

Integrated Music Education

Challenges of Teaching and Teacher Training

Edited by Markus Cslovjeczsek & Madeleine Zulauf

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Music and Education
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PETER LANG

Schools are generally oriented towards discipline-based programmes and therefore students often accumulate fragmented knowledge, disconnected from real life concerns. The eighteen contributors to this work suggest that music offers a highway to developing a more appropriate integrated education. They present a range of views on Integrated Music Education rooted in various cultural traditions, based on several interdisciplinary models and integrated arts curricula, inspired by psychological concepts and referenced to recent teaching experiments as well as original research.

In this innovative book, the reader is invited to go beyond the dichotomy between 'education in music' and 'education through music,' exploring the opportunities put forward by Integrated Music Education thanks to a constant movement from the theoretical roots through a precise description of teaching activities to the benefits for students in terms of integration of knowledge, personal development, and social and cultural belonging. Lastly, there are some new and interesting ideas for training teachers.

Ausgehend von einer Reihe kultureller Traditionen, interdisziplinären oder integrierten künstlerischen Ansätzen, psychologischen Konzepten sowie originären Erfahrungen und Forschungen, stellen die Autoren dieses Buches den Reichtum einer 'integrierten Musikpädagogik' für die schulische Bildung vor und reflektieren, wie Lehrpersonen für diese Herausforderung qualifiziert werden können. Jedes Kapitel enthält eine Zusammenfassung in deutscher Sprache.

Se basant sur certaines traditions culturelles, sur des approches interdisciplinaires ou d'intégration des arts, sur des concepts issus de la psychologie ou encore sur des expériences et recherches originales, les contributeurs de cet ouvrage exposent les richesses d'une 'éducation intégrée de la musique' en milieu scolaire et réfléchissent à la manière de former les enseignants pour relever ce défi. Chaque chapitre dispose d'un résumé en français.



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Chapter 9

Interdisciplinarity Based on a Deep Understanding of Disciplinarity: Benefits for Students' Self-Development

DAGMAR WIDORSKI

Abstract

With regard to the self-development of students, the question arises whether the subject-based content education system should be changed. Numerous progressive approaches to teaching reject the requirements society imposes on schools and the framework conditions for teaching and learning processes arising from these. However, education in school and its subject-based logic can be justified and legitimised not only from a social, but also from a pedagogical point of view. These justifications are based on a view of education and school that focuses not only on society as a whole and its continued existence, but also relies on viewing the individual as a rational, unique, and autonomous subject. This chapter describes 'literacy', 'rational judgment', and 'aesthetic experience' as pedagogical concepts and discusses the role of both disciplinary and interdisciplinary teaching in facilitating the implementation of these concepts in class. Opportunities for interdisciplinary action emerge from this discussion, which are described as part of the professional competencies of teachers. An example illustrates the potential of applying this approach in the classroom. The chapter concludes with implications for the education of teachers and avenues for future work.

This chapter considers the role of school subjects in structuring teaching and learning, and why it is worthwhile, from an educational perspective to invest in interdisciplinary teaching.¹ As Boix Mansilla says:

[Interdisciplinary studies give] the capacity to integrate knowledge and modes of thinking drawn from two or more disciplines to produce a cognitive advancement – for example, explaining a phenomenon, solving a problem, creating a

1 In this chapter, the term 'interdisciplinary' is used as an equivalent of the German expression *fächerübergreifend*.

product, or raising a new question – in ways that would have been unlikely through single disciplinary means. (2005, p. 16)

The discussion starts by considering the role of subjects in relation to the organisation of education in school. In section 1, the function of subjects is explained from a societal point of view and subsequently both contrasted and supplemented with an educational perspective. Section 2 explores the potential of ‘disciplinary’ (i.e. subject-centred) teaching and learning for self-development, drawing on a number of educational concepts (literacy, rational judgment, and aesthetic experience). The contribution of interdisciplinary teaching to the desired targets and aims at the level of the individual is considered in section 3, and in section 4 specific procedures of interdisciplinary teaching are presented and postulated as part of the teaching expertise. The penultimate part of the chapter highlights the benefits of such an interdisciplinary approach towards planning and teaching by discussing an exemplar from a teacher-training context. Following a brief summary, the conclusion frames the implications and consequences for the education of teachers.

