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Learning to think about language step by step: a pedagogical template for the development of cognitive and reflective thinking skills in L1 grammar education

Astrid Wijnands, Jimmy van Rijt and Peter-Arno Coppen

ABSTRACT
Traditional L1 grammar teaching focuses on students’ learning the correct grammar rules rather than learning how to deal with grammatical issues in real life. This is mainly due to the fact that traditional grammar education suggests that language consists of sentences which are well-formed according to a fixed prescriptive norm. However, language is messy (especially spoken language), and even the analysis of written language is often unclear and controversial. Students generally do not learn how to deal with the differences between the prescriptive norms taught at school, language in real language situations, and their own language intuitions. They are not taught how to develop a more reflective attitude to tackle ill-structured language issues. Such a reflective attitude could be stimulated by a pedagogical approach to grammar that addresses higher order cognitive thinking skills and teaches students how to consult language resources. In this paper we combine a cognitive learning model with a reflective development model into a pedagogical template aimed at stimulating both cognitive learning and reflective development.

Introduction

Since the 1970s, L1-grammar teaching has been under discussion all over the world (Locke, 2010). This discussion mainly concerns the question ‘Why teach grammar?’ (Locke, 2010; Myhill, 2016; Van Rijt, De Swart, & Coppen, 2019). From an instrumental point of view it has been debated whether explicit knowledge of grammar enhances students’ literacy development, especially with regard to reading and writing (Derewianka, 2012; Graham & Perin, 2007; Hudson, 2001; Hudson & Walmsley, 2005; Myhill, 2010, 2018; Myhill et al., 2012; Van Gelderen, 2010). Empirical research has shown that traditional L1 grammar teaching, mostly based on parsing isolated sentences, has no beneficial effect on writing (Andrews, 2010; Andrews et al., 2006; Clark, 2010; Graham & Perin, 2007). However, from recent research it...
appears that a possible effect on writing development can be achieved by contextualized grammar teaching (Myhill, 2016; Myhill et al., 2012, 2018).

In L2 education, the main theme of discussion is the so called *interface debate*, dealing with the place of explicit linguistic knowledge versus implicit, automatized knowledge systems (Graus, 2018). Form-focused instruction, which is strongly associated with explicit declarative linguistic knowledge, appears to have its merits in L2 teaching according to some, but most profoundly when it is incorporated into a meaning-focused, more communicative approach (see e.g. Doughty, 2001; Ellis, 2008; Nassaji, 2017; Nassaji & Fotos, 2011).

From a more conceptual point of view, grammar instruction is not only teaching grammar terminology, but also understanding language as an object that is of the utmost societal, individual, and cultural importance (Hulshof, 2013; Van Gelderen, 2010; Weaver, 2010). The aim then is rather to make language interesting and meaningful to students (Hulshof, 2013) by focusing on educating topics such as language acquisition and language variety. From this point of view, issues related to the relationship between grammar and literacy development are of no consequence.

From the onset of the grammar debate in the 1970s, educational researchers and curriculum developers have tried to enrich or even replace traditional grammar teaching based on isolated parsing exercises by approaches aimed at a more reflective attitude towards language. In the early years, several attempts were made to translate the new Chomskyan grammar for the secondary classroom (e.g. in the Netherlands Dort-Slijper et al., 1975), or incorporate Halliday’s Functional Grammar (later on Systemic Functional Grammar, notably in Australia and New Zealand). Also, grammar teaching was altered to become a more linguistic teaching by addressing issues from sociolinguistics, pragmatics, or psycholinguistics. These approaches were focused on teaching students to think about grammar, or investigate language in the context in which it is used (Derewianka, 2012; Derewianka & Jones, 2010; Myhill, 2016). Although relatively unsuccessful at first, research into grammar teaching enrichment has never ceased to exist, and in recent years, there seems to be a renewed interest in a more reflective grammar teaching (cf. Boivin et al., 2018; Rättyä et al., 2019).

