ARGUMENTATIVE SKILLS: A SYSTEMATIC FRAMEWORK FOR TEACHING AND LEARNING

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Abstract

In this paper, we propose a framework for fostering argumentative skills in a systematic way in Philosophy and Ethics classes. We start with a review of curricula and teaching materials from the German-speaking world to show that there is an urgent need for standards for the teaching and learning of argumentation. Against this backdrop, we present a framework for such standards that is intended to tackle these difficulties. The spiral-curricular model of argumentative competences we sketch helps teachers introduce the relevant concepts and skills to students early on in their school career. The focus is on secondary schools, but the proposal can also be of use for learning and teaching in universities, especially in introductory classes.

Keywords: informal logic; critical thinking; standards for argumentative skills; argument; argument reconstruction

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Introduction

Philosophy and Ethics classes pursue a number of important goals.[2] Furthering argumentative skills is undoubtedly among them. But how can these skills be fostered in a systematic way? In this essay, we propose an answer to this question. We suggest furthering argumentative skills by way of precise spiral-curricular standards. In section 1, we review curricula, school books, and other materials from the German-speaking world to show that there is an urgent need for such standards for the teaching and learning of argumentation. Our focus is on secondary schools, but the findings can also be of use for learning and teaching in universities, especially in introductory classes. In section 2, we begin to present our proposal in more detail. We wish to emphasize, however, that the proposal is in many ways still a draft. The framework is informed both by research in argumentation theory and by practical experience in schools. As such, it has already been revised and improved several times, but it can and should be developed further on the basis of practical experience and theoretical reflection.

1. Desiderata for the Teaching and Learning of Argumentation

It is largely undisputed that the development of argumentative skills is both a central goal of teaching in ethics and philosophy as well as of education generally. Accordingly, furthering argumentative skills is given great importance in the curricula and examination requirements for these fields,[3] as well as in the German-language discourse on the teaching of philosophy.[4] Evidence suggests that teachers also attach great importance to imparting argumentative skills. In a survey of philosophy and ethics teachers, almost 85% of the 71 respondents agreed that the ability to formulate and examine arguments were among the most important skills for students to obtain from philosophy and ethics classes (see Löwenstein, Martena, Burkard, Gertken 2020: 103–105).

Nevertheless, fostering such competences gradually and systematically can present difficulties for many teachers, especially with regard to younger learners whose competence development in this area is just beginning. Among other things, one can often observe that argumentative skills are assumed rather than systematically developed in lessons which involve argumentation, especially by teachers who are new to the job. The so-called PLATO method for the analysis of philosophical

[2] We also refer here to comparable school subjects with names that differ depending on the federal state or canton, such as "Werte und Normen" [Values and Norms] in Lower Saxony, "Philosophie / Pädagogik / Psychologie" [Philosophy / Pedagogy / Psychology] in the canton of Bern, or "Lebensgestaltung-Ethik-Religionskunde" [Life-Ethics-Religion] in Brandenburg. In Austria, philosophy and ethics education comprises, on the one hand, part of the subject "Psychology and Philosophy" and, on the other hand, the subject "Ethics" as an alternative to religious education, which was introduced as a school pilot project in 1997 and has just become a compulsory substitute subject for religious education from the school year 2021/22 onwards.

[3] See, e.g., Brun 2016; Dietrich 2003; Goergen 2015; Henke 2015; Pfeifer 2009; Pfister 2014; Roeger 2015; Rösch 2012: ch. 13.

[4] For Germany, see e.g. the "Einheitliche Prüfungsanforderungen für das Abitur Philosophie" (KMK 2006: 5f.) and Berlin's Ethics curriculum (Senatsverwaltung für Jugend, Bildung und Familie Berlin 2015: 6, 12f.). For Austria, see the curriculum "Philosophie und Psychologie. Für Gymnasium und Realgymnasium" (Bundesgesetzblatt 2016), the old curriculum for the school pilot project in Ethics (Bundes-ARGE Ethik 2017), and the draft of the new curriculum for Ethics in connection with the upcoming introduction of Ethics as an alternative compulsory subject to religious education, starting in the school year 2021/22 (Bundesministerium Bildung, Wissenschaft und Forschung. Bundes-ARGE Ethik 2020). In the following, we will speak of the "old" and "new" Ethics curricula in Austria, for simplicity's sake. For Switzerland, see e.g. the framework curriculum for Matura schools (EDK 1994: 84) and the curriculum for Philosophy as a supplementary subject in the canton of Bern (2017).

texts, for instance, requires much more detailed guidance than is commonly given, particularly regarding its third and fourth steps – "set forth the text's reasoning" and "evaluate the viability of the arguments". Methodological guidance for the evaluation of the viability of arguments is typically underdetermined in this respect: "Are the premises convincing? Are the definitions correct? Are the concepts appropriate? Has anything important been neglected?" (Wittschier 2010: 113–115, 214, our translation). School books also often feature exercises that invite students to discuss various questions without providing a definition for "argumentation" that is in any way different from the everyday use of the word.[5] If, however, specific and systematic argumentative competences are lacking, there is a risk that the argumentative exchange remains superficial, conceptually fuzzy, merely additive, and potentially faulty. Even if the subject matter in question is exciting, students often find argumentation itself to be a fruitless endeavor. One leaves the lesson none the wiser. The class is unlikely to make any progress with regard to the content of the philosophical issues. Methodological progress is even less likely. This frustrating experience can lead to a perception of philosophical discussions as largely arbitrary and fruitless (see also Burkard 2018: 117).

Competences do not arise out of nowhere, especially not during a single lesson. In this vein, it may, at first glance, seem advantageous that argumentative competences are mentioned in the lesson plans of various subjects, for instance German, Math, Social sciences, and foreign languages.[6] Accordingly, argumentative skills would not only be furthered in Philosophy and Ethics lessons but also in the context of many other subjects. At a second glance, however, one must consider that in the absence of a systematic foundation for argumentative competences, students are ill-equipped to develop them across a range of subjects and over an extended period. Argumentative abilities need to be developed systematically and by means of a spiral curriculum (see for instance, Althoff 2016b: 9). They must be "broken down" into specific sub-competences and skills, which can be acquired, practiced, applied, and reflected upon at different levels. These systematic foundations are primarily to be found in the domains of applied and informal logic as well as argumentation theory. Thus, they fall primarily within the purview of philosophy.[7]

However, so far, curricula for Philosophy or Ethics have only formulated rather general goals. They (often only roughly) set forth achievement levels for argumentative competence but fail to

[5] See, e.g., Fischill 2015: 16, 35, 197, 236f.; Rösch 2014: 28f.

[6] See e.g., Budke/Meyer 2015 for an overview of the importance of argumentation in various school subjects. The Austrian curriculum for Mathematics ("Unterstufe", i.e. for lower classes) states, e.g.: "The following basic mathematical skills are to be developed: [...] argumentation and precise work, in particular: precise description of facts, properties and concepts (defining); working with a conscious application of rules; justifying (proving); working with logical modes of reasoning; justifying decisions (such as the choice of a specific path towards a solution or a form of representation." According to the curriculum for the first living foreign language, teachers should promote the ability to "recognize [the] main conclusions in clearly written argumentative texts" and to "write [texts] in which arguments for or against a certain point of view are given [...] and explained" (see the relevant curricula in: Bundesgesetzblatt 2016, all translations ours). These formulations are even more specific than those found in the curriculum for Psychology and Philosophy (also in: Bundesgesetzblatt 2016) or in the new curriculum for Ethics (Bundesministerium Bildung, Wissenschaft und Forschung. Bundes-ARGE Ethik 2020).

