A Pattern Language for Teaching in a Foreign Language - Part 2

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Abstract. Teaching a technical subject in a foreign language is not just switching to the foreign language. There are specific problems related to the integration of content and learning. This paper is part of ongoing work with mining of patterns which address these problems and intends to offer practical help to teachers by working towards a pattern language for technical instructors who teach students in a second language, and who are not trained in language pedagogy.

This is the pre-conference version for the PLoP'12 conference. Note to workshop participants: for the PLoP 2012 conference we would like to focus on following patterns: CONTENT-COMPATIBLE LANGUAGE, COMMENTED ACTION, and LANGUAGE MONITOR. We also would like to work on the list of related educational patterns. However, feedback on the other patterns is more than welcome, they are therefore all included in this workshop version of the paper.

1 Introduction

The set of patterns introduced in this paper is aimed at instructors who occasionally want — or have — to teach a class in a foreign language instead of their mother tongue. The patterns are meant to support these instructors in preparing for these classes in such a way that a foreign language will not be a barrier to students' understanding of the course content. This set of patterns is part of a larger project for developing a pattern language for teaching in a foreign language. In an introductory paper an overview of patterns for teaching in a foreign language is given as well as three patterns [13], Part 1 introduces integrated language learning (helping technical instructors develop courses in a foreign language, using integrated language learning) and 4 more patterns [12]. This paper discusses how to improve advanced students' language proficiency while teaching in a foreign language and introduces three more patterns.

2 Enhancing Foreign Language Proficiency through Integrated Learning

In general, teachers are proficient in one domain, either in foreign language pedagogy or in the subject-specific contents of a course. It is difficult to be good in both and be pedagogically aware of both domains [4]. Quite often teaching content and teaching a foreign language are still seen as separate pedagogical issues [16]. The teaching of language and content in a course could be done in a team where one teacher is responsible for the language part and the other for the content. Studies show that this splitting is not very effective and can be counter-productive [4].

Content Based Instruction (CBI) and Content and Language Integrated Learning (CLIL) are both methodologies of improving second language proficiency through teaching specific subjects, providing the benefit of functional exposure to foreign languages [9]. CBI is aimed at second language learners living in English speaking countries, who lack fluency due to extensive use of their mother tongue outside the class room; teachers are native speakers of students' second language. CLIL is aimed at classes in which both teachers and students are still developing their second language skills by giving or taking extended classes on specific subjects in a second language. Typical components of a CLIL or CBI approach are vocabulary and cooperative learning strategies, and practicing reading, writing, listening and discussion.

2.1   Beginners and advanced learners have different educational needs

Beginners in foreign language acquisition may have limited understanding of the course subject matter, which will keep them from enhancing their foreign language competency as well [4]. Just giving students the opportunity to *use* the other language in a programme is not enough for sufficient learning [16].
According to Schleppegrell et al., visualisation and hands-on activities are useful means for beginners in learning foreign language to grasp the meaning of a teacher's instruction [20]. Yet advanced learners need a greater focus on language to improve their level of proficiency.
The focus of this work is therefore to identify ways of integrating the second language in a specific course or class in such a way that language fluency increases without loosing the focus on the specific course content. This improvement can be accelerated by adjusting the content teaching in small ways that help with successful language acquisition.

3   The Patterns

These patterns were mainly mined in existing literature and experience reports. Therefore they often miss sufficient known uses and fail at this moment to follow the *rule of three*. However, we intend to include more known uses after these patterns have been applied and adjusted more broadly and make them available as a whole pattern language.

The patterns use a version of the Alexandrian pattern format, as described in [1]. The first part of each pattern is a short description of the context, followed by three diamonds. In the second part, the problem (in bold) and the forces are described, followed by another three diamonds. The third part offers the solution (again in bold), the (empirical) background, consequences of the pattern application — which are part of the resulting context — and a discussion of possible implementations. In the final part of each pattern, shown in *italics*, we present some known applications.

In the following sections we present the following patterns: CONTENT-COMPATIBLE LANGUAGE, COMMENTED ACTION, and LANGUAGE MONITOR. After that the short versions of the other patterns — the patlets — are presented, the complete patterns are published in [13, 12]. We finally provide an overview of pedagogical patterns which are especially applicable in the context of teaching content in a foreign language.

CONTENT-COMPATIBLE LANGUAGE

You identified the CONTENT-OBLIGATORY LANGUAGE and included in the course design opportunities so that the students can master it. However, most domains contain more elements of a specific language: synonyms, proverbs, expressions, phrases, metaphors, etc.

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Only mastering the obligatory language of a course's content might be sufficient to fulfill the course's requirements, but it limits the students in their expressiveness and does not improve the overall quality of students' language skills.

