

Language as a learning tool in subject learning¹

1. Introduction

Whether it is physics, history or biology, language is an integral part of teaching and learning in all academic subjects, since content is primarily communicated and learned via language. But what are the specific language requirements for pupils in academic learning environments, and what kind of language characterises teaching and learning in subjects such as physics, history or biology?

2. The language of school

The terms “Bildungssprache” (Gogolin et al. 2004; Gogolin 2007), translated here as “education language,” and “Schulsprache” (Olson, 1977; Vollmer, 2006; Feilke, 2012), translated here as “school language,” have become important keywords in the current discussion about education.

The term *education language* implies that one is dealing with a language that is not only relevant in schools, but rather is meaningful in any learning setting. Education language determines both the social and cultural practices of language use, as well as the different forms of communication and knowledge acquisition in a society. Thus, educational success depends on knowledge of the prevalent practices and norms of language usage in a social domain. Educational and academic success are only possible if one is able to appropriately understand and utilise the education language. The term “education language” thus contains a normative character with regard to the goals and opportunities connected with education in a society, which implies a corresponding need for educational organizations to provide competence in the use of education language (cf. Gogolin et al., 2011, p.16). For schools, this means that the education language must be systematically conveyed in all subjects.

The term *school language* suggests that it is the kind of language that is used exclusively at school. However, according to Feilke (2012), school language is not only *used* at school, but rather is produced by schools and employed for school purposes. As an institution, the school determines which language is utilised and accepted, and in this way, it also determines the type of language that is used to convey and acquire knowledge. Thus, the school becomes a special space of action, with specific expectations and demands on language use. It not only assumes a *qualification and socialization function* (c.f. Feilke, 2012), but also a *selection function*: the setting of language norms and standards determines the access to knowledge and thereby the achievement of potential success at school.

The terms *school language* and *education language* are therefore both connected with strong normative associations, which strongly influence not only the types of language used at school but also educational success.

What constitutes the language of the school from the pupils' point of view?

Here is an extract from a teacher-pupil dialogue in a chemistry lesson:²

¹ A german version of this article was published in: Becker-Mrotzek/Michael et al., Hrsg. (2013), Sprache im Fach. Sprachlichkeit und fachliches Lernen. Münster: Waxman, 25-40.

² This teaching sequence was videotaped within the scope of the project “Didaktisches Coaching für den Unterricht in mehrsprachigen

L: WARum ist dieser Text so schwer; (.)
 Dass man so eine hohe Bildung braucht;
 Dass man ihn können kann.
 Sm: Ja weil es kompliziert ist wahrscheinlich.
 L: Was is dran kompliziert?
 Sw: Es sind viele Fremdwörter.
 L: Es sind viele Fremdwörter drinnen.
 Ja,
 Sm: Zu lang geschrieben.
 L: Is ein sehr langer Satz ja.³

School language is typically characterised not only by many foreign words, technical terms and complex syntactical structures, but also by numerous nominalizations and compounds, complex attributes, a high lexical density and the elimination of redundancies. In addition, there is a high proportion of passive constructions and impersonal expressions, as well as numerous abstract nouns. (c.f. Schmölder-Eibinger, 2008, p.32; c.f. Griebhaber, 2010, p.39; Ahrenholz 2010, p.16).⁴

School language and education language are thus characterised by its *complexity, abstractness, context-independence, explicitness and coherence*.

3. Linguistic Competence at school

In the context of school language or education language, Cummins distinguishes between *cognitive academic language proficiency* (CALP) (Cummins, 1979, 1991) and *basic interpersonal communication skills* (BICS). At school, cognitive academic language proficiency is also required orally, since language use in the classroom is strongly connected with the functions, structures and means of written language. While Cummins' terminology has had a lasting impact on the educational policy debate, a lack of clear boundaries and exact characterizations remains (Dalton-Puffer, 2007).