1. The role of subjects for organising education in school

Education in school could be organised in ways other than by subjects. This is demonstrated by many progressive teaching practices and school projects. However:

It is apparent that, while educational reforms may come and go, yet the principle of school subjects endures across historical eras, despite changes in the structure of society, in economic conditions and culture, in the expectations placed on schools, even despite changes in the development and organisation of the school system.² (Huber, 2001, p. 307)

Delving into the function subjects have for the school as an institution, may shed a light on the persistence of subject-organised teaching; it

2 Editors’ note: This quotation and all the following ones have been translated from the original German texts.

might be that their survival is secured because subject-based forms of structuring knowledge transmission play a vital role in the organisation of schools. What then *is* the function of school subjects? To answer this question, I will focus on the subject from three perspectives: firstly, as a structuring tool for the curriculum; secondly, as a way of accessing knowledge in related disciplines; and thirdly as a means of sequencing and selection. Following these deliberations, the institutional perspective is compared and contrasted with an approach which focuses on self-development.

1.1 The subject as a structuring tool for the curriculum

School as an institution is the place where teachers and students enact the public mandate of organised teaching and learning processes that are guided by societal interests and therefore legitimised in terms of educational policy. The subject-based curriculum records the “politically determined definition of knowledge that is culturally considered necessary” (Tenorth, 1999, p. 198) and classified as valuable by society. Thus, the subjects define the internal structure of the curriculum, aiming to pass on cultural heritage and to introduce the next generations to the current state of shared knowledge and prevailing values.

1.2 The subject as a way of accessing knowledge in related disciplines

Academic knowledge is highly valued by our society. School subjects play a key role insofar as they refer back to their corresponding disciplines; the disciplines, in turn, feed into school knowledge. The content knowledge of school subjects should be derived primarily from the knowledge accumulated by the corresponding (academic) disciplines, as argued by Benner (2015), because educational experiences fundamentally *enhance* the child’s capabilities of dealing with his environment. The child must learn in school “what cannot be learned directly through social experience and interaction, but must be learned nonetheless to understand the world and be present in it as a fully realised and engaged individual” (Benner, 2015, p. 486). The difference between common,

everyday knowledge and the researched, verified, and disseminated knowledge is of major significance:

Because subjects are affiliated to disciplinarily defined and methodologically organised scientific perspectives, they enable a thematically focused and controlled access to the world in terms of the validation of knowledge; school subjects regulate, evaluate, and control the everyday knowledge of the people involved. (Tenorth, 1999, p. 200)

1.3 The subject as a means of sequencing and selection

As well as meeting the requirements of institutions of higher education and official educational policy, the distribution of knowledge into subjects also makes it possible to organise and structure needed skills and contents as learning processes across several school years or, indeed, *all* years spent in school. This sequencing of knowledge and skills determines what must be mastered and when. These requirements are then fixed in the syllabi.

The students' knowledge and skills are verifiable by means of appropriate tasks. In other words, their performances can be evaluated and assessed. Formal performance assessment is a key element in entering the employment system, which is itself directly linked to social structures within society (Fend, 2006). In this sense, as topical and organisational units, subjects frame the selection and thereby the qualification for and integration into the structures of society.

1.4 Social induction or self-development?

It could be argued that by organising teaching and learning into disciplines, the students are confronted with the requirements of society. They are expected to show an interest in already pre-selected topics and contents at predetermined moments in preset temporal units (lessons; class phases; quarterly, half-year, and annual plans; cycles; or even the total number of years spent in school). The presentation of topics and contents is determined by the respective subjects, which requires an alignment and adaptation of the students' personal learning paths to

the logic of subject contents. Finally, students are required to learn a predefined perception of the world and to reproduce it in examination situations for evaluation and comparison with other students. From this perspective, the educational interaction with subject-related contents serves above all the social induction of the following generations. This stands in opposition to the principle that education is intended to support the student and contribute to their self-development. In the next part, this antimony is further discussed by asking about the contribution school subjects can make towards the self-development of children and adolescents.