Content First. As the content is often the more important part of a course, any way of showing that it has been mastered is sufficient. The quality and expressiveness of this "showing" seems of less priority.

Language Variety. Things in general are better understood if described in different ways. Using only one set of language constructs restricts the language variety. At the same time, many things can be described in different ways. An example: to understand and be able to use the mathematical concept of subtraction, the expression 'subtract from' might be sufficient. But there are many other expressions which can be used synonymously: 'decreased by', 'less', 'minus', 'differ', 'less than', or 'take away' [7].

Language Elements. Most domains contain more elements of a specific language than only nouns and verbs: synonyms, proverbs or other expressions. But most often only the nouns and verbs are taught to the students.

Unknown Synonymity. Even though the synonymity of expressions might be obvious to the teacher, this is not always the case for the students.

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Therefore: Identify the language constructs and expressions of the course domain which are additional to the obligatory elements. Include opportunities for learning these in your course design and course execution.

Offering a broader variety of descriptive possibilities might help with the better understanding of the content. Documenting Synonyms (as a part of the CONTENT-COMPATIBLE LANGUAGE) in advance creates an awareness of these, which also can later be used in a COMMENTED ACTION.

Including too many — or even all — content-compatible elements could be overwhelming and is in most cases not necessary. The focus should be on either the most used ones in the domain of the course or the ones which match the current language level of the students best. For example, theoretical academic terms of the domain might be inappropriate for beginning undergraduate students while appropriate for graduate students. Terms which are used in the companies where students take an internship could also be important sources of CONTENT-COMPATIBLE LANGUAGE. This means that the corpus of the CONTENT-COMPATIBLE LANGUAGE is variable and dependent on the course level.

One starting point for this is the LANGUAGE STATUS QUO. But it is also necessary to look at the long-term language learning objectives. This way some vocabulary can already be included which enriches the current language, but is obligatory for follow-up courses [18].

Implementing this pattern might require a lot of time, as usually no collections of these CONTENT-COMPATIBLE LANGUAGE elements exist. It is a good idea to implement this pattern in an iterative way by incrementally adding newly identified language elements to the collection and integrating them in the course design.

The first author included a section in the teachers guide for a course on Patterns & Frameworks, listing the most important constructs of the CONTENT-COMPATIBLE LANGUAGE. *This constructs were then used during the lectures and especially* COMMENTED ACTION*s. Examples of terms/constructs on this list are: Is-a relationship, liabilities, responsibilities, Sketch, Members, or sections in class representations.*

COMMENTED ACTION

Also known as: Think Aloud Protocol, Show and Tell.

Often in courses or lectures you show or demonstrate some content-specific activities. You are aware that you are a LANGUAGE ROLE MODEL and have identified the CONTENT-OBLIGATORY LANGUAGE and the CONTENT-COMPATIBLE LANGUAGE of your course. Students do not yet know these language constructs or were just introduced to them.

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If the students only see the activities done by the teacher, they might be able to execute them themselves, but will have difficulties describing in the foreign language what they are doing. Their vocabulary and expressiveness will not increase.

Limited Vocabulary. If all people would only use the CONTENT-OBLIGATORY LANGUAGE of a domain, then communication would be fine. But different people in the domain have different ways of expressing things, which increases the chance of miscommunication because of expressions unfamiliar to the students.

Language Misunderstandings. Students might have wrong interpretations of some parts of the CONTENT-OBLIGATORY LANGUAGE and the CONTENT-COMPATIBLE LANGUAGE. If they do not recognize these misunderstandings they cannot correct them.

Tell vs. Show. If the meaning of language expressions is only told to students, then it is hard for them to really grasp the meaning completely.

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Therefore: Do not only show or demonstrate complex abilities but give a spoken description of the steps you are taking. Use the earlier identified language terms when you show their meaning.

This solution provides an excellent opportunity for using CONTENT-OBLIGATORY LANGUAGE and CONTENT-COMPATIBLE LANGUAGE in the right context. Thus students can be exposed to relevant language parts and may use this input for language acquisition as well. The teacher should make conscious use of it, also exposing the students to language variations using e.g. synonyms or different language constructs for describing the same action. Important is that actions and spoken descriptions are in sync, one should express exactly what one is doing at the moment.

Using spoken descriptions may benefit students who have difficulties grasping the content, as the additional explanations provided help them get a better understanding of the matter at hand.

Be aware that the actions and the used language constructs should match the language of the students. It does not make sense and would be counterproductive to use a language which is too complex for the students, which are in first place trying to understand the content of the activity. If the amount of language expressions you want to introduce in the course is high then make use of this pattern iteratively by using a small subset of the language expressions first and, when these are grasped by the students, move on with some more complex expressions.