Cummins' terminology is associated with the question of successful second language acquisition and the educational opportunities of pupils with migrant backgrounds. This is also true for the term *textual competence*, which was coined by Portmann-Tselikas (Portmann, 2002) and can be understood as the ability to adequately utilise a text-bound language both in speaking and writing within related real-world setting (Schmölder-Eibinger, 2008, p.15). It is not simply a matter of being able to read and write, but rather of being able to deal with the various possibilities in a textual culture within different social and cultural spheres of activity and having command over language as a "cultural tool" (Brockmeier, 1998, p.201). These *textual abilities* influence not only school and educational success, but also the access to life opportunities in a literate society (c.f. Ehlich, 2010, p.52).

Generally, pupils are simply expected to possess the basic language skills necessary for topic learning and therefore receive no special in-class training in this area. For example, the ability to explain, describe and justify something is normally simply taken for granted, although many pupils have no clear understanding of what these terms mean.⁵ In addition, teacher language use often

Klassen" (Didactic coaching for teaching in multi-lingual classrooms) (2010-2012), funded by the BMUKK (Austrian Federal Ministry for Education, the Arts and Culture); (project leader: Sabine Schmölder-Eibinger).

³ The pupils' spoken contributions are marked in bold. The transcripts used here are based on the GAT transcription method.

⁴ This list merely suggests the essential characteristics of school language, without systemically capturing all of them.

⁵ A curriculum analysis conducted as part of the European Council's "Languages of Schooling" project demonstrated that there is a common core of linguistic-communicative requirements (*naming, evaluating, describing, debating, explaining*) that must be developed across subject borders. The study was conducted in five German states/Länder for the subjects of biology, history and mathematics

demonstrates little awareness for the meaning of language tasks in subject teaching. In most cases, language tasks are not explicitly covered in the classroom, even when they are present in task descriptions (e.g. *Define, Describe*, etc.), they are very rarely discussed (c.f., Dalton-Puffer, 2007).

The linguistic competence required of pupils is often more difficult to acquire for pupils with German as a second language than for pupils with German as a mother tongue, and language competence acquisition is always problematic for pupils from educationally disadvantaged families, irrespective of the mother tongue (Gogolin et al., 2004; Schmölder-Eibinger, 2008).

This poses not only the question of how the language of schooling is constituted, but also how schools can help pupils build the linguistic competence required for successful subject learning. Pupils need these skills first for school itself, but also for situations outside of school, where they must participate in the various domains of social, community and intercultural life.

Although many subject teachers have long recognised the need to provide language support for pupils learning in a second language,⁶ very few possess the didactic strategies required to make language as a medium of learning accessible for pupils. This challenge stretches across boundaries of subjects and school types.⁷

4. Three theses on literacy and competence building

Subject teaching, in which language is used as a medium of learning, requires a conscious utilization of a writing-based language, as well as a coordinated fostering of literacy competence within the scope of an *integrated language* curriculum that spans subjects and school levels (cf. Schmölder-Eibinger, 2008, p.161; Vollmer & Thürmann, 2010, p.128). In this context, the synergy of literacy and competence building is essential. This synergy can be conceptualised in three theses:

Thesis 1: Subject competence building requires literacy skills.

Since schools rely upon text-based language, literacy skills are essential for learning success in all subjects, including those where written language skills are not primary topics (cf. Ehlich, 2010, p.58). Thus, literacy skills are required in all subjects and must be fostered in all subjects.

Thesis 2: Subject competence building requires an expansion of literacy skills.

As pupils move from one level of education to the next, literacy demands increase along with the complexity of the subjects learned. Thus, an ever-widening gap will form between the pupils who continually improve their literacy skills and those who do not. Literacy skills must therefore be continually expanded and developed at all school levels.

Thesis 3: Subject competence building evokes the development of literacy skills.

In subject teaching, language is an instrument of both subject learning *and* language learning. Therefore, subject teaching not only requires the development of literacy abilities, but also evokes

(Vollmer & Thürmann, 2010, pp. 110-111).