2. The role of subjects in enabling students' self-development

Enabling self-development *may* be perceived as contrary to society's requirements and expectations with regard to schooling. However, the question arises as to what extent subject-based teaching and learning encompass the potential for the development of personal identity and autonomy? A pedagogical approach offers contexts and insights from an institutional and societal perspective, but also considers the individual as a rational, unique, and autonomous subject.

Based on von Hentig (2008), this pedagogical perspective can be specified using three aspects of the German term *Bildung* (education). The first is *praktische Bildung* (practical education), which "enables people to cope with their historical situation: the knowledge and skills, the attitudes and behaviours that help them orientate themselves within their environment and also help them survive and be useful in societies with division of labour" (von Hentig, 2008, p. 15). The second aspect is *politische Bildung* (political education), which "focuses the individual on the common good, on the existence, knowledge and observance of rights and duties, on the defence of freedom and the observance of order and civility" (p. 15). Von Hentig further explains that political education "encourages the assessment of goals and means and of their relationship. Such education enables decision-making in a context of

power and when resources and time are limited” (p. 15). The third aspect is the so-called *persönliche Bildung* (personal education), which is “what the person engaged in education is trying to achieve for themselves” (p. 15).

These three aspects of education are explained in the following subsections through pedagogical concepts. Practical education is discussed in relation to literacy, political education in relation to rational judgment and, finally, personal education in relation to aesthetic experience.

2.1 *Subject-matter knowledge and literacy*

Cultural techniques such as writing, reading, and calculating have always represented typical examples for subject-matter knowledge that must be taught to the next generation. As intellectual constructs, the terminology, symbols, and presentation of cultural techniques utilised for this process form an orderly world *sui generis*. The disciplines of music, mathematics, or languages demonstrate an elaborated system of traditional, culturally shared signs and symbols. They can be used for engaging with the world; at the same time, they can also be the content topic of subject-specific discussions. For instance, concerning mathematics in class, Winter referred to the desire to perceive and understand living world phenomena in a specific mathematical way, “getting to know and comprehend mathematical objects and issues, represented in language, symbols, images and formulas, as intellectual creation, as a deductively ordered world *sui generis*” and “to acquire problem-solving skills transcending pure mathematics class (heuristic skills) by dealing with different tasks” (Winter, as cited in Neubrand, 2003, p. 345). The point is, therefore, to understand and use mathematics as a means of communication and to additionally learn and comprehend its specific form of world appropriation and rationality. The functional perspective on basic cultural tools is thereby broadened by “opening different horizons of understanding the world” (Baumert, Stanat, & Demmrich, 2001, p. 20). This pedagogical idea is reflected in the concept of ‘literacy’ and is foundational to the *Programme for International Student Assessment (PISA)*. Tasks are constructed with an application-based and situation-based focus, an approach that builds on “the tradition of an

action and future-oriented, democratic educational theory and practice established by the American educational reformer and philosopher John Dewey” (Klafki & Braun, 2007, p. 162). In this context the focus is on the pragmatic dimension of the educational mandate.

The concept of literacy has been adapted by various knowledge domains, for example in the field of visual literacy, which means the “active acquisition of a pictorial language” (Duncker & Lieber, 2013, pp. 13–14). Visual literacy enables cognitive and experiential opportunities and allows an “active participation in image-guided processes of communication” (p. 14). Literacy can be related to music as well. However, in this understanding, musical literacy does not merely refer to the ‘scripturality’ of music, i.e. to learning the musical notation. Rather, it is a question of understanding music as an intellectual creation with corresponding signs and symbols that can be used as a means of communication, expression, and formation.

Cultural assets, which can only be appreciated, analysed, and reflected through the acquisition of available means of expression, are regarded as a frame of reference and an impulse for the self-development and formation of subjectivity. In this sense, by means of subject-based approaches, all students are supposed to develop an understanding of everyday reality, and the ability to acquire knowledge, make decisions and manage actions.