It is not easy to apply this pattern for the CONTENT-COMPATIBLE LANGUAGE, as there is a chance that teachers fall back to standard terms when actually presenting the action live. Applying this pattern therefore requires experience with using different language constructs for the same actions and also good knowledge of the earlier identified CONTENT-COMPATIBLE LANGUAGE.

One implementation of this pattern could be to EXPOSE THE PROCESS [19], which helps in general for a better understanding of the content but, if applied in a foreign language, also with the learning of this language.

This pattern was applied by the first author during the explanation of a possible implementation of a design pattern. He not just sketched the possible implementation diagram, but also talked aloud while doing it, stating e.g. "Lets first paint a rectangle, which is the style for drawing classes in UML, and then the two lines separating the different sections of the class representation", "Let's describe the attributes now, which are written in the second section, the one below the name. Which

potential members can we include here?", "Lets first draw the visibility here. As it is not publicly visible, it can not be seen and used by another class, we cannot use the plus sign as this stand for private visibility", etc. These comments included many terms and synonyms (like e.g. members and attributes) of the CONTENT-COMPATIBLE LANGUAGE.

LANGUAGE MONITOR

Also known as: Formative Assessment.

You have designed a course with a focus on both content and language, identified the CONTENT-OBLIGATORY LANGUAGE and the CONTENT-COMPATIBLE LANGUAGE and used this for INPUT SELECTION. You have chosen specific learning activities to stimulate METATALK, support language learning with COMMENTED ACTIONS and are aware that you are a LANGUAGE ROLE MODEL. You now want to assess whether your learning activities have had the expected result: an improvement of the students' foreign language skills.

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Judging the progress students make with language acquisition is not possible during lecturing, as this already requires all effort of the teacher. But without judgement you don't know if the students make progress with language acquisition.

Student Visibility. Even if you are a good educator, it will be nearly always the case that some of your students are more visible and some are less visible. Especially for the less visible ones it is hard to determine their learning outcome during the course execution.

Phrase Repetition. If students use phrases of the domain language during lectures or written assignments, one cannot be sure if they just repeated them as heard before or if they really have grasped the meaning.

Content Focus. Students might be too focused on the content part of the course and neglecting the opportunities to improve their foreign language skills too.

Language Unawareness. If only the understanding of the content is assessed, students do not become aware of their language shortcomings.

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Therefore: Implement regular assessments on the language skills of the students to determine whether they grasped the content and whether their language skills have improved, and use these outcomes to intermittently adapt your course.

Continuously monitoring students' progress in both areas allows you to redesign your classes based on what students have demonstrated. Such monitors are also referred to as 'assessments of learning' or 'formative tests'. The means of assessment influences the way students study for their tests. If a test only covers the course content, students will put less effort in expressing themselves properly in the foreign language. This is not the teachers aim, as improvement of language skills will help students better understand the course content. Formative tests should assess both content and language in such a way that students will gain an insight in their current knowledge and will be motivated to close any gaps that have become apparent. Formative tests may include: class room observations, presentations, assessments of team products, posters, reports and the like. Met also suggests the form of small conferences as a good source for data [18]. The best assessments are based on 'rubrics', a matrix of a range of criteria and 3-4 categories describing different levels. Both the language and the course content are among the criteria.

Another way of applying this pattern is comparing the results of two different LANGUAGE STATUS QUO's, determined at the beginning and at the end of a course or the beginning of the next course. These are called summative tests. They cannot be used to motivate students during courses or to alter the course's learning activities during the course. They are however much less time-consuming to create than formative tests using rubrics, as they often consist of close ended questions, reports or presentations exam style, resulting in a single mark.

A LANGUAGE MONITOR can also be applied using self assessments of the students. Butler reported some positive effects of regular self assessments among young learners of English, including an increased confidence in learning English and a greater ability in assessing their actual level of English [2].

One of the results of applying this pattern are insights into how to adapt the CONTENT-OBLIGATORY LANGUAGE and CONTENT-COMPATIBLE LANGUAGE objectives in future lessons and units [18].

Mariëlle Nijsten and Christian Köppe used this pattern by taking the Language Status Quo *at two different moments and comparing the results of these. This way an increase in both the abilities of speaking and writing could be observed.*

The other patterns

LANGUAGE STATUS QUO

You assume that students are at a sufficient level of general foreign language competences, i.e. they have knowledge of basic common vocabulary and grammar and can use the language. You now want to start teaching a course in this foreign language, with a foreign language as a medium of instruction so as to improve the use of this language in a professional setting.

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Without knowing the actual level of foreign language competences of the students it is likely that the language parts of the course design are either too difficult for the students which hinders them in grasping the content or are too simple for them which means that their language understanding probably does not improve.