Whereas Locke (2010) and Myhill (2018) concentrate on an Anglophone context, similar research is conducted for other language areas. Notably, in Francophone regions, traditional grammar from the pre-1970s was developed into a modern grammar (‘grammaire nouvelle’) emphasizing the syntactic properties of phrases and sentences (see Boivin, 2018, p. 3), and giving rise to a more heuristic method stimulating students to follow the empirical cycle of first observing the data, then formulating hypotheses, testing them, and finally formulating rules that to be applied in other contexts, which again can be carefully observed. Successful classroom implementation of the *grammaire nouvelle* was reported in several studies (for references, see Boivin, 2018). In the Spanish-speaking areas, the focus is more on (sociocultural) interactions in grammar learning (see Camps & Fontich, 2019; Fontich, 2014; Fontich & García-Folgado, 2018; Ribas et al., 2014). According to this approach, students should be challenged by teachers to observe language together in groups in order to develop their metalinguistic capacity. In the German-speaking area (see Funke, 2018; Trozke & Kupisch, 2020), the quality of grammatical knowledge and the development of linguistic skills is addressed, starting from a more formal (or even structuralistic) linguistic perspective. In all of these recent publications, a more reflective approach to grammar education is advocated, in order to develop some form of metalinguistic awareness of the students.
Although developments towards a reflective grammar teaching are a big step forward, it can be observed that in practice, even more modernistic grammar teaching still predominantly focuses on making the appropriate grammatical choice in a certain context. This is still in contrast with the way in which linguistic experts study language. Linguists typically do not aim at establishing correctness or appropriateness, but rather at investigating, using higher order reasoning skills, structure and meaning of language utterances in context (cf. Anderson & Krathwohl, 2001; Bloom, 1956; Coppen, 2011, 2012; Honda & O’Neil, 2007; Janssen et al., 2019). From this point of view grammar teaching is about teaching students to think like linguistic experts (cf. Van Rijt, De Swart, Wijnands, et al., 2019), and not solely focusing on improving language proficiency. The question remains, however, how this might be achieved.

This paper tries to take up this challenge by investigating how (grammar) education can stimulate higher levels of metalinguistic understanding (Chen & Myhill, 2016, p. 107; Van Rijt, De Swart, & Coppen, 2019). A prerequisite for triggering these higher levels is not to confront students with clear-cut grammatical choices, but rather with problematic language issues for which a clear solution does not exist or an appropriate choice is difficult or even impossible to make, (so called ill structured problems in the sense of Kitchener (1983)). For instance, consider the problem of subject-verb agreement with subjects as ‘You or I’ in sentences such as ‘You or I ARE/AM the winner’. It is not clear at all what would be ‘the right choice’ in these cases. Those problematic, ill-structured language problems ask for a critical and reflective attitude: students have to observe language from a broad perspective, from different point of views and in dialogue with others to underpin or change their opinions (Fontich, 2014; Van Rijt, Wijnands, et al., 2019). Adopting this way of teaching in L1 grammar education is likely to develop students’ insight into language and a pro-active research disposition regarding language issues (Van Rijt & Wijnands, 2017). This is not only important for their development during secondary education or higher education, but it also will ‘facilitate students’ access to a literate society’ (Fontich, 2014, p. 279).

This paper addresses the question ‘What are the pedagogical means to teach students about the workings and structure of language in a more reflective way, using higher order thinking skills?’ For now, we will approach this question from a theoretical perspective. Building on well-established, existing models of cognitive and reflective learning, a template for a new grammar pedagogy will be derived that enables teachers to develop students’ thinking skills for investigating language issues and stimulates the development of their epistemic attitude towards linguistic resources, such as reference grammars and language advice literature. First, we will elaborate on the structure of this template, then we will show different contexts in which this template can be used. A systematic testing of the template in actual classroom practice is postponed to future research (Wijnands et al., forthcoming).

**The development of cognitive and reflective thinking in grammar education**

We will start by elaborating on the exact nature of this reflection. For stimulating reflection it is important to let students reason from different perspectives.

Any language issue can be viewed by students from three perspectives (Coppen, 2011, 2012; Van Rijt & Wijnands, 2017): the perspective of the prescriptive grammar rules (how am I supposed to do this?), the perspective of language reality (how do people actually do this?), and the perspective of the individual language intuitions (how would I personally do this?).
Prescriptive grammar rules focus on what is right and wrong in language. The prescriptive norm has always been an important topic of education and many prescriptive rules are given in textbooks, language advice books and on language websites (cf. Hubers et al., 2020). One of the main reasons teachers teach their students these rules is because they themselves have learned them, and they simply pass them on to the next generation (see Hulshof, 2002). Moreover, teachers tend to rely on simple, prescriptive rules also because they do not feel confident about their own linguistic knowledge, which indeed, as studies show, is often rather poor (e.g. Alderson & Hudson, 2013; Borg, 2003; Giovanelli, 2015, 2016; Jones & Chen, 2012; Myhill, 2000, 2003, 2005, 2018; Sangster et al., 2013; Van Rijt & Coppen, 2017; Van Rijt, De Swart, Wijnands, et al. 2019; Van Rijt, Wijnands, et al., 2019).

From a language reality perspective, a language issue can also be considered in the context of the language we hear (and see) around us. This is the language produced by language users irrespective of its accordance with the grammatical norm (Coppen, 2011, 2012; Van Rijt & Wijnands, 2017). Language reality can be explored on patterns of use, on socio-cultural variation, or historical change. A certain language form can be condemned by prescriptive rules, but it may flourish in certain contexts.