⁶ This was shown in a survey conducted in 2011 within the scope of the project "Didaktisches Coaching für den Unterricht in mehrsprachigen Klassen" (Didactic coaching for teaching in multi-lingual classrooms), funded by the BMUKK (Austrian Federal Ministry for Education, the Arts and Culture), in which almost 300 subject teachers participated.

⁷ This is the result of an analysis of videotaped teaching situations in the subjects of mathematics, accounting, biology, chemistry, physics, business economics and history, which was conducted within the scope of the above mentioned project "Didaktisches Coaching für den Unterricht in mehrsprachigen Klassen".

such development. However, under normal circumstances, this potential is not automatically realised, but must rather be recognised and implemented in a targeted didactic manner.

5. Problem areas in subject teaching

I would like to outline some prototypical problem areas related to language learning that are present in any subject learning but occur with greater frequency in multi-lingual classrooms (see Schmölzer-Eibinger, 2008, pp. 154-155).

- *Pupils are not familiar with the world of texts.*

Not all pupils are familiar with the world of written language and texts. In particular, pupils who are learning in a second language and pupils from educationally disadvantaged families often lack the literacy experiences and skills required to tackle written language and texts. Frequently, they have trouble understanding contexts and reproducing subject-related information in a comprehensible manner. They find it even more difficult to critically *interrogate*, *justify* and *explain*. For many such pupils, the step from everyday and situational talking to the distant, abstract description of facts and circumstances becomes a significant obstacle. Their ability to participate in specialist discourse in the classroom is limited, and they are often unable to take full advantage of the linguistic learning potential offered by subject learning (cf. Portmann-Tselikas & Schmölzer-Eibinger, 2008, p. 15).

- *There is not enough active linguistic activity in subject teaching.*

In subject teaching, the teacher often does all the talking, with the typical distribution of speaking time during a lesson being three quarters for the teacher and only about one quarter for the pupils (cf. Helmke, 2006; Dalton-Puffer, 2007). Pupils' remarks are usually limited to providing brief answers to questions or short speaking contributions in the context of dialogues. Frequently, such contributions consist of only individual words or sentence fragments, and longer, coherent remarks are rare.

L: Welche Atommodelle kennt der Sergio? (- -)

Sm: Bitte? (3 sec)

L: Alex bitte eines?

Sw: Das Bohr'sche Atommodell.

L: Das Bohr'sche Atommodell,

Do sam ma jetzt grad. Das Bohr'sche Atommodell. (-)

Sag ma z'erst die Namen und dann die Zuordnung;

Samra bitte?

Sm: Rutherford'sche Modell.

L: Rutherford'sches Atommodell.

L: Richtig. Und noch das NEUeste,

Des kennt da Mario;

Sm: Kugelwolken.

L: Das Kugelwolkenmodell is eine verei:nfachte FORM;

Also einfachere Form; (.) Welchen Modells? (-)

Wie heißen diese Räume,

Diese wahrscheinlichen Aufenthaltsräume von Elektronen?

Sm: A des

L: Bitte?

Sm: Die Schalen,

L: Na, des:

Die Schalen g'hörn wo hin,

Sw: Zum a Bohr'

In such dialogues, the time allowed between a prompt from the teacher and a reaction from the pupil is normally below the threshold value that is considered sufficient for the construction of complete statements with sophisticated content (Met, 1994, p. 174)⁸. When asked about this topic, teachers often state that they offer ample opportunity for pupils linguistic activity, but pupils frequently contradict this claim.⁹

- *In subject teaching, knowledge is primarily reproduced, instead of actively constructed.*

In subject teaching, knowledge acquisition occurs primarily as a mere reproduction of knowledge. The emphasis is on tasks and questions for which the solutions and answers have been pre-determined. Their communicative purpose is thus removed, and lesson dialogues become mere "question-answer games", and often concealed exam situations. This point is often directly addressed during lessons (chemistry lesson excerpt):

