Commentarii *De Bello Grammatico*™

On the Efficacy of a Certain Card Game in Teaching a Second Language

by

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Abstract

This paper seeks to introduce and to determine the effectiveness of the *De Bello Grammatico* card game at reinforcing a second language. Invented as a way to keep the attention of students, to be accessible to players of all proficiency levels in the target language and also to remain fun (especially for secondary school students, who often, when bored, ignore their studies to pursue entertainment), *De Bello Grammatico* employs several techniques to convey grammar, vocabulary, literature and culture. This paper compiles survey data and research from reviews of various language acquisition programmes and materials to test the efficacy of these different teaching tactics, and ultimately their overall combined effectiveness in *De Bello Grammatico*.

I. Introduction

Many secondary schools throughout the world require that students gain competency in at least one foreign language, though—particularly in many parts of the United States, where people can go their whole lives avoiding those who do not speak English—sometimes good students nod off and forsake their philological studies in favour of more 'practical' disciplines. Indeed curricula often de-emphasise foreign language courses due to the lack of student interest, leaving the teachers in these departments the problem of keeping occupied and engaged children who care less about the minutiae of the grammar of a language they plan on forgetting after fulfilling their graduation requirements than they do the grammar of their native tongue (which is to say: not at all, though the waning instruction of English grammar is a discussion for another time). In the United States, bilingualism doesn't appear even to be valued by many; Arne Duncan, the U.S. Secretary of Educaton, reported that only 18% of Americans reported speaking another language, compared to 53% of Europeans (Skorton and Altschuler 2012). On top of this, the American Council on the Teaching of Foreign Languages reports that many states are cutting programmes in 'unpopular' languages due to lack of student enrolment (2011).

The onus therefore lies upon these teachers to instruct adequately a multitude of students at various learning paces in an approved curriculum while still assaying to engage these same students with various boredom thresholds for the subject matter. The 'Affective Filter' hypothesis states that an unmotivated or anxious language learner impedes his own progress in the language (Stevick 1976). So not only must instructors ensure that the weakest students learn the necessary material (often by slowing the pace of the class), but also that they find the material less of a chore, correctly assuming that the weaker students, if more enthralled, shall learn more—though sometimes they ignore those who can pick up the subject with relative ease. This leaves the strongest students miles ahead, bored, waiting for the class

to catch up to them, without any direction for further study. *De Bello Grammatico*™ (*DBG*) attempts to combat each of these problems with the application of various techniques in educational theory and game design theory.

I.1 The Ideas Behind *De Bello Grammatico*™

At its core, *De Bello Grammatico*™ strives to act as both an educational tool and a diversion from the blunt tedium of rote memorisation which often accompanies language learning; unlike many other language study tools (such as paradigm charts or textual flash cards), *DBG* places equal emphasis on both student enjoyment and language acquisition—it is quite clearly a game, designed to be fun (an adjective rarely used by secondary school students to describe the grammar-intensive discipline of Latin—or indeed any of their studies). All the while, DBG reinforces Latin (and English) grammar, vocabulary, history and culture in a manner accessible to Latinists across the proficiency spectrum. Inspired by Mark Walker's translation of J.R.R. Tolkien's *The Hobbit* (*Hobbitus Ille)* and Peter Needham's *Harrius Potter et Philosophi Lapis* and *Harrius Potter et Camera Secretorum* (the first two books of J.K. Rowling's *Harry Potter* series), which contribute to a long-standing tradition of translating children's books into Latin (cf. Dr Arcadius Avellanus's *Insula Thesauraria*, a translation of Robert Louis Stevenson's *Treasure Island*), I aspired to create a game which could engage high school Latin students who inexplicably do not find reading ancient authors as seductive an activity as anything else in the world. Armed with experience in the board and card game industry (having worked at a game store which specialised in such products), and in teaching and tutoring secondary school students (where translations such as Needham's boosted student interest), I merged the ideas of a free association card game and a word play game with the result being a game of inane sentence mutation.

The game includes two main types of card: Word Cards, which feature a plethora of Latin vocabulary, and Sentence Cards, which contain quotes from ancient authors and

original, basic Latin sentences. Designed to be comprehensible to players with little experience in Latin, each Word Card is thus divided into two main sections: grammatical information and meaning. The Word Cards (for examples, see Appendix A Items A1-6) are intended to teach players vocabulary by exposing them to basic inflectional information and by utilising colour-coding for part of speech, images for object association, synonyms for further expanding vocabulary, and definitions to convey more exact meanings. Sentence Cards (for examples, see Appendix A, Items A7-8) showcase various authors and syntactic constructions, accompanied by English translations. Sentence Cards also feature vocabulary which may not appear in Word Cards, and every word in the Latin sentence is colour-coded by part of speech following the same scheme as on the Word Cards. On top of internal mechanics for accessibility, the game is built to be modular; players can purchase expansion packs to add even more vocabulary, including Advanced Cards (more suited for students at the intermediate level) which cover historical and cultural topics, as well as more advanced grammatical constructions.