2.2 Subject-matter knowledge and rational judgment

School subjects order knowledge in a way that makes it accessible for reason-based action. Furthermore, subjects make knowledge verifiable in terms of origin and validity. Only thus is rational and reason-based judgment conceivable, be it in public and political or in private life. This line of argument centres man as a rational being and is characterised by premises whose roots are to be found in Aristotle’s ‘realism’. Referring to Searle’s Speech-Act Theory, Reichenbach (2007) outlines the position of a contemporary realist as follows: To a realist, knowledge is objective and independent of mindsets and/or emotions; logic and rationality are sufficient to be able to decide on reasonable and unreasonable statements and views concerning the world; the corresponding

intellectual standards must and may be acquired. The idea of a democratically organised Western society is based on rational and reasonably argued negotiation processes. Therefore, the development of political judgment, and hence political participatory competencies, is directly related to intellectual development in the sense of logic and rationality. Moreover, in a realistic understanding of education, rationality and the multitude of knowledge domains play a central role for a successful personal life: “In order to act reasonably, man needs knowledge about alternative possibilities and about the world, which guides his actions into the right directions, so that he may succeed in living a personal life” (Reichenbach, 2007, p. 65). The notion of enlightenment as the “emergence of man from his self-inflicted immaturity” (p. 107) is also based on the individual person’s rationality. Reichenbach further explains that “Kant’s autonomy means that we are able to impose binding rules for our actions on ourselves, independent of social heteronomy and based merely on personal insights” (p. 107). Based on these philosophical notions, it can be argued that the cultivation of human rationality by means of verified and shared subject knowledge is one of the main objectives of education at school.

At this point, one might question the role of rational judgment in music education. Instead of rule-governed and reasonably argued actions, should the main focus not be on creativity and intuition instead? After all, is it not music education that centres emotions and affects as well as openness and ambiguity instead of clarity and orderliness? And is it not music education that deals with imagined and fictional worlds whose nature is not to be rational and logical? One could therefore conclude that music as a school subject is merely intended to compensate for cognitive efforts in other disciplines. However, according to Klafki (see Klafki & Braun, 2007), this would be the wrong conclusion, because aesthetic education goes with aesthetic judgment: The competence to evaluate and assess is indispensable if the perception or experience of a phenomenon or an object is to become an aesthetic perceptual experience. This aesthetic judgment refers to already existing concepts and knowledge, and therefore always contains cognitive, rational, and perceiving elements, be they explicit or implicit.

2.3 Subject-matter knowledge and aesthetic experience

An aesthetic judgment signifies that an individual assigns meaning to an aesthetic object, thereby establishing a personal, subjective connection to it. Therein lays the potential for self-development because the individual occupies a position from which they ask: Why does this concern me? How am I being influenced by this object, what does it trigger within me? Or even: What do I understand, how do I feel about it, and what will I do with it? These are all *subjective* interpretations; however, they are not of necessity arbitrary and indisputable judgments of taste. This is because the interpretation may draw on subject-related concepts and signification schemes, and its validity is always up for *intersubjective* negotiation. Music education illustrates the notion that additional subject-matter knowledge within an aesthetic experience may serve to reach “an increasing differentiation and relatedness to music in the attribution of meaning” (Mönig, 2008, p. 9). Music as a subject makes musical signification schemes available to which students can refer back when interpreting. The diversity of attributions of meaning is thereby increased and new terms and concepts for their verbalisation become available. Subjective attribution of meaning thus becomes communicable in an intersubjective way and therefore negotiable.

In this regard, aesthetic experience plays a major role in education in school. Through such experiences, aesthetic education takes place as a self-referential, individual process in which the individual relates to an object or a phenomenon, and thereby passes aesthetic judgments. But what are the prerequisites that must be established in order to enable aesthetic experience in class? Brandstätter (2014) describes aesthetic experience by using the following terms: sensuousness, self-purpose, self-reference, an altered relation to oneself and to the world, as well as distance and difference³. Hence, we are dealing with an aesthetic experience when sensory perception – for example the nuanced hearing of sounds – is at the centre (*sensuousness*). The aim of the task lies within the perception itself and pursues no other purposes, such as for example

3 These terms are a translation of the original German *Sinnlichkeit*, *Selbstzweck*, *Selbstbezüglichkeit*, *Selbst- und Weltbezug*, *Distanz*, and *Differenz*.