The third perspective to approach a language issue is the perspective from the a student’s own, unique intuition. This intuition may correspond to the language intuitions of other language users, but it can also be different (see e.g. De Hoop, 2016), giving rise to interesting discussions with peers, and the awareness that language is in a way an individual phenomenon. Traditional grammar education often aims at forcefully adapting the students’ intuition to the prescriptive norm, but in linguistic research, the native speaker’s intuition is considered a powerful source in the construction of theoretical descriptions of language (cf. Broekhuis, 2016).

These three perspectives often cause tensions. This is exemplified in the Dutch case of the use of the third person plural pronoun *hun* (‘them’) (Van Rijt & Wijnands, 2017). In spoken Dutch, the use the third person dative plural pronoun *hun* (‘them’ in subject position is very common (see Cornips, 2001; Jansen et al., 2019; Stroop, 2012; Van Bergen et al., 2011; Van Hout, 1989), as can be seen in Examples 1 and 2.

1. Hun hebben gewonnen
   - They have won
   ‘They have won’

   This is language reality, but it is not in accordance with the prescriptive norm. The correct grammatical form is *zij* (‘they’), since, according to prescriptive norm, ‘zij’ is the nominative case, which is required for the subject:

2. Zij hebben gewonnen
   - They have won
   ‘They have won’

   In language reality then, both 1 and 2 occur frequently, but the prescriptive norm rules exclude 1. This also conflicts with varying language intuitions: certainly for people using 1 this is a perfectly normal sentence. Yet for others, it not only violates a prescriptive norm, but also their own intuitions. As a result, often vehement discussions fluctuate between realistic, intuitional and normative perspectives, causing misunderstandings and incomprehension. Linguistic L1 education should provide the means for students to discuss these matters in a more profound way (Van Rijt, Wijnands, et al., 2019).
As remarked above, teachers and educators are often mainly concerned with the prescriptive norm. Society and government demand that this norm be taught. Consequently, grammar education in most countries is mainly aimed at achieving this goal (Van Rijt & Coppen, 2017; Watson, 2015). Moreover, there is a discrepancy between classroom practice and the official curriculum on grammar education: classroom practice is still more traditional than the official curriculum suggests (Van Rijt, De Swart, & Coppen, 2019). This seems to be mainly due to the aforementioned fact that linguistic knowledge of the teachers is underdeveloped (Alderson & Hudson, 2013; Hudson, 2016; Paterson, 2010). Because of their own low competence and subject knowledge in grammar, teachers generally are not able to prepare students to deal with linguistic issues or uncertainties (Alderson & Hudson, 2013; Boivin et al., 2018; Funke, 2018; Giovanelli, 2015; Hudson, 2016; Macken-Horarik et al., 2018; Van Rijt, De Swart, Wijnands, et al., 2019). As a result, education lets students down as far as dealing with the tensions between the prescriptive norm, language reality, and their own language intuitions. They are often exclusively taught about the prescriptive norm.

**Pedagogical means for the development of cognitive and reflective thinking**

In order to explore what pedagogical means can be applied to teach students to think about language issues from the perspectives sketched above, we will turn to two well-established models of cognitive and reflective learning. The first model is the framework for thinking by Moseley et al. (2005), which focusses on cognitive thinking and learning, especially on the characteristics of the mental activity of meaningful thinking. The second model is the Reflective Judgment model by King and Kitchener (1994) aiming at describing the development of reflective thinking. The model depicts the development of the epistemic assumptions individuals have about knowledge and knowing.

**Cognitive thinking and learning**

In Moseley et al. (2005), a review of 41 individual frameworks for understanding learning and thinking is conducted. Following the observation that most models are in some way based on similar principles (loosely associated to Bloom’s taxonomy from 1956), Moseley et al. succeeded in combining all frameworks into a three-tier model for cognitive learning. The model consists of the following stages: *information gathering, building understanding*, and *productive thinking* (see Figure 1). As Moseley et al. (2005) state, this framework can be used as a general guide for thinking but also as a help for formulating learning objectives. According to them thinking in education is a goal-directed process that takes place when ‘there is some uncertainty that a satisfactory end is achievable’ (p. 296). Triggered by this uncertainty, the first stage is gathering information about the issue or problem from memory or through perception, asking questions such as ‘What do I already know about this issue?’ and ‘Did I receive any information about this issue?’. In the next stage, the information thus gathered is further elaborated by manipulating, for instance through working with patterns and sharing ideas in order to understand the issue. A relevant question might be ‘How can I reformulate the issue or problem?’ or ‘To what extent can I examine this issue?’ The final stage concerns higher-order thinking. In this stage, the issue is understood or judged through systematic enquiry, reasoning, understanding causality, problem solving, creative and critical thinking. At that stage, questions like ‘How can I handle this problem?’ and ‘Which relevant
Engagement with and management of thinking/learning, supported by value-grounded thinking (including critically/reflective thinking)