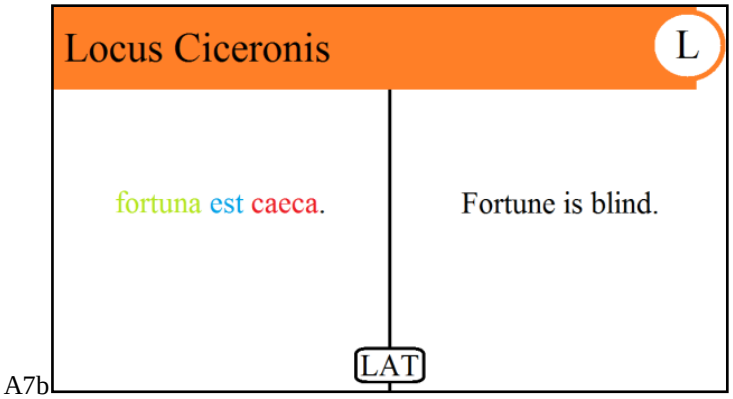
I.2 How Does it Work?

With 'gamification' in mind (see section IV), *De Bello Grammatico*™ began as a game, focusing on play mechanics employing content from the Latin or French classroom rather than focusing on classroom mechanics while running a game in the background. *The Oregon Trail* video game exemplifies 'gamification' done right; while the game concerns itself with the history, geography and culture of the American frontier in the 'Old West', players learn while virtually journeying with their characters to Oregon. If *The Oregon Trail* had quizzed players on trail markers with pictures of the trail in the background, the game would have been less effective, as it would not have engaged players by immersing them in the experience. Although it focused on gameplay mechanics, *The Oregon Trail* still included

encyclopaedic entries on the historical trail, cities, and landmarks; it lured players in, and they enjoyed it so much that they learned more about the history which begot the game.

That's not to say, however, that games focused on pure learning cannot succeed. Back in secondary school, several of my teachers created *Jeopardy!* boards which showcased material from their respective curricula. Students generally welcomed this distraction from normal lectures and worksheets, but, despite my love for *Jeopardy!*, its adoption into a classroom often ostracises struggling students. While classroom boards scale in difficulty in each category, the game still revolves around competition for having the most right answers. Some students with the desire to win may find competition an incentive to study more, but less competitive students may think the exercise no more than a verbal test which lauds the successes of the already successful and accentuates the shortcomings of those with a looser grasp of the subject material.

Contrariwise, while DBG also includes a competitive aspect, pre-existing knowledge of the language only facilitates play, without excluding players who have not studied the language as intensively. Instead of competing to see who can get the right answer to a question the fastest, students attempt to mutate sentences in the funniest (or most apt, or most nonsensical—it's really up to the discretion of the 'Praetor') way possible. Each round, one player acting as 'Praetor' (i.e. judge) draws a card from the Sentence Card deck and reads it aloud in Latin (or, in the French version, the 'Juge' reads the card in French). Each other student next offers a mutation to the sentence by playing a Word Card from his hand face-down, as an anonymous submission. The 'Praetor' then judges each submission independent of the others, by swapping the played word with one of the words of the same part of speech in the Sentence Card (or, in the case of sentences without adjectives or adverbs, adds the suggested modifier). Take for example the following Sentence Card and four Word Card submissions:



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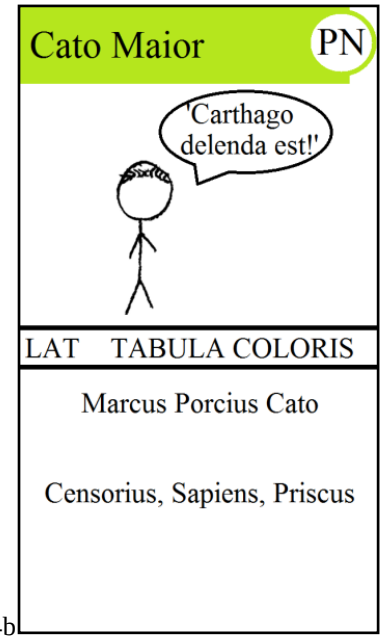

