch, 1972). It was inspired by the political and intellectual climate of the time, being connected with cybernetics, system theory, a holistic worldview, and a belief that radical changes in society and human thinking were urgently needed. Klein (2017) gives an overview of how further typologies classifying interactions between disciplines were developed on this basis, bringing both clarity and confusion to the field. As Klein points out, typologies are neither neutral nor static. They reflect different perspectives on changing institutions and practices. In this chapter, we present a taxonomy (see Table 2.1) that reflects our aim of developing a conceptual framework for crosscurricular teaching, thus adapting earlier typological work on interactions between scientific disciplines to the field of school teaching. The taxonomy is developed with the contemporary educational preconditions in mind and reflects our intention to problematize traditional ways of talking about *Bildung*-centered crosscurricular teaching.

The taxonomy (Table 2.1) shows how crosscurricular and transcurricular teaching are related to the concepts of multi-, inter-, and transdisciplinarity.

Table 2.1 A Taxonomy for Crosscurricular and Transcurricular Teaching

<i>Crosscurricular Teaching</i>		
<i>Crosscurricular Teaching</i>	<i>Transcurricular Teaching</i>	
<i>Multidisciplinary</i> Intradisciplinary; hierarchical; sequenced; correlated; theme-based/ thematic; threaded; fusion	<i>Interdisciplinary</i> Integrated; shared; curriculum integration; fusion	<i>Transdisciplinary</i> Integrative; project- based; problem-based; phenomenon-based; curriculum negotiation; opportunistic; structured and unstructured core

Following the idea of depth and degree of integration, crosscurricular teaching can be juxtaposed with multidisciplinary, while transcurricular teaching can be juxtaposed with transdisciplinarity. Interdisciplinarity includes qualities that can be related to both crosscurricular and transcurricular approaches, depending on the context and intention of schooling.

In the literature, the concepts of multi-, inter-, and transdisciplinarity are not static or uniform approaches and neither are cross- and transcurricular teaching. Every single approach includes many distinct ways of realizing teaching across and beyond school subjects, which is exemplified in the taxonomy through the list of synonymous concepts included in each category. This means that the concepts of cross- and transcurricular teaching apply to several different levels, and it is important to clarify which level that is addressed in the speaking and thinking processes. At the highest level, crosscurricular teaching serves as a meta-concept, which encompasses all the various teaching approaches that go across and beyond different school subjects. In this book, the term crosscurricular is sometimes used in this way, as a general shorthand. On a second level, crosscurricular teaching is distinguished from transcurricular teaching depending on the depth of integration between the subjects involved. On a third and still more specific level, crosscurricular and transcurricular teaching both can be divided into subcategories which refer to various teaching practices within the two main categories. The practices listed in the taxonomy should be seen as typical examples. Like other similar taxonomies, ours is not intended as static or complete. It is part of a framework for continuously developing cross- and transcurricular teaching in response to new institutional and societal conditions. This means that the list and characterization of teaching practices calls for additions and elaborations in response to new experiences and further studies. In the following, the different examples of practices are discussed through the lenses of crosscurricular and transcurricular teaching.

On the third conceptual level, crosscurricular teaching can be exemplified in practice through teaching approaches that relate to the idea of

multidisciplinarity and, in some cases, interdisciplinarity. Crosscurricular teaching as an *intradisciplinary* practice is expressed through integration of subareas within a school subject such as reading, writing, and oral communication in languages. This approach challenges the notion of school subjects as monodisciplinary units and is an important aspect of crosscurricular didactic thinking, although it is not commonly related to as such. The aim is to help students understand the connections between different subareas within a subject and their relationship to the real world (cf. Drake & Burns, 2004).

A more common context of crosscurricular teaching is the *hierarchical* approach, which means achieving progress in one primary subject by also teaching aspects of another subordinate subject. Klausen (2011) suggests using the term “auxiliary” to address this approach, in which the teaching and learning balance is not equal but strictly hierarchical between the involved subjects. The teaching topic is defined by and related to the primary subject, and students’ learning of the topic is supported by using a content area or skill from the auxiliary, or subordinate, subject (cf. Barnes, 2015).