[7] The fact that ethics and philosophy classes can establish the systematic foundations for argumentative competences for various school subjects is true insofar as they can teach the basic concepts of the theory of argumentation and establish a general understanding of justificatory reasoning. Nevertheless, the term "argumentative competences" is used in different subjects with different orientations, which differ, in part, from the competences presented here.

specify how and through which intermediate steps these are to be achieved.[8] Even in curricular requirements that do specify (sub)competences, the requirements and the necessary intermediate steps for the development of the abilities in question remain underdetermined.[9] Concrete standards must be set and (sub)goals for competences must be operationalized as a basis for the systematic and progressive furthering of argumentative skills, also by means of exercises that practice, apply, and reflect upon the relevant (sub)competences.

In Germany and Austria, commercial teaching materials and articles in practice-oriented journals are only occasionally suitable to close this gap. In Germany, an analysis of the relevant school books for the lower secondary level in various federal states shows that they are not designed for the systematic and progressive furthering of argumentative abilities and often make use of a vague or everyday concept of argument (see Burkard 2021). When the term "argument" is used at all, books often apply it in a manner synonymous with "reason" or "justification"[10] instead of introducing the three-part argument concept that is especially relevant for philosophy – where arguments are understood as connections between statements such that one or more of these statements, the premises, justify, or at least purport to justify, another statement, the conclusion. If this fundamental structure is not brought into view, a systematic examination of different reasoning structures and evaluative criteria for individual argumentative elements or errors can hardly take place. Although there are instances of a three-part conception of arguments in some of the books that were analyzed, this alone is insufficient. In one such instance, the concept receives an extensive introduction in the first chapter, only to be never used again in the remainder of the book. Accordingly, the volume lacks any additional exercises for furthering argumentative abilities in a targeted way (see Hack/Sänger 2013). In another school book, relevant terms such as "thesis", "argument", and "conclusion" are introduced in such a way that they cannot be reconciled with their standard uses in philosophy (see Rösch 2014: 28). The same book also lacks materials that could serve to systematically and progressively promote relevant argumentative skills.[11]

In the most popular Austrian school books, the three-part conception of arguments only appears in connection with formal logic, for instance in the presentation of syllogistics. When these books

[8] For Germany, see e.g. the curriculum for Practical Philosophy (Ministerium für Schule und Weiterbildung des Landes Nordrhein-Westfalen 2008: 15, 24f., 31), the curriculum for Ethics at secondary level I in Baden-Württemberg (Ministerium für Kultus, Jugend und Sport Baden-Württemberg 2016: 11f.) and the curriculum for the subject Values and Norms at secondary level I (Niedersächsisches Kultusministerium 2017: 15, 37f.). For Austria, see the curriculum for Psychology and Philosophy (Bundesgesetzblatt 2016) as well as the old (Bundes-ARGE Ethik 2017) and the new curriculum for Ethics (Bundesministerium Bildung, Wissenschaft und Forschung. Bundes-ARGE Ethik 2020). The explanations in various Swiss curricula also remain very general. E.g., relevant basic skills for the subject of Philosophy in the canton of St. Gallen are outlined only as follows: "Be able to present complex relationships with conceptual clarity and stringent logic" and "Analyze and consider philosophical texts with regard to form and content" (Lehrplan für das Gymnasium im Kanton St. Gallen 2008: 168, our translation); see also the curricula given in fn. 4.

[9] For Germany, see e.g. Ministerium für Schule und Berufsbildung Schleswig-Holstein 2016: 17, and Senatsverwaltung für Jugend, Bildung und Familie Berlin 2015: 14f. Among the Austrian curricula for Philosophy or Ethics classes, the most detailed description of argumentative skills can be found in the old version of the curriculum for Ethics: "Arguing and judging: - Making a well-founded (complete and conclusive) judgment in an argument; - Connecting personal opinions with arguments supporting other positions and - Arguing interactively; - Reflecting on argumentation processes and one's own ways of thinking" (Bundes-ARGE Ethik 2017: 5, our translation).

[10] See, for instance, Eisenschmidt 2012: 99, 223; Michaelis/Thyen 2012: 197, 216f.

[11] See Burkard (2021) for more detailed discussion of the examples given in this paragraph, as well as other examples from school books, different teaching materials, and curricula.

do deal with the nature and structure of arguments (which is rarely the case), formal logic (its history and forms) remains dominant over applied and informal logic as well as argumentation theory.[12] In one such book, one finds only a very short section on "Argumentation Theory" at the end of the chapter on "The Logical and Logic". This section, after the introductory sentence "There are, however, many arguments that cannot simply be reduced to the standardized forms of logic", offers only a list of potential fallacies (Liessmann, Zenaty, Lacina 2016: 41–43, all translations ours). This gives rise to the impression that formal logic is responsible for valid forms of inference while argumentation theory exists only to cover erroneous forms. This view is not only untenable in substance, but it also raises the question of the relative value of formal and informal logic for the teaching of philosophy in schools. Formal logic (rightly) has a prominent status in philosophy, much less so argumentation theory, which also includes informal reasoning. In reference to the teaching of philosophy in schools – especially in view of the limited time allotted to it – the question arises how sensible it is to teach syllogistic forms, types of statements, the square of opposition, truth tables, etc., while at the same time not even establishing the three-part conception of arguments.

Since Philosophy and Ethics classes in schools should above all be concerned with the education of young people who mostly do not plan to study philosophy, let alone become professional philosophers, it would be advisable to give more emphasis to real argumentation rather than to the merely theoretical knowledge of formal logic. At the same time, the necessary logical foundations should be put to use in furthering argumentative skills in a systematic way. In this context, it is especially important to maintain a close connection to exciting philosophical questions. That way, students can come to realize that even detailed logical analysis is not merely fiddling about but that it promotes real progress on the subject matter at stake.

2. Standards in the Teaching and Learning of Argumentation

We have seen various points at which standards for the teaching and learning of argumentation are much needed. In the following sections, we will present a draft of a framework for such standards which is intended to tackle these difficulties. This spiral-curricular model of argumentative competences is meant to help teachers introduce the relevant competences to students early on in their school career in a systematic way. To that end, argumentation is broken down into sub-competences (clearly often inseparable in argumentative practice), which are in turn divided into different levels. In this way, teachers are supported in gradually furthering complex argumentative competences among students.[13]

This section begins with an exposition of the competences and the four levels we use to partition their development as well as the background concepts involved therein. The following sections (3–7) describe the individual levels and present the specific individual competences and

[12] See, e.g., Fischill 2015: Section II.9.; Lacina 2014: Section 2.1; Liessmann et al. 2016: Section 1.4. A positive exception is the school book by Karl Lahmer (2017), often used in Austria, which has separate subchapters on logic (5.2) and on argumentation (5.3).

[13] As part of an ongoing project within the DFG network "Argumentation in Secondary Schools", illustrative exercises and explanations for all levels and sub-competences of the table are currently being formulated (forthcoming 2022 at www.philoveretzt.de).

background concepts. The appendix provides a summary table of this content and we recommend keeping this table available for reference while reading.

Argumentative competences can be broken down into single, interrelated sub-competences in many ways. For our purposes, we distinguish three core competences and then seek to illuminate their forms and interdependencies:

A. *Developing arguments*: Students develop their own arguments and formulate them in a clear and convincing manner.
B. *Interpreting arguments*: Students recognize and understand arguments in oral contributions, texts, and other media.
C. *Evaluating arguments*: Students evaluate the plausibility and justificatory power of arguments.