L: Hört's zu.
Wenn ich so: unterrichte; (-)
Dass ich ein Frage Antwort Spiel mit euch mache;
Unter Anführungszeichen;
Es is JEder auf MIch fokUSSIert
Was ist fokussiert?
Sm: Konzentriert
L: Genau.
Der FoKUS is der BRENNpunkt. (-)
In der Physik.
Das heißt;
A:lle schau'n zu mir (-)
Tuan net blattln (-)
Sondern schau wirklich zu mir;
Und hörn zu.
Und sind (.) auf INput eingestellt. (-)
Und wenn ich jemanden frage;
Dann werd der auf OUTput gehen.

Pupils retain specialist knowledge acquired solely through reproduction only for a brief time and cannot use such knowledge independently in different contexts. To build such competence, pupils must be given questions and tasks that they solve proactively via research and reflection.

- *The linguistic requirements of subject learning are often not transparent.*

Frequently, the linguistic requirements often connected with subject learning are not transparent. Below is an example from an Austrian chemistry curriculum on the topic of "basic patterns of chemical reactions":¹⁰

Qualitative assessment of the relationship between the material and energy changes that are induced by the decomposition and restructuring of bonds
Understanding the coupling of oxidation and reduction based on simple examples from the areas of combustion, metabolism, decomposition, electrolysis, energy sources and corrosion
Recognizing the meaning of acid and alkaline solutions related to everyday life
Gaining insight into important properties and reactions of acids, alkalines and salts

⁸ Longer waiting periods lead to both more frequent and more detailed speaking contributions, as well as an increased complexity of pupil statements, more talking initiative and pupil-pupil interaction (cf. Tobin, 1986).

⁹ This result is from a questionnaire-based survey of subject teachers, which was conducted within the scope of the aforementioned "Didactic Coaching for Teaching in Multi-lingual Classes" study.

¹⁰ Source: <http://www.bmukk.gv.at/medienpool/780/ahs6.pdf>.

Here, the linguistic requirements for the pupils are not explicitly stated, despite the fact that high demands are connected with the required understanding and knowledge skills.

What does it mean, for example, to “qualitatively assess” the relation between the material and the energy changes? How can this *assessment* be expressed linguistically?

The limited language awareness evident in the wording of such learning objective can be found not only in syllabi¹¹, but also during the lessons itself and in school books from the various subjects. Here again, teachers and authors of such books often fail to state the linguistic performance expected of the pupils in an explicit manner (cf. Schmölder-Eibinger & Egger, 2012).

- *Intensive text work and epistemic writing rarely occurs during lessons.*

While texts are always present in subject teaching, intensive text work is rare. Text comprehension and reading strategies are seldom explicitly taught, despite that fact that teachers frequently state that many pupils, and in particular those with migrant backgrounds, have difficulty understanding texts used in subject teaching.¹²

In subject teaching, the main purpose of writing is to record information; it is far more rarely about the reflection, processing and further development of knowledge. Epistemic writing (i.e. writing that creates knowledge) is rare in subject teaching. However, when such writing does occur, pupils most often show greater levels of accuracy, reflection and critical thought in terms of both language and content, which results in intensive language work and an improved understanding of content.

6. Didactic perspectives

What does didactics need to accomplish in this context? How can pupils, in particular those who are learning in a second language, be supported in the acquisition of the linguistic competence they need for knowledge acquisition in subject teaching? Which methodological procedures are suitable for addressing the issues outlined above? And: which didactic principles are sufficient for fostering the acquisition of literacy skills in subject teaching?

6.1 Didactic principles

The sections below suggest some principles that are considered relevant for so-called “language-conscious” subject teaching.¹³ These should be viewed in the context of a continuous fostering of literacy competence in all subjects and school levels.

6.1.1 *Integrated language and subject learning*

In subject teaching, integrated language and subject learning means that the teacher’s attention is focused not only on the content but also on the language and the didactic methods employed, which should support the comprehension and learning processes related to content through targeted language work.