<table>
<thead>
<tr>
<th>COGNITIVE SKILLS</th>
<th>Information gathering</th>
<th>Building understanding</th>
<th>Productive thinking</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experiencing, recognizing and recalling</td>
<td>Development of meaning (e.g. by elaborating, representing or sharing ideas)</td>
<td>Reasoning</td>
<td></td>
</tr>
<tr>
<td>Comprehending messages and recorded information</td>
<td>Working with patterns and rules</td>
<td>Understanding causal relationships</td>
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<tr>
<td></td>
<td>Concept formation</td>
<td>Systematic enquiry</td>
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<td></td>
<td>Organizing ideas</td>
<td>Problem-solving</td>
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<tr>
<td></td>
<td></td>
<td>Creative thinking</td>
<td></td>
</tr>
</tbody>
</table>

**Figure 1.** The integrated model for understanding thinking and learning adopted from Moseley et al. (2005, p. 314).

sources can help me in tackling this issue?’ occur. This is a stage of productive thinking, leading to a deeper understanding of the issue or problem. Moseley et al. (2005) state that productive thinking needs time to develop since it is a matter of disposition or habit of mind.

Turning this model into an integrated model, Moseley et al. (2005) add another layer on top of this model, representing reflective and strategic thinking, not only referring to awareness and control of thinking but also relating to motivation, emotion and affect (see Figure 1). In every stage of cognitive thinking, this reflective and strategic thinking influences the process. Unlike cognitive thinking, which can become automatic, this kind of metacognitive thinking is conscious, meaning that this it has a purpose, and it is monitored and evaluated by the individual agent. When this kind of thinking occurs, learning becomes meaningful (cf. Moseley et al. 2005). Cognitive skills may be applied without strategic and reflective thinking, but strategic and reflective learning is impossible without applying cognitive skills.

Although Moseley et al. (2005) present their model as a linear one, they admit that in the process of developing productive cognitive thinking, some unconscious backtracking may occur, causing for instance an individual to return to gathering information if in the stage of building understanding new information is needed. However, although Moseley et al. stress that the two-level model is a representation of how people think and learn to think and not a multilevel hierarchy, they consider it an appropriate tool for ‘use in planning and evaluating courses and curricula’ (Moseley et al., 2005, p. 316).

**The development of reflective thinking**

In the integrated framework of Moseley et al., the strategic and reflective component is not further specified or elaborated upon. The well-known model of reflective thinking developed by King and Kitchener (1994, 2002, 2004) describes the development of reflective thinking...
from late adolescence through adulthood. It is grounded in the work of Dewey (1933) who stated that reflectivity is an important key for learning. When individuals face a problem that cannot be solved by formal logic alone, they search for knowledge through a process of inquiry and reflection. Each possible solution is open for further evaluation and deeper understanding in this ‘condition of mental unrest and disturbance’ (Dewey, 1933, p. 13). According to King and Kitchener (1994), this process can lead to well-grounded solutions and help people to become better problem solvers. A prerequisite for reflective thinking is the epistemic assumption that uncertainty exists. Reflective thinkers acknowledge the existence of the aforementioned ill-structured problems.

In their research on how late adolescents and adults understand and judge ill-structured problems, King and Kitchener (2002) found (1) a remarkable difference in the epistemic assumptions among individuals, (2) a relationship between these epistemic assumptions and the way individuals judge ill-structured problems, and (3) development in the judgement of these problems. In their Reflective Judgment Model, King and Kitchener (1994) describe this development. They distinguish three main stages in the growth of reflective thinking resulting from three subsequent epistemic beliefs.

The first stage of development is called the pre-reflective stage. In this stage, the individuals reason from the epistemic belief that knowledge is correct, absolute, certain, and guaranteed by observation and authority. There is only one answer to all questions and when this does not seem to be the case, the answer is temporarily uncertain, because the evidence has not yet become clear.

Individuals moving to the next stage realize that data can differ and that authorities can have different opinions and points of view. When they come to the conclusion that some issues are really problematic, these thinkers enter the quasi-reflective stage where their epistemic assumption is that knowledge is subjective and can differ among individuals. For these individuals, ‘evaluation is individualistic and idiosyncratic’ (King & Kitchener, 1994, p. 16). The trigger for further development is the understanding that knowledge should be based on evidence, and that there must be a relation between beliefs, evidence and arguments. Quasi-reflective thinkers become reflective thinkers when they realize that knowledge must be constructed and understood in relation to context and evidence. In this reflective stage they acknowledge that a problem can be dealt with using different solutions, which can be compared and evaluated to come to a justification of the problem. In doing so, they realize that any solution is also open for alternatives and counterevidence.