In undergraduate or graduate programs, students will often have different levels of language proficiency due to their different backgrounds.

Cultural Background. Some courses are taught in a foreign language — often English — to attract students from abroad and enable them to take part. The level of language proficiency and the way these students have learned the language in their original countries affects the way the foreign language can be used in such a course. A second background issue may be the students' level of academic English which can vary greatly, depending on the type of education students have had before entering the course and their knowledge of academic language in their first language [3, 20].

Available Material. In many domains, like e.g. ICT related subjects, the written classroom materials used are often available in English only, making it harder for instructors to teach these subjects in their mother tongue, as it forces teachers and students to translate parts of the texts used into the mother tongue, e.g. when giving explanations or answering questions. This results in poor quality translations and negatively affects both the teaching and the learning process.

Educational Career. Many courses (or studies) define minimal language requirements, like language courses which have to be attended and finished. This just gives an indication of the minimum level a teacher can expect from the students and still does not say anything about the variety of language levels present among students.

Standard Language. Even though it shows that the understanding and general knowledge of the foreign language is at a sufficient level, it still can lead to problems. In technology courses, the content contains a lot of specific terms — jargon is used as well as language-structures with content-specific semantics. Knowledge of this vocabulary is not reflected by standard language certificates.

Context-specific pretests. Pretesting is often aimed at a narrow range of aspects: what do students know on the subject? What is their general language proficiency? What is needed for competence based learning or integrated learning, is a specific pretest on communication competences used while performing selected professional and educational tasks in a specific branch or sector you train students for. Context-specific pretests are often tailormade, though their components may be selected from existing proficiency tests.

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Therefore: Get to know the language level of all students at the start of a course to obtain a realistic overview for your specific professional and educational goals. Use appropriate tests that include both general language competences and context specific linguistic competences, such as class room language, formal academic language, and core professional activities in your field. This is the basis for an adequate language integration in the course design.

The LANGUAGE STATUS QUO is usually gathered by one or more tests and should cover the aspects relevant for the course at hand. These aspects can include:

1. *general language competences* — Grammar and general vocabulary, but also reading, listening, writing, and speaking.
2. *content-specific language competences* — Knowledge of the course domain language, like jargon or often used language constructs etc. The CONTENT-OBLIGATORY LANGUAGE and the CONTENT-COMPATIBLE LANGUAGE can be used for testing these aspects.
3. *language-related competences* — Like giving (or *daring* to give) presentations in the foreign language, discussing problems in the language, speaking the language in front of a group, or creating formal writings in the foreign language.

The first aspect can be covered by looking at which courses in the foreign language the students already followed or the language certificates the students own. It is helpful to use proficiency tests based on international standard frameworks for language examination, such as the International English Language Testing System (IELTS), Common European Framework of Reference for Languages (CEFR) or Association of Language Testers of Europe (ALTE). But, as described earlier, there are more aspects which are (usually) not covered by such tests.

In some cases it can be useful to determine the content-specific language competences of the students, if e.g. the students in a course have different educational backgrounds. If the students follow a fixed study scheme and it can be assumed that they have a more or less equivalent level of language knowledge, this aspect can be omitted.

Commonly used proficiency or placement tests (often) do not include the competences to use the language in different educational and professional contexts. Missing these competences can lead to situations where students are not able to give a presentation because they have trouble speaking in front of groups in the foreign language (and not because they don't understand the content). These tests (often self reflective) give a clearer picture on how students apply the language.

Knowing the students' current levels per aspect forms the basis for an appropriate set-up of language elements in a course. Depending on the relevant aspects the following consequences can be identified:

- Difficulties in grammar and general language competences can be improved by promoting METATALK and including the missing parts in the CONTENT-COMPATIBLE LANGUAGE.
- Depending on the strengths and weaknesses of the students' competences to read, listen, write or speak the foreign language, an accordingly balanced mix of the four leaves of the LUCKY LANGUAGE CLOVER should be included in student activities.
- If content-specific language competences already are present, then the CONTENT-OBLIGATORY LANGUAGE and the CONTENT-COMPATIBLE LANGUAGE can be adjusted to cover a broader or deeper range of language aspects. Another consequence could be that less exercises need to put the focus in both content and language aspects.
- If content-specific language competences are not (sufficiently) present, then the missing parts of the CONTENT-OBLIGATORY LANGUAGE and the CONTENT-COMPATIBLE LANGUAGE should be taken into account during course design or course adjustment. Exercises should expose the students repeatedly to these language aspects in different ways, e.g. by letting them research the meaning of different content-specific words, using COMMENTED ACTIONS during lectures and working groups, or let them give presentations which require the knowledge and usage of content language (and also makes use of the LUCKY LANGUAGE CLOVER.
- If the students have shortcomings in language-related competences then include exercises which let them develop and practice these competences.