These general core competences include more specific subject knowledge and sub-competences at different levels. At each of these levels, however, the competences in question remain closely related. Their interrelation is expressed, inter alia, in the background concepts which are listed separately at every level as they occur in each of the three competences in different ways. These concepts refer, for instance, to specific forms and properties of arguments (for example the validity of arguments or the structure of arguments by analogy), which play a role in the development of one's own arguments (A) as well as in the interpretation and evaluation of the arguments of others (B and C). These background concepts therefore cut across all core competences rather than denoting a fourth such competence with equal status. Therefore, they are not represented by the alphabetically subsequent letter "D" in our summary table but rather by an "X". Being able to master and apply these concepts is, of course, a competence itself. However, this competence is *not* manifest next to but rather *within* the core competences, and typically in all three of them. For example, the ability to apply the concept of *modus ponens* is manifest in the interpretation, evaluation, and development of arguments of this form. The following sections therefore always relate the concepts to the specific sub-competences in question.

The systematic distinction of core competences A, B, and C, in addition to the background concepts, X, provides a sequence for teaching and learning only in a very limited sense: in order to evaluate an argument, it must first be understood, that is, interpreted. B is therefore a necessary condition for C. But the three core competences essentially depend on one another. For example, the principle of charity requires that the evaluation of arguments also factors into their interpretation (see section 4). The distinction between the three core competences proposed here is therefore essentially open to various teaching approaches and methods for developing the interrelated sub-competences and skills of each level. Nevertheless, we do suggest a sequence for teaching the competences progressively through the distinction of the aforementioned levels I – IV. The content and skills of the more basic level are generally presupposed and further developed in those that follow.

The order of the levels is not based on age groups or class levels but rather on the logic of the relevant argumentative competences and on the students' previous experience. The levels are therefore labeled as follows:

I. Beginner
II. Basic
III. Intermediate
IV. Advanced

Of course, while the most complex matters are not suitable for ten-year-olds, some entry-level competences may be. This is one of the advantages of our proposal: it is adaptable to many different contexts in schools and elsewhere. Nevertheless, we can suggest the following as a rough guide for school teaching. If Philosophy or Ethics lessons are offered at the lower secondary level, levels I and II can be covered until the end of the final year of lower secondary education, and, depending on the type of school and the particular group, even parts of level III. Level III should be suitable for classes at the upper secondary level as well as at least some parts of level IV, depending on the particular group and the character of the school subject. If Philosophy or Ethics lessons begin in upper secondary school, the beginner and basic levels can of course be introduced much more quickly than at lower grades.

Those are all the elements that build the systematic framework for our standards. In the following sections 3–7, we add content to this structure. Individual elements will be designated with abbreviations drawn from their respective positions in the summary table.

The content itself is largely common knowledge within philosophy and receives excellent treatment in the extensive introductory literature on (philosophical) argumentation. We will therefore refer to specific passages in the literature only occasionally, and especially in those cases in which there are relevant differences not only in presentation but also in the way the content in question is conceived.[14] For general information, we recommend a few introductory texts: in English, Bowell & Kemp (2015), Govier (1988), Lyons & Ward (2018), and Rosenberg (1995); in German, in particular the two essays by Betz (2016) and Brun (2016) from the *Neues Handbuch des Philosophie-Unterrichts* (Pfister/Zimmermann 2016) as well as Brun/Hirsch Hadorn (2014), Pfister (2013), and Pfister (2020).

3. Level I: Beginner

The primary goal of an argument is to convince oneself or others that a statement is true, or at least that it is well-founded. Sometimes we argue directly for certain statements. At other times, we explore the possible implications of statements, that is, we argue for conditionals (for instance, "If determinism is true, then we have no free will"). At level I, students are introduced to this conception of arguments and some further fundamental aspects of the development, interpretation, and evaluation of justifications and arguments. Some basic distinctions play an important role here: for example, the one between declarative statements and other linguistic utterances as well as the one between statements which are being justified and those which serve as their support. Since

[14] This means, among other things, that the inference rules of classical logic are not referenced individually while prominent non-deductive inference forms are, since e.g., analogical inferences are conceived of quite differently by different authors (see sections 6–7).

moral questions play an important role in the teaching of philosophy and ethics, this is also where we introduce the distinction between descriptive and non-descriptive statements (especially normative ones). This distinction prepares students, among other things, for an examination of the is-ought fallacy, which is addressed at level II.

In order to develop the core argumentative skills of level I, it seems natural to begin by conveying some basic knowledge. Students must first learn to distinguish declarative statements from other utterances (X.I.1). Unlike questions, cries for help, or commands, statements are used to claim what is or is not the case. Statements can be either true or false, independently from our knowledge. The next step is to convey the ability to distinguish statements which form the body of an argument from other statements in which, for instance, a mere assertion is made (B.I.1). Students thus understand the basic structure of justifications within the context of the primary goal of argumentation: if one wants to convince oneself or others of the truth of a statement, it is necessary to support this statement with at least one other statement. In so doing, we provide a justification for the statement. That is, we claim that the statement is true *because* (an)other statement(s) is/are true. The mere assertion thus becomes a justified statement, the so-called conclusion. Any further statements used for justifying this conclusion are called premises. With this distinction between premise(s) and conclusion (X.I.3), students possess the basic knowledge needed to understand what an argument is (X.I.2, B.I.2), namely a justification of a statement (the conclusion) by one or more different statements (the premise(s)). An argument, therefore, consists of three elements: the conclusion, the premise(s), and the supporting or justificatory relationship between the two. As we use an argument to claim that one statement is true because one or more other statements are true, we infer the statement in need of justification from the justifying statements. (This supporting relationship is discussed in more detail from level III onwards.)

Relations of justification can sometimes be easily identified by means of specific words, so-called argumentation indicators. Words such as “because”, “since", and “due to” indicate a justification. Words such as “consequently", “therefore", and "thus" refer to the statement that is to be justified, that is, the statement whose truth is meant to be supported by the justifying statement(s). Students develop the competence to justify their own statements, using words that indicate an argumentation (A.I.1).

At this basic level, it is also advisable to introduce a further distinction within the group of statements, namely the aforementioned distinction between descriptive and non-descriptive, and, in particular, normative statements (X.I.4, B.I.3). Normative statements include statements that something should or should not be the case, for example in moral terms.[15] For such statements, some philosophers use the concept of correctness rather than that of truth. This goes back to the view that normative statements do not make assertions about the world the same way as descriptive statements do and, that normative statements cannot be true or false. However, we can bracket this controversy here. In ordinary language, after all, we can call normative statements such as “Killing is wrong” true or false rather unproblematically. Partly on this basis, we will also characterize

[15] For school teaching, this is the most prominent form of normativity, so it is our focus here. However, the remarks can just as easily be applied to other areas, such as aesthetic or epistemic normativity. The group of non-descriptive statements includes normative, evaluative, and prescriptive statements, although the particulars of these categories and their relationships to each other are understood differently (see, e.g., Henning 2019: 29–35).

normative arguments in terms of the truth of the premises supporting the truth of the conclusion. All the same, teachers are of course free to introduce an additional distinction between "truth" and "correctness" here. We intend to keep our proposals neutral with respect to questions of metaethics and the philosophy of normativity. Where we may fail at this, we trust our charitable readers to suitably adapt our ideas.

Knowledge of statement-types and a basic understanding of argumentative structures are vital for the development of one's own arguments as well as for the interpretation of arguments put forward by others. At this level, in addition to introducing students to ways of recognizing and using arguments in texts and conversations, we also introduce a first form of evaluating arguments. Since it can be assumed that the students already have intuitive access to the content of the justifications that are provided, it makes sense to first consider the relevance of this content in its respective context. Students thereby acquire or deepen their ability to decide whether a statement or argument made is relevant to the topic at hand (C.I.1).