¹¹ This is also the result of the abovementioned lesson plan analysis within the scope of the “Languages of Schooling” project of the Council of Europe (Vollmer & Thürmann, 2010, p. 110-111).

¹² This data is from the above-mentioned questionnaire survey which was conducted within the scope of the “Didactic Coaching for Teaching in Multi-lingual Classes” project.

¹³ In this context, Leisen (2010) speaks of “language-sensitive lessons”.

For the realization of this principle, *writing* is particularly suitable: Writing never occurs in a context-free space; the process of writing rather supports and expands comprehension of content, while simultaneously making language accessible as a means of thinking and learning.

Only when I write about a topic can I truly internalise it, as only then do I have my own thoughts about it, and only then can I check my thoughts for their soundness, because I then have them right in front of me, on a piece of paper. At the same time, when writing about a new topic, I create the language that I need with the thoughts and the knowledge. In this way, writing about something allows me to talk about it much better. (Hermanns, 1988, p. 71)

Writing in order to learn content has been a topic in the didactics of natural sciences since the 1970s. In the *writing-to-learn* movement, writing is seen as an instrument that promotes depth of understanding, which serves as a method both for acquiring specialist knowledge and for fostering writing skills (cf. Nieswandt, 2010, p. 253). More recent studies have empirically demonstrated the ability of writing to deepen understanding in subject teaching. For example, in a study in which pupils were made to write texts about physics using the internet as an information source, Priemer & Schön (2003) demonstrated that the pupils who wrote their own texts developed much deeper specialist knowledge than those of the so-called copiers, who drew parts of their texts directly from the internet. Similarly, in the context of physics, Hand, Gunel & Ulu (2009) also demonstrated that writing challenges pupils to refresh existing knowledge and to transform and expand it via the writing process.¹⁴

In the USA, Nieswandt (2010) has developed writing tasks called *written-extended-response questions* (WERQ), which are designed to encourage pupils to re-organise newly learned concepts from natural sciences and to link them with their previous knowledge. WERQs consist of questions that require a detailed response (Nieswandt, 2010, p. 259):

White fur in animals (e.g. in polar bears) is created by a lack of pigmentation. Biologists believe that the predecessors of polar bears had dark fur. Use the theory of natural selection [...] to explain how the white colour of the fur in polar bears might have developed.

An empirical analysis of the answers to these questions has shown that many pupils had problems constructing an hypothesis that could explain the evolution of polar bears. Many pupils could not see the intention of the question and therefore concentrated on unimportant details and continually lost sight of the overall relation. Many of them (above all those who are learning in a second language) were also unable to express their thoughts in writing in a suitable manner (cf. Nieswandt, 2010, p.262-263)

For this reason, pupils who are learning in a second language require special support in order to understand subject-specific content and to adequately present thoughts, ideas and learning results, and writing as an instrument of promoting integrated language and content learning plays a central role in such support.

6.1.2 Language awareness

Language awareness decisively advances not only language acquisition, but also knowledge acquisition (Kern, 2000, p. 320). Language awareness should be fostered in subject teaching both through the teacher's language use and by awareness building and reflection on language and language use. This involves the use of tasks and questions that require an alert approach to language, ~~make language a topic in itself,~~ and encourage reflection on language.

¹⁴ Moreover, writing in natural sciences can also be used to support verbalization and the understanding of non-linear depictions (graphics, diagrams, etc.), which is often difficult for pupils learning in a second language. (cf. Langer, 2010, p. 149).