Another way of implementing crosscurricular teaching is through *sequenced* or *correlated* practices, where the topics of study are sequenced and arranged to coincide with each other so that teachers of different subjects all deal with the chosen topic at the same time (Lam et al., 2013). In primary education, where teachers teach many subjects, one and the same teacher can allow students to explore the topic through the perspectives of several subjects. This approach is closely related to *theme-based* or *thematic* practices, which share a similar core idea of exploring a theme through the lenses of various subjects. However, theme-based or thematic refers to a more intensive way of working with a common theme, and the subjects involved need to be carefully selected to essentially deepen the understanding of the theme and to itself be better understood through application to the theme (cf. Barnes, 2015; Drake & Burns, 2004).

Finally, relating to the idea of multidisciplinarity, crosscurricular teaching can be expressed as *threaded*, referring to an approach in which overarching skills of, for example, thinking skills, social skills, study skills, or technology are threaded through various school subjects (Lam et al., 2013). *Fusion* shares a similar idea of fusing general skills, knowledge, and attitudes into the regular school curriculum, for example, that the students learn respect for the environment within every subject (Drake & Burns, 2004). There is, however, an alternative understanding of the term fusion in the literature, as Lam and colleagues (2013) define it as an interdisciplinary approach in which the idea of integration is taken further by combining the content of two or more subjects into a new course with a new name. This kind of fusion refers more to a transcurrenular than a crosscurricular teaching approach as the subjects are merged into a new entity. The different notions of fusion are an example of how concepts and approaches are not fixed or uniform, but there might be conflicting understandings in the literature of how they should be interpreted and realized in practice.

Depending on the context and aims of teaching, crosscurricular and transcurricular teaching both can be expressed through approaches that relate to interdisciplinarity, such as *integrated* teaching, *shared* teaching, or *curriculum integration*. The core idea of these is to study interdisciplinary topics by finding overlapping skills, concepts, and attitudes in the subjects involved. Shared planning and teaching takes place to achieve overarching goals that cannot be accomplished within a single subject (Klausen, 2011; Lam et al., 2013). According to Beane (1993), the concept of curriculum integration may also include, besides the integration of knowledge from different subject areas, integration of experiences and social integration, which refer to psychological and sociological dimensions of learning. These dimensions relate to the idea of transcurricular teaching more than crosscurricular, as they touch upon elements in students' *Bildung* processes that go beyond the division of subjects. Similarly, Lam and colleagues (2013) suggest integration or *integrative* as a transcurricular approach, referring to possibilities for personal and social integration through the organization of teaching around issues without regard for subject area lines.

Transcurricular teaching can also be expressed in practice through approaches of *project-based*, *problem-based*, and *phenomenon-based*. In such cases, teaching rests on the ideas of holism, authenticity, contextuality, problem-based inquiry, and open-ended learning processes. Holism refers to the need of decompartmentalizing education to help students explore phenomena from the viewpoints of multiple subject perspectives. The ideas of authenticity and contextuality accentuate the importance of exploring real-world phenomena existing within tangible time and space, rather than engaging with only theoretical or hypothetical ideas. Through problem-based inquiry, students explore the phenomena by identifying and investigating possible problems. In this process, teachers collaborate with students to create investigations that are attainable and relevant. The learning processes of students are thus not predetermined but rather open-ended, allowing students' interests in areas of the phenomenon to guide (Drake & Burns, 2004; Silander, 2015; Symeonidis & Schwarz, 2016).

Transcurricular teaching as referring to the conceptions of *curriculum negotiation* and *opportunistic* is similarly to letting students' questions form the basis for curriculum and teaching. These approaches are not easily planned but rather unpredictable. The teacher needs to be confident and capture the moments when students show special interest in their surroundings. All environments, situations, concepts, and ideas can be looked at from many viewpoints, but it requires teachers who are conversant in a range of subject areas to build upon students' responses to real experience (Barnes, 2015; Drake & Burns, 2004).

Following the idea of *structured and unstructured core*, transcurricular teaching does not always need to entail student-led practices. While the approaches are student- and society-centered, and thus closely related to the very idea of transcurricular practices in general, the teacher(s) take the lead

in teaching planning by identifying the needs, problems, and topics that are of relevance for students. Concerns, skills, and subject matter from any pertinent subject are brought to help students deal with the matters. In a structured core, teachers have the whole responsibility for designing units of study that are relevant to students, whereas in an unstructured core, teachers and students together develop the units of study (Lam et al., 2013).