De Graaf et al. suggest that students should be exposed to input at a (just) challenging level [9]. In order to determine this level, knowledge of the LANGUAGE STATUS QUO is required. This can also be used as the first check of the LANGUAGE MONITOR. The following checks can then be compared with the beginning situation.

One advantage of testing is that students will become more aware of their language proficiency and that they are able to determine themselves whether their language competences need further improvement. A disadvantage of applying this pattern is that it requires more work from the teacher and also extra time from the students.

The authors applied this pattern at the beginning of a course which was taught in English to students whose mother tongue was Dutch. They had to fill in a short survey stating their last followed

courses in English and the grades received for those. The levels of these courses were known to the authors, making it easy to relate the grades for these courses to levels of international standard frameworks like the Common European Framework of Reference for Languages. Furthermore they were also asked to fill in a self-evaluation about their competences and ease of giving presentations, reading technical documentations, explaining technical problems, etc. The test showed the most students were afraid of giving presentations in English at the beginning of the course, so the amount of exercises and assignments which required student presentations was increased, starting with just giving small presentations about a small-scoped problem and ending with a presentation of their final project result.

INPUT SELECTION

Most courses make use of material — literature, websites, tutorials etc. — which covers the content of the course. You have identified both the CONTENT-OBLIGATORY LANGUAGE and most parts of the CONTENT-COMPATIBLE LANGUAGE and you know the LANGUAGE STATUS QUO of the students' language levels. You now want to start to look for the material

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Available material often differs in both language levels and comprehensibility, and can be too difficult or too easy for students. Both cases will lead to problems during the course.

Complexity. Long sentences and words, academic words, complex concepts and a dense writing style requiring analysis, makes texts hard to understand.

Text cues. Cues such as headings, lists, signal words, and visuals help students understand course texts.

Different Writing Styles. Each author has a specific writing style, and as a result, some authors' texts are much easier to read than others. Getting used to different writing styles takes getting used to.

Different book audience. Most of the textbooks available which cover the content of a course and are written in the foreign language are made for people *using* this language and not for people *learning* this language. These books therefore do not include language didactics, which might be necessary or helpful if this book is used as input.

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Therefore: select comprehensible course input that explains the subject matter in a way that matches students' language levels and interests.

Krashen looks upon comprehensible input as the primary motivator of language development, immersing students in meaningful input, without any explicit teaching of grammar [14].

Teachers should explain the course content in students' own words. By asking open-ended questions, asking students to justify their answers, they can help students understand the structure of texts.

According to Carrell, teachers should focus on the readers' background instead of on the text [3]. Students need sufficient knowledge of text content as well as text structure and grammar. They may fail to understand texts due to lack of text cues or schemata, or culturally specific schemata. She suggests narrow reading, i.e. limiting the number of authors to one. She also advocates students previewing texts, which may include presenting difficult terms and expressions used in these texts [3].

According to Dale et al., as a rule of thumb, no more than 5 of the words on a page should be unfamiliar [6]. Readability instruments can be found online, helping instructors determine the level of difficulty of texts[1].

A consequence of applying this pattern is a longer preparation time, as the material has to be checked on appropriateness for both content and language.

Köppe uses for a course on Patterns & Frameworks different kinds of literature. As the book by Gamma et al. [8] is a quite difficult reading for undergraduate students, the material was complemented with links to websites which describe the design patterns in a shorter and more comprehensible way. But in the later phase of the course the students had to use the Design Patterns book, but were better prepared for it as they understood the CONTENT-OBLIGATORY LANGUAGE *and the* CONTENT-COMPATIBLE LANGUAGE.

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[1] http://www.online-utility.org/english/readability_test_and_improve.jsp

CONTENT-OBLIGATORY LANGUAGE

The content of a course is mostly focused on one domain, which often has specific terminology used in this domain. If students have a low general language proficiency, the chances of them failing to understand the real meaning of this terminology increases [18].

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Some lexical items and terminology of the foreign language are so closely related to the content of a course that mastering them is crucial to students in order to achieve the course objectives.

Some students may get the wrong understanding of the domain of the course contents. When explaining this terminology in the foreign language, they use phrases in the foreign language without grasping their meaning.

Definition Repetition. Students know that it is sometimes sufficient to memorize definitions without understanding, as tests are often asking for memorized knowledge only. Not all things have to be understood more deeply and in the broader context.