Here too, writing plays a vital role. According to Vygotsky (1986, cited in Dixon-Krauss, 1996), compared to speaking, writing itself is an inherently more aware activity and is also more effective as a tool for building awareness. When writing, the writer's own linguistic action becomes the focus of reflection and learning. The special potential of writing is created by a "stretched" communication situation (Ehlich, 1983), by which the learning process is slowed down and a greater awareness is evoked. Thereby, according to Thürmann (2012), linguistically disadvantaged pupils, in particular, are afforded more time to produce more complex linguistic statements. In subject teaching, it is precisely these pupils who are often spared from demanding writing tasks – even though writing is particularly effective for lower-performing pupils (cf. Schmölzer-Eibinger, 2008; Glaser, 2004; Bachmann, Vital & Ospelt, 2007).

6.1.3 Active speech activities and interaction

Active speech activities in foreign language theory are considered the motor of language learning. Active speech activities make learners aware of what they already know, but also of what they still need to learn. According to Swain's *output hypothesis* (1998, pp. 66-68), the awareness of this gap is a primary driving force of language acquisition. What about subject learning, though? Can we assume a similar relationship between active speech activities and subject knowledge acquisition?

Bonnet (2004, p. 290) has demonstrated this relationship for bilingual subject teaching, particularly if speech activities take place within the scope of *interaction*. According to Bonnet, when groups interactively negotiate meaning, participants acquire both linguistic and subject competence, provided that the interaction space created by the learners is not too complex and that the learners interact on the factual, social and meta-cognitive levels (cf. Bonnet, 2004, p. 294).

Grießhaber, Özel & Rehbein (1996) argue that the acquisition of skills in multi-lingual classes cannot be expected a priori through interaction. According to their findings, language interaction between pupils learning in a second language often consists of identifying and naming objects by means of gestural speaking. It cannot be assumed that subject-specific knowledge is automatically acquired through this process (cf. Grießhaber, 2010, p. 47).

In contrast, a recent study of teachers and pupils in subject teaching has shown that interaction in multi-lingual classes can be effective.¹⁵ This conclusion has been drawn based on interactions in which pupils have recognised their knowledge gaps, deduced meaning independently, solved comprehension issues independently and found adequate solutions for technical difficulties. One condition for this is that pupils must be confronted with relevant questions and issues, which they then focus on during their discussions and solution-finding activities.

Cooperative writing tasks encourage active speech activities and interaction in a special way (cf. Tynjälä, Mason & Lonka, 2001, p. 12; Schmölzer-Eibinger, 2008) by compelling learners to suggest, justify, check and comment on ways of formulating written texts and to continuously rethink and reformulate what is then written down. In this process, several meta-cognitive and meta-linguistic activities arise, which intensify both the linguistic and the content learning process.

¹⁵ This is the aforementioned project "Didactic Coaching for Teaching in Multi-lingual Classes".

6.1.4 Focus on literacy and texts

Written language not only represents cognitive structures but also creates them anew (cf. Wolff, 2002, p. 78). Hence, literacy enables new qualities of thinking and dealing with language.

In texts, knowledge is recorded, passed on and expanded – text spaces are knowledge spaces, and knowledge spaces are text spaces (cf. Ehlich, 2010, p. 55). In subject teaching, knowledge is also primarily disseminated and acquired by means of texts. The text-heaviness increases as the pupil progresses through the school years – the more information that is disseminated, the greater the demands on linguistic explicitness and coherence, and the higher the inherent demand on textuality.

A short speaking contribution within the scope of a dialogue presents rather minor challenges. Coherence within the scope of conversation is created ad hoc and can remain implicit, which means it only has to be partially linguistically marked, at the most. Coherence within the scope of texts, however, has to be "incorporated" into the text, which means it has to be made explicit such that the relations in terms of the content are comprehensible, regardless of when or where someone hears the text or reads it (Portmann-Tselikas & Schmölzer-Eibinger, 2008, p. 6).

The "3-phase model for promoting text competence" (Schmölzer-Eibinger, 2008) and the model for building literacy competence (Dorner & Schmölzer-Eibinger, 2012) offer didactic models that guide the building of text competence in small steps. The *3-phase model* begins with associative writing tasks, emphasises intensive work on texts, and then leads to knowledge-transforming and epistemic writing. The *model for building literacy competence* focuses on linguistic actions (e.g. describing, explaining, reasoning). It begins with implicit, orally oriented dialogues in subject teaching and leads to written-language-oriented oral language use and writing. Both didactic models place a particular emphasis on the principles of integrated language and subject learning, language awareness and language reflection, active speech activities and interaction.