4. Level II: Basic

Once students have been introduced to some background knowledge and the basic skills of argumentation, these are deepened at level II. They learn to present and reconstruct arguments in standard form as well as to examine arguments in view of their completeness. Furthermore, they learn to recognize some fallacies.

Acquiring the ability to reconstruct arguments in standard form (X.II.1) is fundamental to the development, interpretation, and evaluation of arguments.[16] With respect to the core competence of interpreting arguments, we propose a two-step process. The first step consists in converting statements from contributions that contain complete arguments into standard form (B.II.1). In so doing, statements are identified as premises and conclusions (including intermediate conclusions), usually in the form of a list with the appropriate designations. An argument with two premises and one conclusion, for instance, would take on the following standard form:

1. Statement (premise 1)
2. Statement (premise 2)

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3. Statement (conclusion)

There are various equally suitable conventions in use to designate premise(s) and conclusions, for instance, a list with "P1" and "C" instead of the remarks in brackets or three points rather than a line to indicate the conclusion (see, for instance, Henle, Garfield & Tymoczko 2012; Tetens 2006). Graphic representations in the form of diagrams or maps can also be helpful here, whether with boxes (filled with individual statements) or connecting arrows (for supporting relationships). Both individual arguments can be presented in this way – as an alternative to the standard form (see Harrell 2012: 32) – as well as relationships between several arguments – as an extension of the

[16] Valuable tips on reconstructing arguments in standard form can be found in Betz 2016: sect. 5.3; Brun 2016: 262-267; Brun/Hirsch Hadorn 2014: Section 8.2; D'Agostini 2010: ch. 4; Govier 1988: ch. 2, 23f.; Tetens 2006: ch. 6.

standard form (see Betz 2016). We will deal with this option in more detail in section 5.

In a second step, students reconstruct arguments in standard form from text passages that contain incomplete arguments (B.II.2, B.II.3). In this way, they become familiar with the need for completeness in argument reconstructions (X.II.3) and understand that superfluous premises must be removed while an implicit conclusion as well as implicit or missing premises must be added (X.II.4).

The requirement of completeness does not only apply to the interpretation of the arguments of others but also the development of one's own arguments. By performing complete reconstructions of their own arguments, students improve their clarity and precision (A.II.1). This also makes it easier for them to write texts with a clear argumentative structure (A.II.2), which in turn makes it as easy as possible for others to reconstruct the arguments according to their intended, complete structure.

The sub-competences of the interpretation of arguments flow quite naturally into the sub-competences for evaluating arguments, in which the requirement of completeness also plays a special role. Until this point, students have evaluated whether a statement or an argument is relevant for a certain topic only in an intuitive way (C.I.1). Now, in a first step forward, they evaluate whether a given argument is relevant to a given statement and, if so, whether the argument either supports, criticizes, or remains neutral with respect to that statement (C.II.1). In a second step, they learn to evaluate an argument with regard to its completeness and possible redundancy (C.II.2). Only then can passages with incomplete arguments be reconstructed into complete arguments by adding premises, as mentioned above.

In this context, students must understand and take to heart the principle of charity (X.II.2). In general, the principle states that an argument should be interpreted and reconstructed in the strongest way possible, given the wording and the context of the discussion in which it is embedded. All interpretive decisions that render the argument unnecessarily implausible should be avoided. This includes efforts to arrive at an adequate formulation of the content as well as the complete reconstruction of the argument, in which all and only the relevant premises are included. (We expand on this aspect from level III onwards.) Relevant premises that remain implicit should be added, provided that the person making the argument can be presumed to accept them (X.II.4). Among other things, a charitable interpretation can prevent a reconstruction of an argument as a so-called straw man argument, that is an argument which can be easily refuted but no longer corresponds to the argument originally put forward. The stronger one reconstructs an argument on behalf of its proponents, the more convincing a possible criticism will be.

Once students have become familiar with the requirement for completeness in arguments, it is appropriate to introduce a distinction between two types of criticism (C.II.3): on the one hand, criticism of the contents of the premises and, on the other hand, criticism of the form of arguments (for instance, that they must be complete). The second type of criticism is explained in more detail from level III onwards (see section 6.1), when deductive and non-deductive arguments, as well as fallacies, are addressed. The fundamental concepts of (deductive) validity and soundness of arguments (X.III.2) can also be introduced already at this point. In any case, at level II, it is already possible and appropriate to familiarize students with certain fallacies and other argumentation errors. This applies in particular to those errors that concern the relevance of the premises for the

conclusion and the completeness of arguments, for instance, the *ignoratio elenchi* (missing the point), the *petitio principii* (begging the question, assuming what is to be demonstrated) and the is-ought fallacy (C.II.4), all of which we will briefly characterize here.[17]

The *ignoratio elenchi* is closely related to the straw man argument described above. In the case of this error of argumentation, a different conclusion is justified than was originally at issue. This error also sets in when, instead of properly refuting the premise of a given argument (see also section 5), this premise is incorrectly reproduced, such that the new argument fails to hit its target. Such an argument is therefore not relevant to the subject or the thesis in question, after all.

The other two errors of argumentation, the *petitio principii* and the is-ought fallacy, concern the completeness of an argument, each in their own way. In the case of a *petitio principii*, the conclusion to be justified is either explicitly or implicitly presupposed by one of the premises. In a formal sense, a circular argument is not a problem, because everything follows from itself. What is problematic, however, is that the truth of the conclusion is presupposed by the premise in question, which nullifies the justificatory function of the premise for the conclusion. Those who are not already convinced by the conclusion will also reject the premise in question. The other premises, for their part, are not sufficient to infer the conclusion.

An argument that contains an is-ought fallacy is incomplete in a different way.[18] This mistake occurs when a normative conclusion is inferred from purely descriptive premises. This means that purely descriptive statements about what *is* the case are used to infer, for example, what *ought to* be the case or whether it is *good*. The normative content of the conclusion, however, is precisely what remains to be justified by the premises. Without at least one relevant normative premise the argument cannot make this leap. In this sense, it is incomplete. An is-ought fallacy can be easily amended by adding a suitable normative premise. Then, of course, this added premise can be closely examined and possibly refuted. Being able to add normative premises which otherwise would have remained implicit and thereby to allow for their explicit and critical discussion is a very important competence, which results from a combination of the sub-competences presented at this level.

5. Optional Branching Point: Arguing within a Discussion

After students have acquired the basic skills for the development, interpretation, and evaluation of individual arguments at level II, these competences can be enriched with more specific elements, which, among other things, deepen their ability to argue within a discussion *context*. After all, single arguments are always embedded in discussions in which various questions and further

[17] For a discussion of fallacies and argumentation errors in general as well as their background in cognitive science and their importance in the context of public debates, see, e.g., Brun & Hirsch Hadorn 2014: 302–311; Coliva & Lalumera 2006: ch. 4; D'Agostini 2012: part IV; Govier 1988: 328-332; Iacona 2005: part IV; Lyons & Ward 2018; Pfister 2013: section 1.8; Pfister 2020: ch. 21.