Conclusions and some recommendations for terminological practice

Our ambition with this chapter has been to present a coherent conceptual framework adapted to teaching across and beyond school subjects. We have discussed the existing terminological traditions of multi-, inter-, and transdisciplinarity and problematized them in the light of the nature of school teaching. Cross- and transcurricular teaching are suggested as more suitable concepts for Bildung-centered school teaching and the didactic nature of school subjects. The term curricular refers to teaching in a broad sense, enabling practices that either fit within existing curricula or move beyond them. Based on the chapter discussion, we presented a taxonomy which clarifies the relations of cross- and transcurricular teaching to the ideas of multi-, inter-, and transdisciplinarity. In the taxonomy, different cross- and transcurricular teaching approaches and practices are specified. The taxonomy is to be seen as an open framework that needs to be further developed and adapted to different educational contexts.

The concepts of cross- and transcurricular teaching are recommended for international usage through the English language. However, we are aware of the possible challenges of translating the concepts into other national languages since the terms curricular and curriculum may simply not have direct corresponding concepts. Based on the ideas and arguments presented in this chapter, we encourage scholars around the world to continue the work of developing conceptual frameworks for crosscurricular teaching across languages.

As far as possible, we recommend using a terminology suited for school teaching. Nevertheless, it sometimes can be necessary to keep to an already established terminology, for example, established by educational policy documents or existing research literature. In that case, it is important to clarify which conceptions the terms could be taken to express. Shared conceptual understanding is the key to more coherence in crosscurricular didactic practices.

Note

- 1 In addition to the three concepts of multi-, inter-, and transdisciplinary, there are other concepts relating to disciplinarity, such as *monodisciplinary* (appealing to a single discipline) and *circumdisciplinary* (encompassing experiential practices and knowledge). These have not gained the same attention in literature and practice, and thus we do not elaborate on them here. For further reading, see, for example, Lenoir and Hasni (2016).

References

- Apostel, L., Berger, G., Briggs, A., & Michaud, G. (1972). *L'interdisciplinarité. Problèmes d'enseignement et de recherche dans les universités* [Interdisciplinarity. Teaching and research problems in the Universities]. OECD/Centre for Educational Research and Innovation.
- Barnes, J. (2015). *Cross-curricular learning 3–14* (3rd ed.). SAGE Publications.
- Beane, J. A. (1993). *A middle school curriculum: From rhetoric to reality*. National Middle School Association.
- Bundesministerium. (2022). *Ethik – Pflichtgegenstand für alle Schülerinnen und Schüler, die keinen Religionsunterricht besuchen*. Retrieved September 16, 2022, from www.bmbwf.gv.at/Themen/schule/zrp/ethik.html
- Chevallard, Y. (1989). On didactic transposition theory: Some introductory notes. In H. G. Steiner & M. Hejny (Eds.), *Proceedings from international symposium on selected domains of research and development in mathematics education* (pp. 51–62). University of Bielefeld and University of Bratislava.
- Deng, Z. (2012). School subjects and academic disciplines: The differences. In A. Luke, K. Weir, A. Woods, & M. Moroney (Eds.), *Curriculum, syllabus design and equity: A primer and model* (pp. 40–73). Routledge. <https://doi.org/10.4324/9780203833452>
- Drake, S., & Burns, R. (2004). *Meeting standards through integrated curriculum*. Association for Supervision and Curriculum Development.
- Goodlad, J. I., Klein, M. F., & Tye, K. A. (1979). The domains of curriculum and their study. In J. I. Goodlad (Ed.), *Curriculum inquiry. The story of curriculum practice* (pp. 43–76). McGraw-Hill.
- Gundem, B. B., & Hopmann, S. (Eds.). (1998). *Didaktik and/or curriculum. An international dialogue*. Peter Lang.
- Haapaniemi, J. (2022). *Beyond basics: An integrative approach to learning in Finnish comprehensive school*. University of Helsinki.
- Hammond, D. (2017). *An investigation into the impact of an integrated curriculum on learning in primary school*. Durham University.
- Jantsch, E. (1972). Inter- and transdisciplinary university: A systems approach to education and innovation. *Higher Education*, 1, 7–37. <https://doi.org/10.1007/BF01956879>
- Klafki, W. (2000). Didactic analysis as the core of preparation of instruction. In I. Westbury, S. Hopmann, & K. Riquarts (Eds.), *Teaching as a reflective practice. The German Didaktik tradition* (pp. 139–160). Routledge.
- Klausen, S. H. (2011). Det faglige samspils former [Forms of interdisciplinarity]. In S. H. Klausen (Ed.), *På tværs af fag. Fagligt samspil i undervisning, forskning og teamarbejde* [Across the disciplines. Interdisciplinarity in education, research and team work] (pp. 69–100). Akademisk Forlag.
- Klein, J. T. (2017). Typologies of interdisciplinarity. The boundary work of definition. In R. Frodeman, J. T. Klein, & R. C. S. Pacheo (Eds.), *The Oxford handbook of interdisciplinarity* (2nd ed., pp. 21–34). Oxford University Press. <https://doi.org/10.1093/oxfordhb/9780198733522.013.3>
- Krogh, E., Qvortrup, A., & Graf, S. T. (Eds.). (2021). *Didaktik and curriculum in ongoing dialogue*. Routledge.
- Lam, C. C., Alviar-Martin, T., Adler, S., & Sim, J. (2013). Curriculum integration in Singapore: Teachers' perspectives and practice. *Teaching and Teacher Education*, 31, 23–34. <https://doi.org/10.1016/j.tate.2012.11.004>