In addition, knowledge of types of texts should be systematically trained in subject teaching, as it supports pupils' efforts to tackle subject-specific learning tasks in a focused and effective manner (cf. Thürmann, 2012). From a didactic point of view, a multi-stage analysis is suitable for addressing text types. First, the pattern of the relevant text type has to be deconstructed. Second, the typical text action pattern and linguistic means and constructions have to be identified. Based on this, a text on a new topic can then be produced (cf. Thürmann, 2012; Langer, 2009)

7. Summary and outlook

A significant untapped potential remains in the use of language as a medium of learning in subject teaching. Action is required not only for the learners, but also for the teaching staff: subject teachers must receive greater support than ever in order to make "language-conscious" subject teaching a reality. This means

- for *teacher education*, that courses dealing with the theoretical and didactic foundations are offered for all subject teachers in the form of modules addressing "language in subject teaching". Although such courses already exist at some universities,¹⁶ an extensive implementation in the curricula of all subjects is still outstanding.
- for *teacher further education*, that subject teachers receive advice in the form of process and situation-oriented coaching with regard to their linguistic and didactic actions in the classroom; this coaching should be based on concrete teaching situations, should take into

¹⁶ One example for this is the Humboldt-University Berlin, which offers modules for language promotion in all subjects (cf. Lütke, 2010).

account insights from writing and reading acquisition research, and should focus on the particular language learning situation of pupils who are learning in a second language.¹⁷

- for the *curricula* of all subjects, that the linguistic requirements connected with the learning goals of the subjects are explicitly stated and made transparent. Curricula analyses conducted within the scope of the European Council project “Language(s) of Schooling” revealed an urgent need for a new conceptualization of the curricula in this direction. Although initial steps have already been taken in specific curricula in Germany, a comprehensive, nationwide effort to meet this demand has not yet been made.¹⁸
- for *school books* of all subjects, that language is explicitly, precisely and coherently deployed such that pupils are introduced to a text-based language use in a step-by-step manner. Recommendations for language use in school books should be made accessible for all authors, reviewers and publishers of such books (cf. Egger & Schmölder-Eibinger, 2012).
- for *research*, more focused and sustained research must be conducted on the language of school and its domain-specific characteristics, functions, action patterns and routines, as well as the implications and effects for subject learning. To this end, an orientation around writing and literacy research, as well as a focus on the development and action aspects of communication and learning processes in subject teaching are of a high priority. Based on this, didactic concepts and models should be developed that improve the existing approaches in terms of their targeting towards specific domains, contexts, functions and recipients, and these concepts and models should then be empirically investigated to determine their effectiveness in subject teaching. To this end, a research initiative is needed that brings together experts in particular subjects and language experts. The growing interest in language, which currently stretches across the borders of specific subjects, provides an important basis for such an initiative.

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¹⁷ Initial steps in this direction are e.g. the model of “SprachFörderCoaches” (“language support coach”, which is currently being implemented within the scope of the “Qualitätsoffensive Hauptschule” in North Rhine-Westphalia (cf. Thürmann, 2012). In Austria, analysis instruments are currently being developed within the scope of the project “Didactic Coaching for Teaching in Multi-lingual Classes” (BMUKK), which shall be implemented in a planned training for language coaches for subject teachers in the future.

¹⁸ See chapter “Hinweise zur Sprachkompetenzentwicklung im Lernbereich” in the core curricula of the secondary schools for natural sciences and social science (http://www.standardsicherung.schulministerium.nrw.de/lehrplaene/upload/lehrplaene_download/hauptschule/GL_HS_KLP_Endfassung.pdf. p. 14.)

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