[18] The is-ought fallacy is sometimes also referred to as the naturalistic fallacy. However, this wrongly suggests that normative conclusions would only be problematic if they were drawn from descriptive statements, e.g. about natural facts. Regardless of the content of the premises, however, any transition from purely descriptive premises to normative conclusions is problematic. The designation "is-ought fallacy" is imprecise as well, since it suggests that only the inference from purely descriptive premises to ought-statements is problematic, whereas this also applies to inferences to evaluative and prescriptive statements (see fn. 15). However, we stick to this established name as an umbrella term here.

arguments are being negotiated. In this regard, we rely on a helpful overview of this topic by Gregor Betz (2016). The relevant competences (see sections 5.1 and 5.2) can be incorporated quite flexibly at various points. For instance, they can

1. either branch out directly from level II without touching upon the contents of levels III and IV, or
2. be fully discussed only in connection to levels III or IV, or even
3. be divided between levels III and IV, without being more closely connected with the other contents of these levels.

Overall, we find the third option to be somewhat more feasible than the first two, given that the relevant single competences for arguing within the context of a discussion exhibit various levels of complexity themselves. In particular cases, however, the other two options may be better. The appendix subdivides the relevant competences between levels III and IV. From level II onwards, it also includes references to these competences in order to clearly demarcate this branching out within the logic of argumentative competences without unnecessarily overcomplicating the table. By explaining the specific individual competences in this separate section, however, we follow their thematic connections more closely.

5.1 Coherence and Overview

The first step for arguing within the context of a debate revolves around the concepts of contradiction, consistency, and coherence (X.III.7) and can be found at level III within our proposal. There it may, for instance, be connected with the topic of the (deductive) validity of arguments, in which accepting the premises and rejecting the conclusion would represent a contradiction (see Sections 6.1, 6.3).

Students improve their competences in developing their own arguments by dealing with potential contradictions in the totality of the statements and arguments they have made (A.III.3). They develop new arguments with a special focus on examining potential tensions and dissonances and, when possible, resolve them if they actually arise.[19]

These skills also play a role in the interpretation of the arguments of others: students evaluate the extent to which a certain argument coheres with other arguments, for example, with those which their proponent has already endorsed (C.III.3). This further develops the competences of interpretation and reconstruction covered in level II. For instance, when applying the principle of charity (X.II.2), students learn to consider the broader argumentative context in order to avoid careless attributions of contradictions and instead explore alternative avenues of interpretation.

In addition, at this stage students develop the ability to identify the central theses of longer texts and discussions, to recognize individual arguments for or against them, and to reconstruct them in their own words (B.III.3). Students do not only work on simple pro-con lists but reconstruct individual elements from these lists as arguments with their own internal structure.

[19] This also plays a special role in philosophy and ethics education in general (see, e.g., Barz 2019; Burkard et al. 2018; Henke 2015).

5.2 Mapping and Diagnosis

The second step is classified in level IV in our proposal and includes a more detailed analysis of the relationships between arguments (X.IV.4), especially of the support- and the so-called attack-relations[20] which are defined as follows (see for instance, Betz 2016: 189):

- An argument supports another argument if and only if the conclusion of the supporting argument corresponds exactly to one of the premises of the supported argument.
- An argument attacks another argument if and only if the conclusion of the attacking argument corresponds exactly to the negation of one of the premises of the attacked argument.

With these conceptual tools, students can practice interpreting first shorter and then also longer texts and discussions in such a way that they not only distill the arguments for and against a specific thesis (B.III.3) but also create so-called "reason hierarchies" or "debate-maps" (B.IV.3). That is, among other things, they can practice distinguishing "first-level" arguments for or against a core thesis from the "second-level" support and objections related to them, etc. Visualizations are quite suitable for this purpose, whether on posters or with the aid of specialized software (see for example https://argdown.org/).

This mapping competence is closely linked to another competence within the field of evaluation (C.IV.3). In the light of possible indirect connections between different arguments, students now also evaluate to what extent a new argument in a debate context is suitable to *indirectly strengthen* or *weaken* a certain central thesis or position. They also consider *other* mediated relationships that can arise between arguments. For example:

- the indirect strengthening of a thesis or of an argument, for instance by countering an objection to it,
- the indirect weakening of a thesis or an argument, for instance by criticizing arguments that support it,
- the possible circularity of chains of supporting arguments – also in contradistinction to the *petitio principii* (X.II.5).

Such insights also affect the core competence of developing one's own arguments. Students can now reflectively formulate and express their arguments in such a way that they, for instance, indirectly support their own statements and arguments or that they indirectly criticize competing statements or arguments (A.IV.3).

[20] The warlike imagery of the term "attack" is anything but unproblematic (see e.g., Cohen 1995). We retain the established technical term for this attack relation due to a lack of better alternatives. Still, we would like to point out that it concerns attacks on statements and not on persons (see the argumentation error ad hominem) and that such attacks, i.e., arguments against specific premises of other arguments, are an indispensable part also and particularly of the common search for knowledge in friendly, constructive discussions.

6. Level III: Intermediate

At the intermediate level III, previously developed competences are extended to more fine-grained elements of the analysis of arguments. The focus here lies on becoming able to more precisely evaluate the strength of single arguments regarding their form. Furthermore, this level focuses on incorporating these competences in the interpretation of arguments put forward by others as well as in the formulation of one's own arguments. In addition, further competences from the domain of argumentation in a debate context can be integrated here (see Section 5, esp. 5.1).

6.1. Specifying the Strength of Support in Arguments

The starting point for the steps taken here is the rather intuitive concept of the completeness of arguments and their reconstructions which the students have worked with so far (X.II.3). Now we will take a closer look at what "completeness" consists in. We will therefore clarify the impression students already have that certain premises *guarantee* a certain conclusion. Students understand that what matters here is the *form* of the argument and the rules that underlie the inferences (X.III.1). Thus, evaluating the plausibility of single arguments is closely tied to the evaluation of the plausibility of arguments with the same structure. Given this background, the concept of completeness is now refined by way of two new concepts:

1. (deductive) validity (X.III.2) – understood as the property of an argument such that the conclusion must be true provided that all premises are also true since there is no structurally identical argument whose premises are true but whose conclusion is false.[21]
2. non-deductive strength (X.III.3) – understood as the property of an argument to not be (deductively) valid, but to create a strong transfer of plausibility from the premises to the conclusion through its argumentative structure.

In the context of teaching, these abstract categories referring to the forms of arguments and principles of inference should be conveyed in connection with concrete examples. It may also be appropriate to ask students to extract the abstract categories from the examples given below. They are accordingly divided into examples of deductive (section 6.3) and non-deductive forms of arguments and inference rules (section 6.4). However, in presenting these argument forms in separate subsections, we do not propose any order for teaching and learning of deductive and non-deductive inferences. Level III conveys the most common and fundamental forms of inference. Level IV (advanced) addresses more complex ones. To begin with, however, section 6.2 provides a general background by relating the above considerations to the three core argumentative competences our framework is meant to further.

[21] On this basis, the notion of soundness can also be introduced, understood as the property of an argument to be both (deductively) valid and to have only true or plausible premises. In this context, some German texts also use "Schlüssigkeit" (see e.g., Rosenkranz 2006; van Riel & Vosgerau 2018) or "Beweiskräftigkeit" (see e.g., Strobach 2011). The term "validity" is also called "Schlüssigkeit" in some texts (see e.g., Tetens 2006). As long as the terms are appropriately determined and do not cause confusion, various labeling decisions are of course unproblematic.

6.2 Argument Forms and Argumentative Competences

The new content of level III revolves around the familiarization with specific forms of arguments which relate to corresponding background concepts. In what follows, we explain how these forms of arguments are central to all three core competences.