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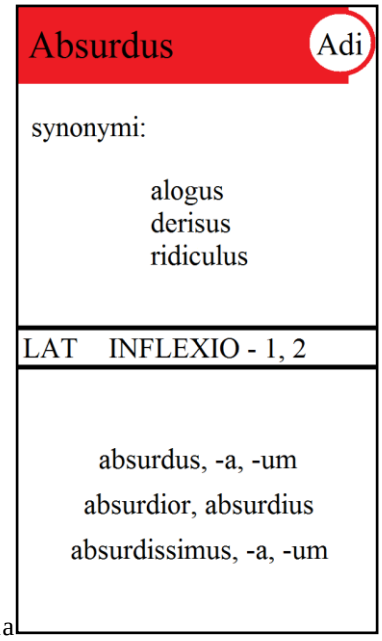
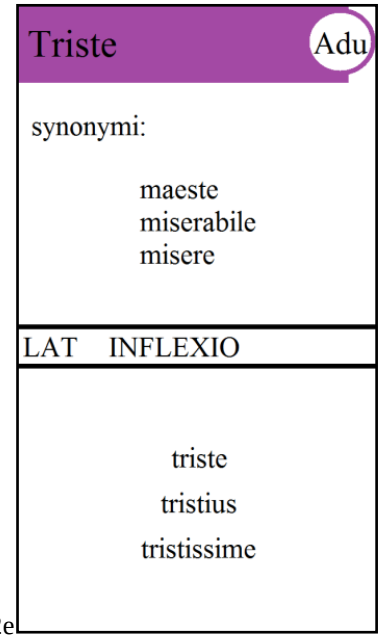


A1a



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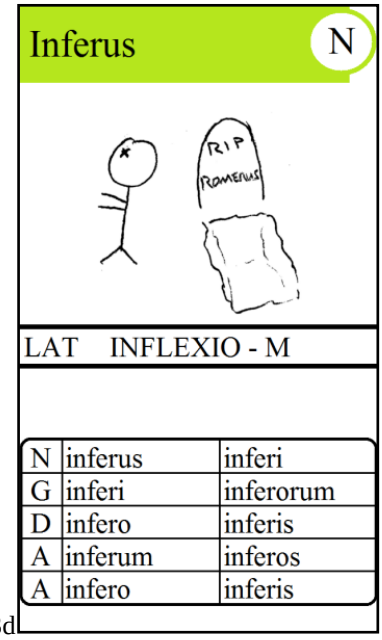


N	inferus	inferi
G	inferi	inferorum
D	infero	inferis
A	inferum	inferos
A	infero	inferis

A3d

After each player has submitted a Word Card, the Praetor shuffles them (to remove any sort of bias towards one player) and then reads and judges the four following sentences:

1a. ***Cato Maior*** *est caecus.* 'Cato the Elder is blind.'

1b. *fortuna est* ***absurda****.* 'Fortune is absurd.'

1c. *fortuna est* ***triste*** *caeca.* 'Fortune is sadly blind.'

1d. ***inferus*** *est caecus.* 'The zombie is blind.'

Note the 'Praetor' must inflect appropriately; the adjectives agree in gender with what they modify. The 'Praetor' then decides which suggested sentence mutation suits his fancy on that particular day, and the player who submitted the Word Card which produced the winning mutation gains one point. The round ends, and the role of 'Praetor' shifts clockwise for the next round. The game ends when one player has reached the point threshold designated for victory (the instructions (see Appendix B) suggest 8 points in a game of five players, such as the above example), or when the class period ends. Because the object of creating ridiculous sentences does not require advanced competence in the language, introductory Latin students can play even with their instructors without being discouraged by the gap in knowledge, especially since the cards themselves contain clues to attempt to bridge any such gap (see section III - Accessibility).

II. Grammar

In the quest for accessibility (more on that in section III), DBG cards are designed to facilitate play, by providing basic grammatical information on every card, so students who have not memorised paradigms can look up the correct forms. Word Cards display their part of speech, and list basic inflection in order that the playing card double as a 'flash card' for such paradigms. The game cards contain information a student might write himself on a flash card (excluding most notably declension number, gloss and the two aforementioned cases), such that time spent playing the game equates also to time spent studying, as if using flash cards. In a language as inflectionally rich as Latin, however, such small cards cannot contain