- Lenoir, Y., & Hasni, A. (2016). Interdisciplinarity in primary and secondary school: Issues and perspectives. *Creative Education*, 7(16), 2433–2458. <http://doi.org/10.4236/ce.2016.716233>
- Löfström, J. (2019). Yhteiskuntaoppi: Social studies in Finland. A country report. *Journal of Social Science Education*, 18(4), 103–116. <https://doi.org/10.4119/jssc-1583>
- Lonka, K. (2018). *Phenomenal learning from Finland*. Edita.
- Nollmeyer, G., Kelting-Gibson, L., & Graves, J. (2016). Mapping the domain of subject area integration: Elementary educators' descriptions and practices. *International Journal of Learning, Teaching and Educational Research*, 15(9), 1–27.
- Ongstad, S. (1999). Sources of “didacticization”. On defining and their “(fag)-didaktik” across borders illustrated with examples from Mother Tongue Education (MTE). *TNTEE Publications*, 2(1), 173–187.
- Rennie, L., Venville, G., & Wallace, J. (2012). *Knowledge that counts in a global community. Exploring the contribution of integrated curriculum*. Routledge. <https://doi.org/10.4324/9780203817476>
- Rowley, C., & Cooper, H. (Eds.). (2009). *Cross-curricular approaches to teaching and learning*. SAGE Publications. <https://doi.org/10.4135/9781446269282>
- Savage, J. (2010). *Cross-curricular teaching and learning in the secondary school*. Taylor & Francis Group. <https://doi.org/10.4324/9780203844205>
- Silander, P. (2015). Digital pedagogy. In P. Mattila & P. Silander (Eds.), *How to create the school of the future: Revolutionary thinking and design from Finland* (pp. 9–26). University of Oulu: Center for Internet Excellence.
- St Clair, B., & Hough, D. (1992). *Interdisciplinary teaching: A review of the literature*. Southwest Missouri State University, Department of Curriculum and Instruction.
- Symeonidis, V., & Schwarz, J. (2016). Phenomenon-based teaching and learning through the pedagogical lenses of phenomenology: The recent curriculum reform in Finland. *Forum Osviatowe*, 28(2), 31–47. <https://doi.org/10.34862/fo.2016.2.3>
- Westbury, I. (2000). Teaching as a reflective practice: What might Didaktik teach curriculum? In I. Westbury, S. Hopmann, & K. Riquarts (Eds.), *Teaching as a reflective practice. The German Didaktik tradition* (pp. 15–40). Routledge.
- Whitty, G., Rowe, G., & Aggleton, P. (1994). Discourse in cross-curricular contexts: Limits to empowerment. *International Studies in Sociology of Education*, 4(1), 25–42. <https://doi.org/10.1080/0962021940040102>
- Wilson, A. (2010). *Knowledge power. Interdisciplinary education for a complex world*. Routledge. <https://doi.org/10.4324/9780203858035>
- Wineburg, S., & Grossman, P. (2000). *Interdisciplinary curriculum: Challenges to implementation*. Teachers College Press.
- Young, M. (2014). What is a curriculum and what can it do? *The Curriculum Journal*, 25(1), 7–13. <https://doi.org/10.1080/09585176.2014.902526>