In *interpreting* arguments, students acquire the ability to recognize the relevant deductive and non-deductive inference rules for arguments and to reconstruct them accordingly (B.III.1, B.III.2). That is, they learn to detect the structures of these inferences more easily and become better at formulating premises in the reconstruction of an argument in such a way that the inference rules are more clearly recognizable (building on B.II.1), for instance by adding implicit premisses (building on B.II.2)

In *evaluating* arguments, students acquire the ability to assess *those* arguments more precisely which exhibit a form which either corresponds to the relevant deductive or non-deductive inference pattern (the positive case) or deviates from it in characteristic ways. In this latter, negative case, one can speak of deductive fallacies or weak non-deductive inferences (C.III.1, C.III.2).

These competences in evaluation are, in turn, closely connected to the competences in interpretation presented above. For if an argument seems to involve a fallacy, one must, according to the principle of charity (X.II.2), consider the broader context and seek alternative possible reconstructions which make the argument more plausible than its perhaps simply inaccurate wording suggests. In the presentation of the forms of inference in the following sections, we use the keyword "charitable reconstruction" to mention relevant aspects which students may consider in their interpretations. In addition, when we introduce a fallacy, we also provide a suitable example in which the corresponding premises are clearly true but the corresponding conclusion is clearly false.

In *developing* arguments, students acquire the ability to reflectively apply the relevant deductive and non-deductive reasoning principles in their own arguments (A.III.1, A.III.2). That is, they learn to make use of their knowledge of the justificatory power of a given argument form when finding their own arguments and to elucidate this structure, whether orally or in writing, in such a way that the persuasive power of their arguments is clearly strengthened (building on A.II.2).

6.3 Deductive Inferences

The deductive inferences of level III can be divided into two groups. The first group includes *conditionals* ("if-then-sentences") and the necessary and sufficient conditions expressed therein (X.III.4). The distinction between these two types of conditions is therefore as central here as the notion of a conditional itself and the different ways in which conditionals can be expressed (for instance, "if" vs. "only if"). Included here are both the simple, propositional form ("if p, then q") and the commonly encountered universally quantified form, the general conditional (for instance, "Everything that is F is G") (X.III.5). Accordingly, at this point, students grasp three particular inference rules (1–3) along with the fallacies associated with them (4–5). Through the interplay of universal instantiation and *modus ponens*, one can reconstruct, among other things, those arguments in which general moral principles are applied to specific cases. These rightly play an important role in philosophy and ethics classes, often under the name of "practical syllogism" (see

Althoff 2016a, among others).

1. *Modus ponens*: "if p, then q" and "p" entail "q".
2. *Modus tollens*: "if p, then q" and "not q" entail "not p".
3. *Universal instantiation*: What is true for everything is also true for some arbitrary individual, for instance: "everything that is F is G" entails "if a is F, then a is G".
4. *Affirming the consequent*: "if p, then q" and "q" does not entail "p".
   Example: "When I sleep, I lie down. I lie down. But I do not sleep. (I read and lie on the sofa.)"
   Charitable reconstruction: Is the affirmed condition merely necessary or is it also sufficient? If the latter, it is a valid modus ponens and not a fallacy.
5. *Denying the antecedent*: "if p, then q" and "not p" do not entail "not q".
   Example: "When I sleep, I lie down. I do not sleep. But I lie down. (I read and lie on the sofa.)"
   Charitable reconstruction: Is the negated condition merely sufficient or is it also necessary? If the latter, it is a valid modus tollens and not a fallacy.

The second group comprises disjunctions and exclusive disjunctions, that is, statements with an inclusive or exclusive "or" (X.III.6). Here, too, we consider various linguistic expressions (for instance, "either" does not necessarily have an exclusionary effect) and we consider valid inferential principles (6–7) as well as false inferences (8–9).

6. *Disjunctive syllogism*: "p or q" and "not p" entail "q".
7. *Exclusive disjunctive syllogism*: "p or q, but not both" and "p" entail "not q".
8. *False alternative (also: incomplete disjunction)*: Arguments with disjunctions as premises are only convincing if the disjunction mentions all relevant or possible cases. If not, the disjunction is incomplete. This is, however, not a criticism of the validity of the argument itself, that is, not a fallacy in the narrow sense, but a criticism of the premise in question.
   Example: In the case of the disjunctive syllogism, for example: The argument, "Either I will become rich or I will become grinding poor. I will not become grinding poor. Thus, I will become rich." is flawed because it assumes an incomplete disjunction. In addition to "I will become rich" and "I will become grinding poor," there are other options.
   Charitable reconstruction: Have the additional options, which would also have to be inserted into the disjunction, not been mentioned elsewhere?
9. *False exclusive disjunctive syllogism*: "p or q" and "p" do not entail "not q".
   Example: "Either Mom or Dad come to pick you up. Dad comes to pick you up. Still, it is not true that Mom does not come to pick you up. (Both come.)"
   Charitable reconstruction: Is the "or" statement really appropriately reconstructed as an inclusive disjunction? If an exclusive disjunction is appropriate, then the conclusion is a valid exclusive disjunctive syllogism.

In light of these examples of valid inferences (1–3, 6–7), the general notion of (deductive) validity

(X.III.2) mentioned in Section 6.1 becomes much more tangible for students. The examples above are well suited to accompany the notion of deductive reasoning as prime examples. They do this, *inter alia*, by providing a particularly clear illustration of how accepting the premises in question while simultaneously rejecting the conclusion would lead to a contradiction.[22]

6.4 Non-deductive Inferences

We have grouped three non-deductive inferences here at level III because they are both frequent and accessible. They can be taken up and taught in any order. Similarly, they can be flexibly supplemented by other argument patterns which are sufficiently relevant but not too complex. For each of the three non-deductive inference patterns, we also mention suitable avenues of criticism which go beyond the simple and uninformative remark that they are invalid.

10. *Generalization,*[23] understood as the inference from specific to general statements (X.III.5), in simple variants, for instance from "the known / investigated things of kind F exhibit property G" to "everything that is F is G".
    Possible criticism: for instance: (a) The unknown / unexamined things of kind F differ from the known / examined ones in a way relevant to property G. (b) We had categorically excluded everything that is not G from being F, but maybe that was wrong? (Example: We had categorically excluded everything non-white from being a swan.)
11. *Inference to the best explanation* in a simple form,[24] for instance, understood as the inference from "p" and "q is the best explanation for p" to "q".
    Possible criticism: for instance: There is another, better explanation for "p".
12. *Argument by analogy* in a simple form,[25] for instance, understood as the inference from "p is the case in domain A" and "the domains A and B are analogous, such that the state of affairs p in A corresponds to the state of affairs q in B" to "q is the case in domain B".
    Possible criticism: Domains A and B are disanalogous in relevant respects. Or: In the analogy between these domains, the state of affairs p in A does not correspond to the state of affairs q in B.

In light of these examples of strong non-deductive inferences, the general notion of the non-deductive strength of arguments (X.III.3) mentioned in section 6.1 becomes much more tangible for students. The examples listed here are well suited to accompany the notion of non-deductive strength as prime examples.

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[22] This is not only a further development of the notion of (deductive) validity by means of the notion of contradiction but at the same time also the basis for the development of an independent notion of logical consistency (X.III.7). This is the basis for a further competence in the evaluation of arguments in a debate context (C.III.3, see section 5.1).

[23] See, e.g., Bowell & Kemp 2015: 111–116, 159–162; Brun & Hirsch Hadorn 2014: 277–290; Govier 1988: 255f.; Lyons & Ward 2018: Section 4.3; Pfister 2013: Section 1.3, and the more complex variants in Level IV.

[24] See, e.g., Bowell & Kemp 2015: 167–169; Govier 1988; Lyons & Ward 2018: Section 4.5, 257–259; Pfister 2013: Section 3.7; Pfister 2020: ch. 15; Walton et al. 2008: 10, 207, as well as the more complex variants in level IV.