improving mathematical or reading skills (*self-purpose*). The object of education is perception itself and not merely a sound piece or song. The aesthetic experience refers to itself (*self-reference*) because individual perception is as much at the centre as the object to be perceived. Becoming aware of one's own perception in all its uniqueness harbours the opportunity to establish a relation to the object (*relation to oneself and to the world*). Allowing for highly versatile interpretations of one object enables a *distance* from reality, as it may be interpreted and understood in a multitude of ways. Hence, reality becomes somewhat changeable and may be perceived as being shapeable already in the act of experiencing. By comparing and negotiating one's personal interpretations with those of others, one's own habitual manner of perception may be challenged. This may lead to a restructuring of perception (*difference*).

3. The potential of interdisciplinary teaching for self-development

Why not just continue to teach isolated school subjects when they offer such obvious benefits to the society and the individual? I hold that the positive effects of subject-based teaching for the self-development of children and adolescents can be enhanced by integrating and connecting subjects. The following subsections will re-examine the concepts discussed above and relate them to an interdisciplinary understanding of teaching.

3.1 *The contribution of interdisciplinary teaching to literacy*

Integrating several subjects when teaching enables the use of overlaps between them for learning subject-specific language. Corresponding terminologies and already acquired knowledge and skills from other subjects can be built on. In this way, abstract concepts and terms become more tangible and can be illustrated. The methods of thought,

expression, and procedure typical of one subject can be used to gain access to the language of another. The demands of the different types of learning can also be met. Note taking, illustrating, translating, and projecting different aspects of one subject onto another, all give rise to impulses and inspiration for a type of education in which sensorial inputs and activities do not remain isolated; rather, subject-specific contents are used as a language and means of expression for communicating with others and the world (Stenger, 2011). Moreover, the different forms of expression can be compared and contrasted, leading to reflection on their limitations and opportunities.

3.2 The contribution of interdisciplinary teaching to rational judgment

As already noted, the subjects and their related disciplines provide verified and shared knowledge, serving as a basis for the ability to form reasoned and cogent judgments. However the consequences of one's actions and the responsibilities that they incur are a critical aspect of these judgments. At this stage it becomes clear that such judgments cannot be formed within the confines of a single subject. This is because questions with either personal or social relevance, which require considered judgement, are frequently complex and cannot be adequately approached using a strict, subject-related logic. Consequently, nuanced, critical reflective judgements that draw on a wide range of factors rely on more than one subject-related perspective. In this context, a subject-connecting education aims at linking the relevant knowledge and skills from different subjects and integrating them to form judgments (Valsangiacomo, Widorski, & Künzli David, 2014). Incorporating different subject-related bodies of knowledge may also be used to debate and assess the development of knowledge with its underlying premises and related discourses. This creates an appreciation of the fact that, depending on the question at hand, various forms of knowledge may prove to be meaningful and may claim validity. Such education qualifies students to become autonomous and mature in the judgment and selection of knowledge (Benner, 2015; Huber, 2001).

3.3 *The contribution of interdisciplinary teaching to aesthetic experience*

The inclusion of several subjects can enhance and deepen aesthetic experience, because one deals with an object or a phenomenon by means of multiple approaches. This broadens and enlarges the range of perception and, in many cases, the duration of the action is prolonged. Objects or phenomena that students may find initially unattractive can be made more interesting by adding another subject's perspectives; this frequently opens unsuspected avenues into what was previously inaccessible. The basis of knowledge and skills necessary for the attribution of meaning can be enlarged significantly by drawing on several subjects; the same is true for personal means of expression. Negotiating the attribution of meanings across disciplinary boundaries within school also provides the basis needed for long-term dialogue between subjects and disciplines.

4. Interdisciplinary teaching methods as an aspect of the professional competencies of teachers

The preceding section has focused on the competencies that students can acquire by means of interdisciplinary education. These skills enable students, amongst other things, to adopt different perspectives, assess knowledge regarding its origin and validity, to integrate different bodies of knowledge into their own judgment, or to include various subject-specific concepts and signification schemes in the interpretation of objects, situations, and phenomena.