False Friends. When reading a text in a foreign language there are often words which are unknown or the meaning is only vaguely known. Usually the meaning becomes somewhat clearer in the broader context and through the position of the words, but these are just assumptions. Especially terminology in specific domains can give a different meaning to common known words, which can lead to "false friends".

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Therefore: Define the content-obligatory language before and during course design. Expose the students to this language continuously in different ways with an emphasis at the beginning of the course. Let this language repeatedly come back during the whole course to improve assimilation and understanding of this language.

The content-obligatory language can consist of different parts:

– vocabulary - the terms used in, and specific for, the domain covered in the course. Example for mathematics would be the terms: Subtraction, Addition, Division, and Multiplication.
– language constructs - domain-specific ways of using the language, which are specific for the domain. Examples are the mathematical constructs: "x is subtracted form y" or "factor out the greatest common factor".

The language specific for a domain often includes visuals as well, but these are mostly independent of the language used and should therefore already be included in the content-related material. However, these are also very helpful in language acquisition [9], as they help in relating knowledge structures to associated language expressions [16]. In some cases it therefore can considered to be helpful if these visuals are also explicitly added to the content-obligatory language. The known uses section gives an example of this.

The defined language is a reference for the course design — the used materials, presentations, etc. It therefore also forms the basis for INPUT SELECTION.

Use different communication ways — as defined by the LUCKY LANGUAGE CLOVER — for explaining the language and exposing students to the language and letting students grasp, practice and apply the language.

To check whether they really understood the domain concepts, ask students to explain them in their own words. This way you will find out whether they've simply learned phrases or really grasped a deeper understanding of the concepts and terminology. Especially in the beginning these explanations can also be in the students' mother tongue, which gives more insight into the deepness of understanding [17].

De Graaf et al. suggest the learners should be stimulated to request new vocabulary items [9]. However, in order to ensure that these items contribute to the content too, a list with the essential vocabulary items should be made in advance. This list could also contain the items of the CONTENT-COMPATIBLE LANGUAGE.

A serious risk when defining the CONTENT-OBLIGATORY LANGUAGE is that is costs the teacher a lot of preparation time, mainly for two reasons: (a) it is not always obvious which parts of the language are really essential for understanding the course content, so determining these parts requires extra time and (b) the amount of relevant terms and constructs can be overwhelming, leading to excessive lists which are not easy to create and handle. To avoid this, select input texts of the appropriate level, using the INPUT SELECTION pattern or use visuals to explain domain language.

Köppe and Weber defined in a course on (Design) Patterns & Frameworks a list with the essential terms (and important visuals like UML class- and sequence-diagrams), which included: class, association, generalization, specialization, inheritance, interface, Pattern, Framework, sections (of a pattern), context, forces, abstraction, coupling etc. Even though some of these terms can be assumed as known to the students because of earlier programming and UML courses, they are included again here as they are essential for understanding the patterns but also the pattern solutions and their impact on the overall design. In the first lecture the students had to give short presentations in English about general design principles and techniques including examples. The use of some of the terms was implicitly required for this exercise, and the teachers emphasized the importance of these terms by immediately asking questions like "Why have you chosen a generalization and not an association" which requires deeper understanding of the terms in order to be answered correctly. This exercise gave a good overview of which terms the students already knew at a sufficient level and which terms did need more explanation and repetitive attention during the following lectures.

LUCKY LANGUAGE CLOVER

You are thinking about the tasks you want to include in the course design and want to ensure that they also cover the CONTENT-OBLIGATORY LANGUAGE and the CONTENT-COMPATIBLE LANGUAGE aspects appropriately.

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Exposing the students to language comprehension only — reading and listening — is not sufficient for improving production levels of the foreign languages.

Usage motivation. Using a foreign language as medium of content instruction does not automatically lead to language usage of the students too. Some students are simply not motivated enough.

Potential Hubris. Many people think that they master a foreign language quite well because they can read and understand the foreign language. These people often fail when it comes to speaking and writing.

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Therefore: Include all four types of linguistic competences in your course design. Promote reading and listening, but have students writing and speaking in the foreign language as well.

Learning a language requires mastery of all types of linguistic competences: reading, listening, writing, and speaking — the four leaves of the LUCKY LANGUAGE CLOVER. This is referred to as exposure to input or *comprehension* (i.e., reading and writing) and so-called pushed output or *production* (i.e., writing and speaking). But language input does not always lead to language intake. It is by actively using the language input in stimulating assignments that help students grasp its actual meaning, the input is actually stored in students' long term memory. So just giving lectures in the foreign language and requiring the students to read literature in the foreign language is not sufficient. Courses must allow for students to write and speak in the foreign language as well, with a special focus on speaking [17]. Producing output requires students to use their passive knowledge of the language to make themselves understood. Thus, their mastery of this language is enhanced [22].