A pedagogical template for the development of linguistic thinking

Comparing Reflective Judgement theory with the model for the development of cognitive thinking, it can be argued that they complement each other. Depending on their current stage of reflective thinking, people will be likely to respond accordingly to the uncertainty that triggers cognitive thinking. For instance, a pre-reflective individual will start the cognitive process in search of only one possible answer, which is supposedly attainable through observation or consulting authorities. However, a quasi-reflective individual will rather prefer starting an argumentation, and be open for different opinions given by different authorities. A reflective individual will prefer gathering evidence and contextual information. In this way,
reflective thinking influences the way individuals further develop their cognitive thinking, and presumably conversely.

Taking the comparison one step further, it can be argued that the cognitive process described by Moseley et al. represents a kind of convergent thinking. Development proceeds in a goal-directed manner, aimed at some solution in the form of conceptual understanding or integrating new concepts into productive thinking. Reflective development, on the other hand, can be characterized as a kind of divergent thinking. With each stage, more context is taken into account. First, more authorities, more points of view, then more arguments, and finally more contextual evidence.

Moseley et al. (2005) try to integrate cognitive and reflective thinking in a model by simply distinguishing them as different components, loosely stating that they influence each other. From the comparison above it seems that a better way to integrate the two is by putting them in a matrix. Since each reflective stage influences an individual’s actions in each stage of cognitive development, working from three stages per model gives us nine different combined stages (see Figure 2).

First and foremost, this integrated model represents stages of combined reflective and cognitive development (see Figure 2). For instance, the upper left cell (P-IG) is an individual in a pre-reflective stage confronted with an incentive (cognitive friction) to gather information. The middle cell (Q-Bu) represents a quasi-reflective individual in the cognitive stage of building understanding. Such an individual will be aimed at setting up a solid argumentation to prove a point. The bottom right cell (R-PT) is a reflective individual able to tackle complex, context-dependent language issues by combining new cognitive concepts in a creative manner. If Moseley et al.’s model and Reflective Judgement theory are on the right track, these nine stages automatically follow.

Of course, real life reflective and cognitive development will not always proceed in a linear fashion (as Moseley et al. already admitted). However, the model represents the overall
pattern in the development. What is more important, however, is that the model is an appropriate tool for ‘use in planning and evaluating courses and curricula’ (Moseley et al., 2005, p. 316). It is a pedagogical template.

Using the matrix model as a pedagogical template, for each combination of reflective and cognitive development, a pedagogical arrangement can be designed satisfying the needs of the learning individuals in this stage. For instance, departing from a cognitive uncertainty, a reflective individual will most likely want to proceed in a divergent way, searching for more evidence and context. A pre-reflective individual on the other hand, will be focused on converging to the supposedly one and only correct solution to the problem. And even if reflective individuals proceed in a converging fashion, they will experience a need for diverging to more context.

Within the domain of linguistics, this pedagogical use of the matrix model can be illustrated in more detail. The three stages of cognitive thinking give learners an excellent opportunity to explore a linguistic issue. They can gather information about the issue by making use of language reality and their own language intuitions. They can build further understanding by manipulating the linguistic issue, working with language rules and patterns on word, sentence or construction level, and conceptualizing the issue. In the final stage of productive thinking, they can come to a final understanding of the problem.

It is important to realize the difference between a pedagogical template and a model depicting development. Whereas development may show backtracking and even relapse, a pedagogical template considers the preferred direction to go in every given situation.

**How the pedagogical template can be used in teaching**

A predominant focus on correct solutions to language issues likely leads to a fossilization of pre-reflective thinking and lower order thinking skills. The pedagogical template for grammar teaching (Figure 2) intends to expand both the cognitive and reflective thinking skills of students and teachers. It can be used for developing assignments about ill-structured language problems, and it can also be used as a tool for observing the cognitive and reflective thinking skills of both students and teachers to measure their cognitive and reflective linguistic competence. The template can help teachers to develop their own linguistic competence.

When the pedagogical template for grammar teaching is taken as an instrument for creating assignments about language issues, there are different routes for triggering students to develop their cognitive and reflective skills. First of all, students must be intrinsically motivated to think about a given language issue (Ryan & Deci, 2000). Therefore, the ill-structured problem should be a language issue that students recognize and that creates a certain cognitive friction (Moseley et al., 2005), which is believed to trigger intrinsic motivation (Coppen, 2011). Starting at a pre-reflective thinking stage (in box P-IG), the cognitive friction could be that students experience that there is a conflict between the use of a certain language form (language reality) and the prescriptive norm. For instance, traditional grammar warns us against ‘dangling modifiers’ as in ‘Sitting on a bench, the sun set’, so why do they occur? And what is wrong with ‘Enclosed you will find a personal letter’ (see also Pinker, 2014)?