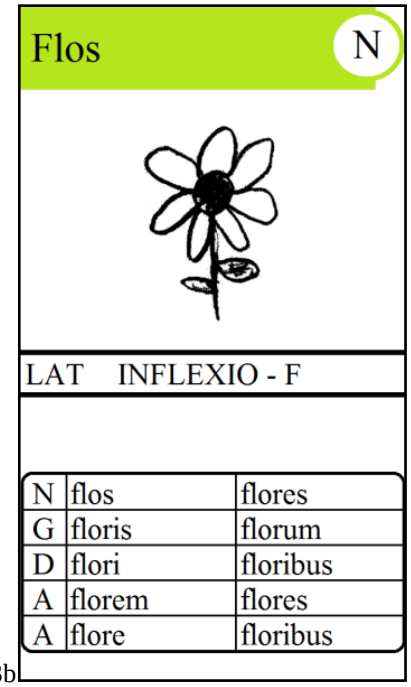
an exhaustive collection of paradigms, so the cards prioritise the more fundamental aspects of Latin inflectional morphology.

II.1 Parts of Speech

Each Word Card prominently displays its part of speech (i.e. adjective ('Adi' in Latin or 'Adj' in French), adverb ('Adu' in Latin or 'Adv' in French), noun ('N') or verb ('U' in Latin or 'V' in French)—the four which, after extensive beta testing, yielded the best results) on the title bar of the card. While this does not grant immediate knowledge of grammatical function to learners unfamiliar with the classification system, players learn to associate particular words with the appropriate part of speech (setting aside complexities such as the substantive usage of adjectives, gerunds, gerundives, and other quirks of grammar). Further, the colour-coding system (see section III.1) provides contexts for students of each part of speech, enabling weaker students to learn the syntactic function of each part of speech.

II.2 Nouns

Noun Cards most often exhibit common nouns, in order to bolster students' nominal lexica. Each card includes a declensional paradigm of that word for the five most common grammatical cases in Latin (at the exclusion of the rarer Vocative and Locative cases). In addition, the card lists the noun's grammatical gender.

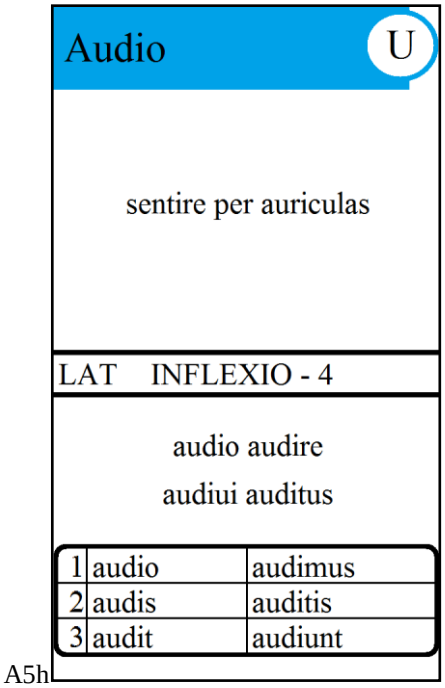


A3b

For the above card *Flos* ('flower') (titled by its lemma, the nominative form, should players need to reference a dictionary), the card lists under the 'Inflexio' ('inflection') section 'F' for feminine, followed by a chart containing the singular and plural forms for the Nominative, Genitive, Dative, Accusative and Ablative cases. Nouns can appear in Sentence Cards in any of those forms, so it is up to the player to use proper grammar, whether that entails using the correct case, number or gender.