The previous passages also present different teaching procedures. An interdisciplinary approach to the planning and implementation of teaching can be described as part of 'the science and art of teaching a subject'⁴. The following eight aspects demonstrate how this approach

4 The expression 'science and art of teaching a subject', i.e. the procedure of determining subject-specific goals, contents, and methods, is used here for the German *fachdidaktisches Wissen und Können*.

enhances and develops education in a differentiated manner and thus helps to improve it.

- a) *Enabling access to the object or phenomenon:* Getting involved with an object or a phenomenon can be supported and facilitated by means of diverse approaches. The students' disposition and interests are taken into account. The teacher can thus deepen and broaden aesthetic experience by means of various approaches.
- b) *Increasing the duration and intensity of engagement:* Engaging with an object or phenomenon is possible for longer without a decline in the intensity of contemplation.
- c) *Building connections to existing knowledge:* The overlaps between subjects can be used for learning terminologies by forging connections with already available knowledge and skills.
- d) *Providing additional terms and knowledge for the attribution of meaning:* What do key terms from one subject mean in another subject or how are they implemented across subjects? This kind of enquiry can be used to initiate and practise interdisciplinary dialogue.
- e) *Specifying and illustrating contents:* Abstract phenomena, terms and concepts can be illustrated, specified, and shared.
- f) *Enabling knowledge transfer:* The transfer of knowledge from one subject to another for the interpretation of an object or phenomenon can be practised and developed.
- g) *Enhancing expressive possibilities:* Personal expression in an additional subject can be triggered and inspired. Additionally, the means of expression can be amplified by combining various tools and methods.
- h) *Activating cognitive reflection by contrasting and comparing:* The comparison of subject-based approaches and means of expression can be used to develop an understanding of the specificity of subjects. Additionally, concepts for the arrangement and systematisation of subject-based and subject-specific knowledge can be developed.

Using an example from class, the following section will discuss how the advantages of interdisciplinary education can be implemented when integrating language, arts and music.

5. The potential of interdisciplinary education using the example of ‘aural pictures’

In this section, I describe an approach used in the education of teachers which is then analysed with reference to the options for organising the classroom activities discussed above (see section 4).

The example under discussion focuses on *Hörerziehung* (aural skills education), as part of the training process for pre-service German language teachers. In a text published in 2011, Wermke focuses on the function of paintings for aural education and language. She emphasises the importance of precise observation and imagination, and then outlines the different possible uses of paintings for aural education, which includes a description of the paintings’ acoustic dimension. Works⁵ such as *Revolution des Viadukts*⁶ by Paul Klee (1937) or *Nighthawks* by Edward Hopper (1942) are discussed in this context:

[These painted scenes] imply acoustic phenomena without exhibiting them explicitly, and these scenes are to be made audible in their fullness. The question “What do you hear when looking at the painting?” generates different texts corresponding to the description of the painting in a different sensorial area. The result is what I call an aural picture.⁷ (Wermke, 2011, p. 299)

Wermke has collected the texts from several generations of students and her analysis concludes that “the transformation into an aural picture leads to noticeably different manifestations of image perception and to a different perception of the painting compared, for example, to the mere viewing of the image” (2011, p. 300). The visual space is complemented by the aural space; the moment in time captured by the image is placed along a temporal continuum and the distance between the object and its viewer is reduced and guided into the more intimate space of listening. Images without clearly detectable sound motives (such as surrealist paintings) may be processed by inventing aural representations.

5 All the paintings discussed by Wermke are illustrated in her publication (Wermke, 2011).

6 Revolution of the Viaduct.

7 ‘Aural picture’ is used here as a translation of the German term *Hör-Bild*.

The author uses the texts of students who wrote on Caspar David Friedrich's painting *Frau am Fenster*⁸ (1822) to substantiate and illustrate her findings. She states that the aural picture transcends the visible parts of the work of art and incorporates aspects not shown. By asking "What do you hear when looking at the painting?", one opens up a new perspective to the painting, differentiating and enhancing the perception of the image. What results is a concrete interpretation of the painting, remaining on the level of sensory perception and representation without ending in speculative readings; instead, elements of the painting are highlighted and thematised. This is exactly where lay people often encounter difficulties when describing a painting. An example in this regard is the simultaneity that functions as a structuring principle in *La strada entra nella casa*⁹ by Umberto Boccioni (1911). Wermke points to the importance of the language when speaking about paintings, by saying that "the verbalisation of aural impressions serves the development of a differentiated linguistic repertoire" (2011, p. 315).