Exercises, assignments, and didactics should therefore take all four leaves of the LUCKY LANGUAGE CLOVER into account. This could be achieved through the use of a variety of pedagogical patterns, e.g. PREFER WRITING, PEER FEEDBACK [19], and many others. Swain suggests a collaborative form of writing, as this implies the need for talking about the content [21] and therefore also promotes the use of METATALK.

When students are asked to explain concepts in their own words — whether in spoken or written form — it helps them store these concepts in their long-term memory and retrieve them when needed. Talking and writing promote learning content and learning languages at the same time. De Graaf et al. also emphasize the importance of practice through relevant speaking and writing assignments [9].

Implementing LUCKY LANGUAGE CLOVER requires careful selection of exercises. Coonan showed that GROUPS WORK [19] leads to a much higher oral output than a classical teacher-led lesson [5]. If LUCKY LANGUAGE CLOVER will be applied in teacher-led lessons, then an extended focus should be put on the questions asked during the lesson, e.g. by applying CAREFULLY CRAFTED QUESTIONS [15], which obliges the students to elaborate their responses more richly [5].

Another important aspect is that not all students make use of the opportunity to speak, most often we see a small group of students which answers most of the questions. The teacher has to ensure that the oral participation is spread over all students equally if possible in order to increase the language learning effect for the whole group. This also requires an atmosphere where students *dare to speak*, another important aspect the teacher has to take care of.

But even in groups work do not all students automatically make use of the opportunity to speak [5]. They are pedagogical patterns which help to increase the participation of all students, like THINK PAIR SHARE [15] or STUDENT DESIGN SPRINT [19].

Another question which needs to be addressed when applying this pattern is whether the use of the native language is permitted at all and if so, under which circumstances. Mehisto et al. suggest that especially when the students are exposed for the first time to content being taught in a foreign language they also should be allowed to use their native language when necessary [17]. This should only be seen as bridging technique and the students should always be encouraged to use the foreign language as much as possible. It has to be clear that using the language at all is more important than using it 100% correctly.

The students in a course on Model Driven Development at the Hogeschool Utrecht had to work on a longer lasting assignment which included a Model-to-Text transformation implemented in a tool new to the students. After the first week all student groups (mostly 2 students) had to prepare and give a presentation about one of the problems they encountered during the first week of the assignment. This included therefore writing (the content of the presentation) and speaking (discussing the content and giving the presentation).

In another course at the Hogeschool Utrecht on Patterns & Frameworks which was given in English this pattern was implemented by having the students regularly give presentations on different topics, e.g. as part of the implementation of DISCOVER YOUR OWN PATTERN *[11]. A survey taken at the end of the course showed that their ability and self-consciousness regarding speaking and writing improved remarkably.*

METATALK

Students understand the content and are using the foreign language, making use of all four leaves of the LUCKY LANGUAGE CLOVER, but the language competences of the students still vary.

<div align="center">❖ ❖ ❖</div>

Students are not aware of their foreign language shortcomings and keep using incorrect language constructs and terms.

Hands-on activities. It seems common sense that hands-on activities are of benefit for students when learning new information and language expressions [16]. But this is rather based on general pedagogical principles. But the pure fact of hands-on activity does not necessarily stimulate language learning.

No self-reflection. Students often just apply the foreign language, but do usually not reflect on their language use.

Insufficient feedback. As teacher there is not enough time to correct all occurring incorrect language uses of students. The students are therefore missing sufficient feedback needed for correction and improvement of their language use.

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Therefore: Stimulate foreign language learning by including exercises or other appropriate course parts which require a collaborative reflection on language usage.

Westhoff [22] explains that language learners often do not apply grammatical rules they have learned in grammar classes, even though they understand them. It appears that in language learning, people in fact apply grammar rules they deducted from input they were exposed to. They have all kinds of assumptions and hidden knowledge in the back of their minds, which become clear the moment they try to express themselves in a foreign language. So even students who passed their grammar tests and did their vocabulary exercises, will not immediately use this knowledge in actual communication. However, when talking or composing a joint text, they will become aware of their lack of knowledge, by themselves or as pointed out by others. When given frequent corrective feedback, either by peers or by teachers, students' accuracy, correct use of expressions and grammar rules will improve [22].

The usage of language to indicate an awareness about their own, or their interlocutor's, use of language is called *Metatalk* [21]. Metatalk helps in acquiring CONTENT-COMPATIBLE LANGUAGE, as students discuss different ways of saying something and therefore broaden their vocabulary and means of expression. This helps students in making use of foreign language learning strategies.