The discovery of such a conflict is likely to make students eager to know the correct rule. In the box ‘pre-reflective - gathering information’ (P-GI), they will use their own language
intuitions for judging sentences with dangling modifiers as acceptable or as unacceptable. In the box ‘pre-reflective - building understanding’ (P-BU), students learn how to recognize dangling modifiers. They will discover the properties of dangling modifiers in order to understand why those modifiers are seen as grammar mistakes and to learn how to apply the correct rule for non-finite modifiers. For instance, they find out that school grammar dictates that the subject of a non-finite clausal modifier has to be identical to the subject of the main clause. Therefore, ‘Sitting on a bench the sun set’ is an error. They learn to reformulate this incorrect sentence into the correct sentence ‘Sitting on a bench we saw the sun set.’ The final box, named ‘pre-reflective - productive thinking’ (P-PT) may seem surprising in this pre-reflective stage, because building understanding concerns higher order thinking and pre-reflective thinking is characterized by the use of lower order thinking skills. However, in the P-PT box, students are introduced to higher order thinking skills, such as basic analyses of these ‘dangling modifiers.’ They will be able to reason on their own about those linguistic issues rather than through transmission of information by a teacher. In the P-PT box, students will consult a reference grammar or language advice for confirming or adjusting the explorations they conducted in the box ‘building understanding’ (P-BU). They will also learn that in these resources dangling modifiers are judged from ‘unacceptable’ to ‘less objectionable’ to ‘institutionalized’ in the case of sentences, such as ‘Enclosed you will find a personal letter’ (see Quirk et al., 1985). They will find out that the judgements they made about the sentences with dangling modifiers in the P-IG-box might conflict on one hand with the strict prescriptive rules they investigate in the P-BU-box but might be in line on the other hand with the descriptive information in linguistic resources. In other words, these pre-reflective assignments do not only stimulate the students to reason in a convergent way to a correct solution, but also make a start with applying their knowledge and language intuitions to reasoning about counterexamples or comparable issues. This will stimulate their abstract and divergent thinking about linguistic issues.

Assignments can be complemented with a ‘toolbox,’ consisting of tools to tackle linguistic problems. For instance, the subject of the non-finite clause may be made visible by a reflexive verb: ‘Amusing ourselves on a bench, the sun set.’ While the assignment tells students what to do, the tools from the toolbox help them as to how to do it. There are tools for developing basic grammar skills, such as writing down similar examples from memory, classifying word (groups) or sentences, manipulating word order in sentences, comparing languages, but also doing a query in a database, reading instructions on how to consult reference grammars and so on (in other words: the toolbox helps students to reason linguistically (Fontich & García-Folgado, 2018; Honda & O’Neil, 2007; Van Rijt, Wijnands, et al., 2019; Van Rijt, De Swart, Wijnands, et al. 2019). Although tools are available at all stages, some tools may be more appropriate in specific stages (e.g. consulting reference grammars is best in the stage of gathering information) or even less appropriate in others (e.g. consulting reference grammars may be confusing for pre-reflective thinkers in the first two pre-reflective boxes). Students can explore their own creative thinking about language using tools if needed. Hence, these tools prevent teachers from unwittingly hindering the development of linguistic thinking by students, turning it into habitual actions and automatic routines (Fontich, 2016; Havekes et al., 2012).

An alternative route through the pedagogical template for grammar teaching could be that students after finishing the first assignment (in the box P-IG) proceed in a vertical direction, conducting the assignment in box ‘quasi-reflective – information gathering’ (Q-IG). From there, they can continue doing assignments horizontally. For example, by consulting
databases of written or spoken language, they can discover how often and in which context in real language this particular language problem occurs. They may find that dangling modifiers are a common phenomenon, and in some cases (if the modifier is placed elsewhere and the intended subject is obvious) the result is quite acceptable. Or they may relate the dangling modifier to infinitival complements and their subjects. In a stage of building understanding, they may try to make sense of this variation by formulating logical principles that govern the choice of subject in an non-finite clause, or they may explore different contexts (like English by non-natives or historical English), in order to come to a more sophisticated assessment of several dangling modifier phenomena. In the final box of the quasi-reflective line (Q-PT), students will formulate for themselves which rule they are willing to apply in which context. In any stage, students can also proceed with the assignments along the reflective route. In this route, they learn to think in a (more) professional linguistic way, investigating ill-structured problems, finding out which linguistic concept causes or explains the observed variation. Students will also compare different linguistic resources and conclude that different linguistic structures have their pros and cons, and they can take a well-considered decision in which context this structure is correct and in which context it is not (Coppen, 2011).