[25] See, e.g., Brun & Hirsch Hadorn 2014: 294–299; Govier 1988: ch. 10; Löwenstein 2015; Lyons & Ward 2018: Section 4.4; Pfister 2013: Section 3.5; Tetens 2006: ch. 15; Walton et al. 2008: ch. 2, as well as the more complex variants in level IV.

7. Level IV: Advanced

Level IV closely follows level III in terms of content and structure. Here, too, background concepts in the form of important deductive and non-deductive forms of reasoning play an important role, especially in that they expand upon the three core argumentative competences of developing, interpreting, and evaluating arguments. These relationships were presented in detail in section 6.2 for level III and are much the same in level IV. Accordingly, we begin by presenting the deductive inference rules that are grouped here (section 7.1), followed by the non-deductive argument forms, again in connection with related fallacies and errors of argumentation (section 7.2). In addition, further competences in argumentation within a debate context can also be integrated here (see section 5, esp. 5.2).

7.1 More complex Deductive Inferences

Level IV's more complex deductive inferences can be divided into two groups. The first group consists of the inference rules 13–16. They often occur together and should therefore ideally be taught together (the interaction of 15 and 16, for example, covers numerous classical syllogisms).

13. *Transitivity*: "if p, then q" and "if q, then r" entail "if p, then r".
14. *Contraposition*: "if p, then q" entails "if not q, then not p".
15. *Universal transitivity*: "Everything that is F is G" and "Everything that is G is H" entail "Everything that is F is H".
16. *Universal contraposition*: "Everything that is F is G" entails "Everything that is not G is not F".

In addition, other forms of statements are distinguished and applied with regard to widespread principles of reasoning: conjunctions and biconditionals as well as existentially quantified propositions and the general distinction between existential and universal quantifiers (X.IV.1). Accordingly, and in addition to the above group, we propose to discuss the inference rules 17–20 as well as related fallacies (21). That being said, one can also include other forms of inference here, thus building a bridge to classical logic at the introductory university level.

17. *De Morgan's laws*: (a) "not (p and q)" entails "(not p) or (not q)" and vice versa. (b) "not (p or q)" entails "(not p) and (not q)" and vice versa.
18. *Constructive dilemma*: "p or q", "if p, then r" and "if q, then r" entail "r" (analogously with additional disjuncts).
19. *Universal constructive dilemma*: "Everything that is F is G or H", "Everything that is G is I" and "Everything that is H is I" entail "Everything that is F is I" (analogously with additional disjuncts).
20. *Duality*: (a) "It is not the case that everything that is F is G" entails "There is something that is F and not G" and vice versa. (b) "All that is F is G" entails "It is not the case that there is something that is F and not G" and vice versa.
21. *Fallacies with existentially quantified propositions*: for instance: (a) "There is something that is F" and "There is something that is G" do not entail "There is something that is F

and G". (b) "For everything that is F, there is something that is connected to the former by the relational property G" does not entail "There is something that is connected to everything that is F by the relational property G". *Example* for (b), which occurs in a very simple variant of the Cosmological Argument ("All events have a cause. Therefore: there is a cause of all events."): "All people have parents. But it is not the case that there is a parent of all people." *Charitable reconstruction*: Are there any other considerations that play a role in justifying the conclusion?

7.2 More complex Non-deductive Inferences and Further Errors in Reasoning

The non-deductive inferences assembled here are not a close-knit group, just like the inferences at level III (see section 6.4). They can therefore be taught in any order as well as selectively and may even be supplemented by other forms of inference. In the following, we also mention appropriate tools for a targeted criticism of arguments of the respective form.

22. *Generalization* in more complex forms,[26] for instance, as arguments by analogy of the form "The known / examined things of kind F exhibit property G," and "The set of known / examined things of kind F and the totality of things of kind F are structurally analogous," to "Everything that is F is G". Alternatively, as arguments by analogy in a more complex form (see below) or with further statistical analysis.
    Possible criticism: for instance, see argument by analogy below.
23. *Inference to the best explanation* in more complex forms,[27] for instance, as the inference from "p" and "in the explanation of p, criteria K are relevant" and "q is, given the criteria K, the best explanation for p" to "q".
    Possible criticism: for instance: (a) There is another, better explanation for the fact that p, in light of criteria K. (Ideally: Namely ...) (b) For the fact that p, the criteria K are not relevant. (Ideally: The relevant criteria are instead ...)
24. *Argument by analogy* in more complex forms,[28] for instance, as the inference from "(S) The domains A and B are structurally identical with respect to aspect Z", "p," and "If (S), then p is true if and only if q is true" to "q".[29]
    Possible criticism: for instance: (a) The domains A and B are not structurally identical at all with respect to aspect Z. (Ideally: This structural difference is shown by ...) (b) If the domains A and B are structurally identical with respect to aspect Z, then it is not the case that p is true if and only if q is true. (Ideally: Rather, p would be true if and only if ...)
25. *Arguments from authority / expertise,*[30] for instance, as the inference from "S claims that p" and "whether p is true belongs to domain B" and "S is a pertinent expert / authority for domain B" to "p".

[26] See the footnote on simpler variants in level III.
[27] See the footnote on simpler variants in level III.
[28] See the footnote on simpler variants in level III.
[29] For example: (S) Mice and humans are very similar (structurally the same) in terms of their relevant physiological characteristics. p: The new drug is effective in mice. If (S) then: If p, then the new drug also works in humans. Thus: The new drug also works in humans.
[30] See, e.g., Brun & Hirsch Hadorn 2014: 290–294; Govier 1988: 82–84.

Possible criticism: for instance: (a) Whether p is true does not belong to domain B. (Ideally: It rather belongs to the following area...) (b) S is no expert / authority for domain B at all. (c) There are too many other relevant experts / authorities for domain B who do not claim that p.

Next to these argument patterns, we also suggest covering other fallacies and more complex errors of argumentation at this level. These can also be selected and arranged in several ways and they can be supplemented with other forms of inference – or even be selectively included earlier (for instance, simple variants of *ad hominem* in levels III or even II).

26. *ad hominem:*[31] A criticism of a person making an argument does not entail a criticism of the argument they proposed.
    Advanced consideration: This is also the case with arguments from authority / expertise (see above): In this case, one can certainly criticize the expertise / authority of S (variant (b), possibly (c), above), but this does not thereby impact upon the person who presented the argument (which relies on somebody else as an expert / authority).
27. *post hoc, ergo propter hoc:*[32] One can by no means conclude that event A is the (or a partial) cause of event B simply from the fact that A took place before B.
28. *Fallacy of Equivocation:*[33] The use of an ambiguous expression in an argument in which (a) the inference to the conclusion depends on the expression in question being used with a uniform meaning for all premises, but (b) that expression is used with different meanings in the different premises.

Concluding Remarks

The systematic framework for the development of argumentative skills proposed here is an answer to the tension described in section 1. On the one hand, the teaching of argumentative skills is seen as an important task of education in philosophy and ethics. As stated at the outset, these objectives are to be found both in the research literature on the teaching and learning of philosophy and in the national and federal curricula. On the other hand, neither curricula nor teaching materials in the German-speaking world offer sufficient guidance for systematically furthering these skills in the classroom. This is precisely where the framework for fostering argumentative skills presented here, with its precise, progressively designed standards, comes into play. These standards for developing, interpreting, and evaluating arguments can support teachers in systematically guiding learners to develop argumentative competences. The competences at the introductory and basic levels can already be taught from the beginning of secondary school onwards. Since the levels are designed systematically rather than with respect to age-groups, however, the same standards can also be used for higher grades in schools or at the introductory university level.