It is important that metatalk is encouraged in contexts in which learners are engaged in making meaning. Implementation can be through a dictogloss task [21]. E.g. read the description of a pattern to the students, let them write down familiar words and phrases and afterwards have them reconstruct the pattern based on their shared resources. These can then be compared with the original text. Another possibility is a jigsaw story construction task (give some pictures in unsorted order, let students sort them and write the story down).

If one student in the group is really good, chances are that all the others are following this student, omitting discussions on language usage. So you have to be aware of this when forming groups of students which are to work together. Encourage all members to participate in applying METATALK.

This pattern makes use of LUCKY LANGUAGE CLOVER, as discussions are mostly done orally and the results are manifested in written form. These written results could also be used for the LANGUAGE MONITOR.

METATALK can also be stimulated in a PEER FEEDBACK [19] situation, as also suggested by De Graaf et al. [9]. The artifacts feedback is given on should be made using the foreign language.

In a course on Model Driven Development, Christian Köppe let students document a problem that students experienced during the implementation of their assignments. These assignments were done in pairs. The students had to prepare a joint presentation of the problem. The requirements

for this presentation were an accurate description in proper English of the whole problem including context and other relevant information, as well as possible solutions they had already tried. The preparation also required the students to not only discuss what their problem actually was, but also how to describe it in correct English. This process promoted METATALK *in combination with the* LUCKY LANGUAGE CLOVER *and led to good presentations.*

LANGUAGE ROLE MODEL

You are asked to give a course in a foreign language.

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Learning is also imitating, but imitating incorrect language usage of a teacher will affect the students' learning of the language negatively.

Mother Tongue. Not all teachers who give a course in a foreign language are native speakers of this language. Their own language skills might be limited.

Qualification. Teaching content in a foreign language requires the ability of doing so. Evenly important is the ability to *select* and *apply* the appropriate instructional options.

Linguistic Confidence. The combination of teaching a specific content while using a foreign language correctly can be overwhelming, as it requires a greater repertoire of instructional options as fallback if observations indicate that the used option does not work for the students [18].

Facilitation. The teacher should have the facilities needed for teaching content in a foreign language. These facilities include material, time for preparation (including INPUT SELECTION and general course design), and, if necessary, additionally available language courses.

Curriculum objectives. If the language abilities of a teacher are sufficient for giving a specific course in a foreign language depends on the defined curriculum objectives regarding the foreign language.

Content-Focused. Swain observed that in cases when considerable teaching of content occurred, no or less attention was paid to the accuracy of the target language use [21].

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Therefore: make careful language preparations to ensure that you can instruct students using a foreign language in a correct way for all related language parts. Use the language during the course always as correct as possible.

As teacher you should be a LANGUAGE ROLE MODEL for the students and use the CONTENT-OBLIGATORY LANGUAGE, the CONTENT-COMPATIBLE LANGUAGE and the general language as correct as possible.

The process of implementing this pattern consists of three steps: (1) assess your level in the foreign language (free online resources are available, such as the Dialang test[2]) and compare it with the level of the curriculum objectives, (2) carefully prepare your classes to ensure that you as teacher are able to give the course using the foreign language in an appropriate way and (3) use your language consciously during the course while taking the different language aspects into account.

Proper language assessment will help you decide whether you are the right person to teach in a foreign language. Your level in the foreign language should clearly exceed the required level as defined in the language objectives of the curriculum.

People just acquiring specific skills are often unsure if they also can apply them sufficiently, even if the qualification to do so is sufficient. If this is the case it might help to rehearse parts of your classes in front of colleagues and ask for feedback. You could also videotape your classes and review them, to detect points of improvement.

Christian Köppe used this pattern for a course on Patterns & Frameworks. As he'd given the course in English before it was ensured that his language skills were appropriate. During the course he made use of CONTENT-OBLIGATORY LANGUAGE *and* CONTENT-COMPATIBLE LANGUAGE *in general and also at specific* COMMENTED ACTION*s.*

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[2] see `http://www.lancs.ac.uk/researchenterprise/dialang/about`, last visited on 13 june 2012

Related Educational Patterns

Some problems which can occur when teaching through a foreign language are already addressed by existing educational patterns. These related patterns are described in the following sections.

Extra Waiting Time

It is good practice to give students time for formulating an answer to the question raised by the teacher. The pattern PREGNANT PAUSE [15] addresses this issue. In a foreign language context this is especially important as students do not only have to think about an answer, but also need to formulate it. This requires therefore some extra time.

Student Activities

The students can be introduced to the Learning Patterns LANGUAGE SHOWER[10] and FOREIGN LANGUAGE EVERY DAY (unpublished yet).

Honor Questions

It is helpful to HONOR QUESTIONS [15] which are related both to the content and the language. This should be emphasized continuously.

Acknowledgements

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