In summary, a route through the pedagogical template for grammar teaching can proceed in both horizontal and vertical directions. By means of scaffolding (Fontich, 2014; Weaver, 2010; Wood et al., 1976), students must not only be tempted but also be facilitated to move on to a next stage in the model. This temptation and facilitation can be attained by exploring the ill-structured language problem from the three aforementioned perspectives: prescriptive norm, language reality, and language intuitions. Students can make steps from each box to another by asking themselves the question ‘OK, so what does this mean?’ This question triggers them to move in a horizontal direction, the question ‘OK, but how does this compare to…’ to move in a vertical direction (see Figure 3).

The challenge for the grammar assignment developer is to make sure that the student can choose any direction from any stage. This means that the prior knowledge and skills of each box should be provided in any route from the starting point. For example, the prior

<table>
<thead>
<tr>
<th>Stages of reflective thinking (King &amp; Kitchener, 1994)</th>
<th>Information-gathering</th>
<th>Building understanding</th>
<th>Productive thinking</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-reflective</td>
<td>P-IG</td>
<td>P-BU</td>
<td>P-PT</td>
</tr>
<tr>
<td>Quasi-reflective</td>
<td>Q-IG</td>
<td>Q-BU</td>
<td>Q-PT</td>
</tr>
<tr>
<td>Reflective</td>
<td>R-IG</td>
<td>R-BU</td>
<td>R-PT</td>
</tr>
</tbody>
</table>

**Figure 3.** Pedagogical template for grammar teaching, including triggering questions.
knowledge and skills for the quasi-reflective box ‘building understanding’ (Q-BU), the box in the middle of the template, should be acquired in the quasi-reflective box ‘gathering information’ (Q-GI) when students think in a convergent way, following the horizontal line in the template. But when students think in a divergent way, following the vertical line in the template, the prior knowledge and skills of the quasi-reflective box ‘building understanding’ (Q-BU) should be acquired in the pre-reflective box ‘building understanding’ (P-BU).

Another important aspect for grammar assignment developers is the stimulation of dialogue between students. In grammar teaching the employment of dialogic discussion and collaborative investigation for developing students’ reasoning about language issues enables students to reason actively on the language forms (see Camps, 2014; Fontich, 2014). Students are stimulated to compare their own language intuitions with their peers, and investigate language reality and the prescriptive grammar rules. Hence, to facilitate the development of cognitive and reflective thinking, the assignments in this template are preferably to be implemented as a peer group dialogue of students work in peer groups, talking with each other about the given language issue, while making use of possible tools from the toolbox for the direction of their talk (Havekes et al., 2012; Mercer, 2000).

In addition to serving as a pedagogical template for creating assignments and toolboxes for teaching cognitive and reflective thinking, this template for grammar teaching can also be used as a tool for observing the cognitive and reflective thinking skills of students as well as teachers to measure their cognitive and reflective linguistic competence. From the way students analyze language issues using the three perspectives prescriptive norm, language reality, and language intuitions, students’ reflective and cognitive development can be assessed. The more cognitively students think, the more they will move from lower thinking skills, such as remembering and applying, to higher order thinking skills, such as analyzing and evaluating. The more reflectively students think, the more they are inclined to take different perspectives into account, the more they discover the tensions that occur between the three perspectives that play a role in language matters, and the more they will be able to draw balanced and well-argued conclusions for linguistic problems.

In addition, teachers can test their own reflective and cognitive thinking competence with this template. According to Van Rijt, Wijnands, et al. (2019), teachers are open to embracing a more reflective way of grammar teaching. However, in practice the textbooks they use do not stimulate this kind of thinking and teachers are not well-enough equipped for stimulating this kind of thinking because of the lack of their conceptual linguistic knowledge. This lack of conceptual knowledge inhibits teachers in helping their students to make well-informed decisions about language issues (Denham & Lobeck, 2010; Hudson, 2004; Van Rijt & Coppen, 2017; Van Rijt et al., 2020). In this pedagogical template, teachers with weak linguistic knowledge (see Alderson & Hudson, 2013; Hudson, 2016; Myhill et al., 2013; Paterson, 2010) can use the toolbox to think in a more linguistic way. This can help them to stimulate and facilitate students’ reasoning about language (Gartland & Smolkin, 2016) and support students’ metalinguistic thinking (Myhill, 2003, 2005, 2018; Myhill et al., 2012, 2013). Students expect that teachers are the expert guide concerning linguistics. However, as Myhill (2005, p. 90) states: ‘Teachers often become dependent upon commercial teaching materials or support materials provided by curriculum authorities (…)’.
An obstacle for using this pedagogical template might be that teachers are not inclined to teach ill-structured language problems because they are used to teaching grammar in a pre-reflective thinking way (Chin & Chia, 2006; Havekes, 2015; Van Rijt, Wijnands, et al., 2019). Another obstacle might be that teachers do not have the confidence to teach problems they feel uncertain about (Giovanelli, 2015). However, since students are expected to be able to follow the steps in this pedagogical template by themselves (they have to make their own directional choices), the teachers’ linguistic knowledge and reflective capacities to think about linguistic issues is not crucial for the lesson. First and foremost, the teacher should be aware of the possibilities to proceed, and some of the repertoire or resources needed in each stage, and then think along with the students themselves.