The specific implementation of these standards in teaching and learning can take many forms;

[31] See, e.g., Govier 1988: 108–112, also on the relationship between ad hominem and arguments from authority.
[32] See, e.g., Govier 1988: 302–305; Pfister 2020: ch. 16.
[33] See, e.g., Brun & Hirsch Hadorn 2014: 306f.

further inquiry into this matter is beyond the scope of this article. Concrete exercises to illustrate the standards as well as accompanying handouts for students are currently in development within the DFG-network "Argumentieren in der Schule" (Argumentation in Secondary Schools). The draft presented here can and should be continuously tested and revised further, both by means of such additions as well as by practical implementations and trials. Its touchstone, however, is the integration of the practice of developing, interpreting, and evaluating arguments into the engagement with philosophical questions and texts in interplay with further teaching objectives. Even the trickiest logical analyses in the classroom are not intended as a mere game, but students must experience them as illuminating contributions to answering genuine philosophical questions.[34]

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Overview: Standards for the Teaching and Learning of Argumentation

I.	A: Develop arguments	B: Interpret arguments	C: Evaluate arguments	X: Background concepts for competencies in A, B, and C at the respective level
	A.I.1 Students justify their statements using words that indicate an argumentation.	**B.I.1** Students distinguish argumentative utterances from utterances in which no arguments occur. **B.I.2** Students distinguish the statement that is justified (conclusion) from the justifying statements (premises) in an argument. **B.I.3** Students identify descriptive and non-descriptive (esp. normative) statements.	**C.I.1** Students evaluate the relevance of an argument to the topic of discussion (e.g., to a thesis under debate).	**X.I.1** (declarative) statement (vs. question, exclamation, ...) as well as argumentative / reasoning vs. other utterances (e.g., pure assertion) and "argumentation indicators" (e.g., "because", "since", ...) **X.I.2** argument, justification **X.I.3** conclusion, premise **X.I.4** descriptive vs. non-descriptive (esp. normative) statements

II.	**A.II.1** Students present their own arguments in standard form. **A.II.2** Students write their own argumentative texts with recognizable argument structures. Possibly A.III.3. (See below) Possibly A.IV.3. (See below)	**B.II.1** Students convert statements from contributions with complete arguments into standard form. **B.II.2** Students convert statements from contributions in which there are incomplete arguments into standard form, i.e. by making implicit premises explicit and adding them. **B.II.3** Students convert statements from contributions in which there are incomplete arguments into standard form, i.e. by making an implicit conclusion explicit and adding it. Possibly B.III.3. (See below) Possibly B.IV.3. (See below)	**C.II.1** Students evaluate how an argument relates to a given statement (supportive, critical, or neutral). **C.II.2** Students evaluate the relevance of the premises to the conclusion of an argument (completeness / redundancy). **C.II.3** Students distinguish criticism of the content (i.e. the premises) and criticism of the form of arguments (e.g., their completeness). **C.II.4** Students identify a first group of fallacies and errors in reasoning (is-ought fallacy, *petitio principii*, *ignoratio elenchi*). Possibly C.III.3. (See below) possibly C.IV.3. (See below)	**X.II.1** argument reconstruction (and its representation in standard form) **X.II.2** principle of charity in interpreting and reconstructing arguments **X.II.3** completeness of argument reconstructions (= only and every relevant premise is included) **X.II.4** implicit premise(s) and their supplementation, implicit conclusion and its supplementation **X.II.5** is-ought fallacy, *petitio principii*, *ignoratio elenchi* Possibly X.III.6. (See below) Possibly X.IV.6. (See below)

III.	**A.III.1** Students reflectively use simple deductive inferences (modus ponens, modus tollens, exclusion principle, disjunctive syllogisms) in their own arguments. **A.III.2** Students reflectively use simple non-deductive inferences (e.g., generalizations, analogies, inference to the best explanation) in their own arguments. **A.III.3** Students develop their own arguments in a reflective way so that they cohere with their own arguments/statements. Possibly A.IV.3. (see below)	**B.III.1** Students identify simple deductive inferences (see left) in arguments at hand and reconstruct them appropriately. **B.III.2** Students identify simple non-deductive inferences (see left) in arguments at hand and reconstruct them accordingly. **B.III.3** Students interpret texts and discussions in such a way that they identify a central thesis as well as the individual arguments for and against this thesis (pro/con list). Possibly B.IV.3. (see below)	**C.III.1** Students evaluate support relationships in arguments in deductive inferences (see left) and identify faulty inferences in this context (mistaking a necessary condition for a sufficient condition or vice versa, false alternative, false exclusive disjunction). **C.III.2** Students evaluate support relationships in arguments in non-deductive inferences (see left) and identify faulty inferences in this context (e.g., incorrect generalization, disanalogy, better explanation). **C.III.3** Students evaluate the extent to which an argument fits coherently with other arguments (e.g., especially with arguments/statements from the same person). Possibly C.IV.3. (see below)	**X.III.1** argument form, inference rule **X.III.2** (deductive) validity, if necessary, also "soundness" (= valid + all premises true) **X.III.3** non-deductive strength of support relationships **X.III.4** conditionals, sufficient condition, necessary condition, modus ponens, modus tollens **X.III.5** general vs. specific statement (also: conditional), universal specification **X.III.6** disjunction, exclusive disjunction, false alternative (also: incomplete disjunction), false exclusive disjunction **X.III.7** contradiction, consistency, coherence **X.III.8** analogy and disanalogy **X.III.9** explanation vs. justification (possibly also *explanans explanandum*) Possibly X.IV.6. (see below)

IV.	**A.IV.1** Students reflectively use more complex deductive inferences (e.g., chain inferences, contrapositions, dilemma inferences, De Morgan's laws, dual quantifiers) in their own arguments. **A.IV.2** Students reflectively use more complex non-deductive inferences (e.g., more complex variants of the forms of inference covered in Level III, arguments from authority) in their own arguments. **A.IV.3** Students develop their own arguments reflectively in such a way that they are suitable to support other arguments/statements of their own and, if necessary, to critique other, competing arguments/statements.	**B.IV.1** Students identify more complex deductive inferences (see left) in arguments and reconstruct them accordingly. **B.IV.2** Students identify more complex non-deductive inferences (see left) in arguments and reconstruct them accordingly. **B.IV.3** Students interpret texts and discussions in such a way that they work out the various support and attack relationships of the arguments and theses among each other (hierarchy of reasons, debate map).	**C.IV.1** Students evaluate support relationships in arguments in more complex deductive reasoning (see left) and identify faulty inferences in this context. **C.IV.2** Students evaluate support relationships in arguments in more complex non-deductive inferences (see left) and identify faulty inferences in this context (e.g., disanalogy, better explanation). **C.IV.3** Students evaluate to what extent an argument within a debate context is likely to indirectly strengthen or weaken other arguments / positions (also in more complex phenomena, e.g., circular chains of arguments). **C.IV.4** Students identify more complex fallacies and errors of reasoning (e.g., *post hoc ergo propter hoc*, equivocation, *ad hominem*, ...).	**X.IV.1** other propositional forms: conjunction, biconditionals, existential propositions, universal and existential quantifiers **X.IV.2** criteria and aspects of analogies and disanalogies (structures of domains, structural equality and inequality) **X.IV.3** criteria and aspects of the evaluation of explanations, the need for explanations **X.IV.4** argument-relationships (support, attack) **X.IV.5** more complex fallacies and errors of reasoning (e.g., *post hoc ergo propter hoc*, equivocation, ad hominem, ...)

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