Wermke's findings offer insights into the potential of interdisciplinary teaching as discussed above:

- a) *Enabling access to the object or phenomenon*: The question about the acoustic layer of paintings enables students to engage more fully with works of visual art. They interpret images by focusing on elements of the paintings and transferring them into the area of sound. This specific interpretation of the painting remains on the level of the sensory perception and representation, and therefore does not result in speculative readings. Imagining visual images as sounds encourages musically literate students to get involved with the painting. On the other hand, visually talented or interested learners are offered access to the world of sounds with the aid of the painting.
- b) *Increasing the duration and intensity of engagement*: Verbalising the interpretation triggered by the painting's acoustic layer leads to a long-lasting and intense examination of the painting. Alongside visual interaction with the painting, this leads to aurally rooted accomplishments of imagination, and task-oriented engagement with the object or phenomenon is prolonged.

8 Woman at a Window.

9 The Street Enters the House.

- c) *Building connections to existing knowledge:* Knowledge about the composition of the painting can be linked to music knowledge. For example, the use of musical terms regarding aspects of rhythm or timbre can develop new knowledge and vocabulary in the domain of image literacy.
- d) *Providing additional terms and knowledge for the attribution of meaning:* The transformation of visual expression into an aural picture leads to a different perception of the image, manifested in the terms used for the description. In other words, visual space is complemented linguistically by the aural space. The temporal moment shown in the painting is placed into a temporal continuum, which then finds resonance in the language of the description. Finally, the viewer's distance is informed by the listener's intimacy, which also leads to a different conception.
- e) *Specifying and illustrating contents:* The perception of music is characterised by a high level of abstraction, as sounds are evanescent and cannot be captured in their original form. Therefore, it is quite difficult to verbally describe one's aural impressions in a way that makes it possible to discuss them with others and to negotiate their meaning. A painting, by comparison, can be looked at time and time again and its visual elements can be shown, described, and located. The connection between the visual and the aural layer does not only enable an extraordinary form of image perception, but makes the students' sound perceptions concrete, vivid, and therefore communicable.
- f) *Enabling knowledge transfer:* Aural pictures grasp what is not shown visually and transcends what is visible. Students practise moving between different forms of expression and terminologies. The skills and knowledge attained by applying concepts and terms from one subject to another subject can be regarded as the basis for future multi-perspective, interdisciplinary thinking and working.
- g) *Enhancing expressive possibilities:* Images without clearly detectable sound aspects (such as surrealist paintings) may be processed by inventing aural representations. The symbolic substance of the image may be transformed into a sound design, a musical composition or a description of intended sound effects.

- h) *Activating cognitive reflection by contrasting and comparing:* The task described above allows a comparison between the aural and visual dimension of perception and expression. It becomes possible to ask about which forms of expression are best suited for what. The relative importance of terms such as time and space for various disciplines can be discussed. The structuring principles of the different subjects can also be compared: Which of these principles are visual and which are musical in nature?

6. Conclusion and prospects: Implications for the education of teachers

The antinomy between the demands of society and the self-development of each individual student cannot be resolved. However, it can be demonstrated that subject-matter content teaching and learning play a major role in the facilitation of self-development. Interdisciplinary teaching also creates many possibilities for action in terms of access to an object or phenomenon, temporal structuring, connections to already established knowledge, provision of additional terms and knowledge for the attribution of meaning, the concretisation as well as communicability of contents, knowledge transfer, amplification of expressive possibilities and, finally, cognitive activation.