### Conclusion and discussion

The main question in this article was ‘What are the pedagogical means to teach students about the workings and structure of language in a more reflective way, using higher order thinking skills?’ We argued that three principles are essential for achieving this goal: analyzing language from the perspectives of the prescriptive norm, language reality, and language intuitions by students; facilitating the development of cognitive thinking and stimulating the development of reflective thinking.

Building on the framework of Moseley et al. (2005) for learning cognitive thinking and the model of Reflective Judgment model of King and Kitchener (1994, 2002, 2004), we designed a template for a different grammar pedagogy: a pedagogical template for the development of cognitive and reflective thinking about grammar issues. This template for grammar teaching is a teaching template enabling teachers to design pedagogical arrangement to teach students using higher order thinking skills for the study of language and enhancing their epistemic beliefs about language rules and linguistic resources, such as reference grammars. The use of linguistic resources offers students a broad perspective on the language reality, since these resources demonstrate how professionals reason about language. The template can also be used as an instrument to test the cognitive and reflective thinking competence of students when facing a linguistic issue. We also pointed out that this template can be used by teachers for testing their own reflective and cognitive thinking competence.

It has to be taken into account that the pedagogical template in this paper has not been tested in the classroom yet. We are currently in the process of empirical testing in classroom practice, having worked out a full template for a certain linguistic issue, and observing how different types of students follow different routes through the template (in which several patterns emerge).

Another important issue for the evaluation and practical application of this template is the role of the teacher. According to Van Rijt, Wijnands, et al. (2019) teachers lack the conceptual knowledge necessary to teach their students to make well-informed decisions about language issues (see also Alderson & Hudson, 2013; Hudson, 2004). This omission can lead to a pre-reflective attitude of the teachers because they lack the skills to scaffold their students in the development of cognitive an reflective thinking. Although the toolbox can
partly solve this problem, there is still a risk of a normative teacher bias (Hudson, 2004). This focus on the prescriptive rules can stop the thinking process of students because they are inclined to look at teachers as know-it-alls (Mercer, 2000). Follow-up research should examine the role of the teachers when working with this template.

Additionally, another limiting factor for the development of cognitive and reflective thinking is the traditional way of assessing grammar. From Van Rijt, Wijnands, et al. (2019), it appears that textbooks strongly focus on lower order thinking skills and pre-reflective thinking skills. In current Dutch textbooks, 99 percent of all the exercises concern lower order thinking skills (Van Rijt, Wijnands, et al., 2019). Because of the constructive alignment between assessing and teaching (Biggs, 1996), current Dutch grammar assessing does not surpass lower order thinking skills either. Hence, working in the classroom with a pedagogical template that focuses on the development of both cognitive and reflective thinking should require the development of a more appropriate way of assessing, preventing that students only learn for the test and therefore remain pre-reflective thinkers. Instead, they have to learn to weigh different linguistic analyses from different perspectives. With the template presented in this paper both the cognitive linguistic development and the reflective thinking development of students can be stimulated and assessed.

The pedagogical template has been designed for L1 grammar teaching in the upper levels of secondary education. However, depending on the assignments and toolboxes, it can be applied to all levels of education. In fact, its core, the differentiation in cognitive and reflective learning, is not limited to L1 grammar teaching or in fact, even to language education. It can be used in every teaching situation in which ill-structured problems occur. Finding their own route through this template helps students developing their cognitive and reflective thinking skills. This form of creative learning can also stimulate and facilitate them to bridge the gap between secondary school and university studies in general.

**Note**

1. As stated in e.g. Taskforce Language/Expert Group Continuous Curriculum Language and Arithmetic (Werkgroep Taal/Expertgroep Doorlopende Leerlijnen Taal en Rekenen, 2008 for the Dutch situation); Flemish Alliance of Catholic Secondary Education (Vlaams Verbond van het Katholiek Secundair Onderwijs, VVKSO, 2014 for the situation in Flanders, Belgium); The National Curriculum in England (2013) for the situation in England (see DfE, 2014; Myhill, 2018; Paterson, 2010), and Australian Curriculum, Assessment and Reporting Authority (ACARA, 2009) for the Australian situation (see also Derewianka, 2012; Myhill, 2018)).

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