It becomes evident that such an interdisciplinary education requires a sound conception of disciplinarity. Hence, to facilitate the inclusion of interdisciplinarity into teachers' 'toolbox', its potential must be thematised during the initial and continued training of teachers as a facet of subject-specific knowledge. The example described can be interpreted as a possible task during training. However, in order to develop professional competencies in interdisciplinary education, the example should be analysed, reflected on, and related to one's own practice, based on the conception presented above. Therefore, on the one hand, examples of learning opportunities that contain interdisciplinary elements are required and may be tested with both pre- and in-service teachers. On the other hand, tools are needed for analysing

and reflecting on these exercises and the experiences contained therein. The example discussed above deals with the *perception* of already existing works of art; the question arises to what extent the opportunities for action described in this chapter can also be applied for the *production* of aesthetic objects, drawing on more than one subject. This would require further investigation.

Empirical studies assessing the efficacy of such teacher training for implementation at different school levels should be undertaken. This could serve as a basis for the continued development and optimisation of subject-related content and interdisciplinary education, both at school and in the training of teachers.

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Zusammenfassung

Fächerübergreifende Unterrichtsgestaltung auf der Basis fundierter Fachlichkeit: Vom Nutzen für die Persönlichkeitsentwicklung von Schülerinnen und Schülern

Müsste der fachliche Unterricht im Sinne der Ermöglichung einer freien Persönlichkeitsentwicklung der Schülerinnen und Schüler überwunden werden? Zahlreiche reformpädagogische Bestrebungen kritisieren die gesellschaftlichen Anforderungen an die Schule und die daraus entstandenen Rahmenbedingungen für schulische Lehr- und Lernprozesse. Schulischer Unterricht und seine fachliche Logik kann aber nicht nur aus gesellschaftlicher, sondern auch aus pädagogischer Sicht begründet und legitimiert werden. Solche Begründungszusammenhänge eröffnen eine Perspektive auf Unterricht und Schule, welche die Gesellschaft und ihr Fortbestehen um den Blickwinkel auf die einzelne Person als vernunftbegabtes, einzigartiges und selbstbestimmtes Subjekt erweitern. In diesem Kapitel werden die 'Literalität', die 'rationale Urteilsbildung' und die 'ästhetische Erfahrung' als pädagogische Konzepte dargestellt. Anschließend wird diskutiert, welche Rolle sowohl das fachliche als auch das fächerübergreifende Lernen für die Ermöglichung der Umsetzung der beschriebenen Konzepte im schulischen Unterricht übernehmen kann. Aus diesen Ausführungen ergeben sich fächerübergreifende Handlungsmöglichkeiten, die als Teil der professionellen Kompetenzen von Lehrpersonen beschrieben werden. An einem Beispiel wird gezeigt, welches Potential entsprechendes Unterrichtshandeln enthält. Daraus werden schliesslich Implikationen für die Lehrerinnen- und Lehrerbildung sowie Forschungsdesiderate abgeleitet.

Résumé

Fonder l'interdisciplinarité dans une compréhension profonde de la disciplinarité: Bénéfices pour le développement personnel des élèves

Devrait-on sortir d'un enseignement disciplinaire pour promouvoir le libre développement personnel des élèves? Nombre de mouvements pédagogiques réformateurs critiquent les attentes que la société adresse à l'école et les conditions cadre qui en résultent en termes de processus d'enseignement et d'apprentissage. Toutefois, l'enseignement

scolaire avec sa logique disciplinaire peut trouver un fondement et une légitimité non seulement d'un point de vue sociétal, mais aussi d'un point de vue pédagogique. Une telle manière de raisonner permet d'ouvrir une perspective sur l'enseignement et l'école qui, à l'intérêt de la société et de sa perpétuation, vient ajouter celui de la personne individuelle en tant que sujet doué de raison, unique, et capable d'autodétermination. Dans ce chapitre, l'auteur présente les concepts pédagogiques de 'littératie', 'jugement rationnel' et 'expérience esthétique'. Suit une discussion sur le rôle que peuvent jouer tant l'enseignement disciplinaire que l'enseignement interdisciplinaire dans la mise en œuvre de ces concepts dans le cadre scolaire. Concevoir de telles applications ouvre des possibilités d'action interdisciplinaire qui sont décrites comme faisant partie des compétences professionnelles des enseignants. Un exemple permet d'illustrer le potentiel que recèle une pratique d'enseignement qui s'inscrit dans cette optique. Le chapitre se conclut par l'énoncé de quelques implications pour la formation des enseignants et par la formulation de souhaits en matière de recherche.