II.3 Verbs

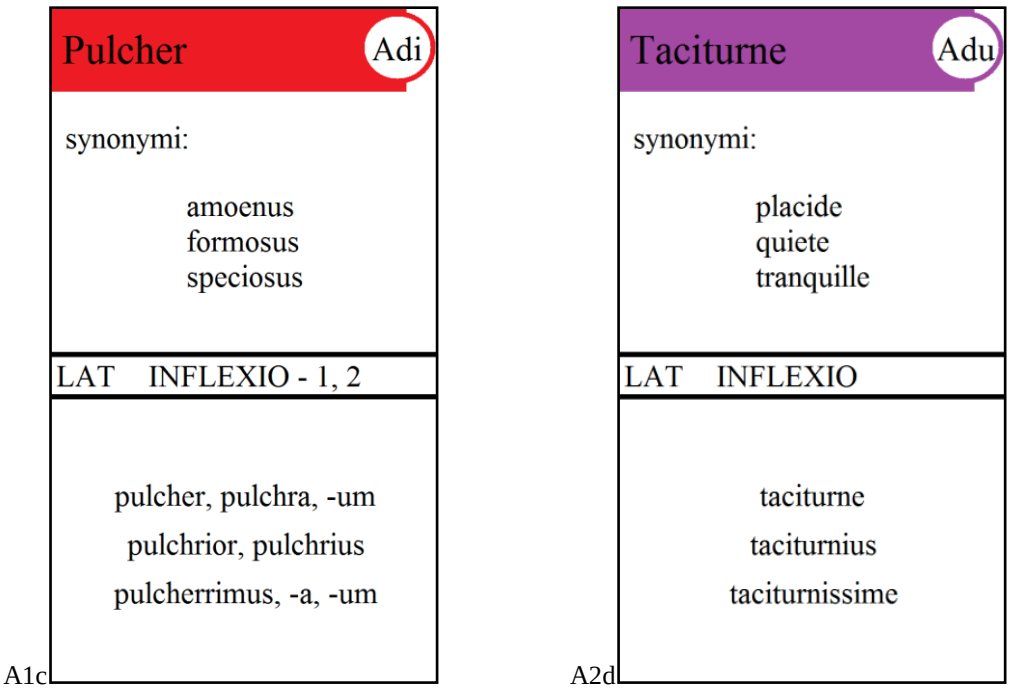
Verb Cards showcase the various regular verbs (deponent verbs, semi-deponent verbs, defective verbs and irregular verbs reserved for Advanced Verb Cards (see section III.7)). First, each card lists the conjugation number—a necessary distinction for the cards since they lack macrons (the distinguishing factor in modern written Latin between infinitives of the second and third conjugations). The 'Inflexio' section for verbs includes the four principal parts of the verb (in order: first person singular present active indicative, present active infinitive, first person singular perfect active indicative, masculine perfect passive participle—the four forms every Latin student must memorise for any verb in order to actively generate its inflection and derivatives).



Audio ('hear') therefore is marked with a '4' for fourth conjugation, '*audio audire aduiui auditus*' (its principal parts, from which most other inflectional forms can be derived), and, in a chart similar to Noun Cards, the singular and plural forms for each grammatical person. Due to unfortunate size limitations, Verb Cards cannot include more than the present active indicative paradigm. The Sentence Cards for the base game include relatively simple sentences, so students do not need to generate other forms. Advanced Sentence Cards (see section III.7) may feature additional tenses or moods.

II.4 Adjectives and Adverbs

Nouns and verbs make up the majority of the game's Word Cards, followed next by the less inflectionally complex adjectives and (least inflectionally complex) adverbs. Instead of case inflection, Adjective Cards display their positive, comparative and superlative degrees (as do Adverb Cards), in the nominative forms for each grammatical gender.



Adjectives in Latin can act either like first and second declension nouns, or like third declension nouns. *Pulcher* ('beautiful'), falling into the former class, is marked '1, 2'. Where the stem remains the same, (as *pulcherrimus, -a, -um*), the card lists only the gender endings. Where the stem is altered (as *pulcher, pulchra, -um*), the card lists the change. From these cards, students can generate all of the further forms.

III. Accessibility

DBG aims to teach this information to all students by being accessible, rather than targeting a single demographic, as public schools often prioritise. While many classrooms work at a pace suitable for the majority of students, leaving those lagging behind to seek tutors or extra help and those light-years ahead to remain bored with the material, often uninspired to progress further, DBG enables pupils at each end of the spectrum to succeed and continue. While the bottom half of a card contains grammatical information, the top half of a card contains clues as to the word's meaning, in order to familiarise students with novel vocabulary (and to streamline the game so students do not need to consult a dictionary frequently). The game uses various techniques to teach struggling students, such as colour-coding, image association, lists of synonyms, definitions, and, when all of the above are

exhausted, English translations. For more advanced students, the game offers modularity, allowing players to add expansion packs, including 'Advanced Cards', which contain less morphological data and cover historical, cultural or complex grammatical concepts. All of these proven methods combined facilitate and encourage the dissemination of grammatical information.

III.1 Colour-coding

The simplest and most ubiquitous accessibility tactic in DBG involves associating words of each part of speech with a colour. These colours help to lend an air of levity to the game, helping students relax and view the exercise as entertainment rather than study (see section IV.2), often remarking, 'these remind me of *Monopoly* cards!' Adjectives correlate to the colour red, Adverbs purple, Nouns green and Verbs blue. Every Word Card bears a bold streak of the appropriate colour at the top of the card, and every word on each Sentence Card matches using this colour-coding system. Words which do not fall into either of the four above categories appear in black in sentences, and are not featured in their own Word Cards[1].

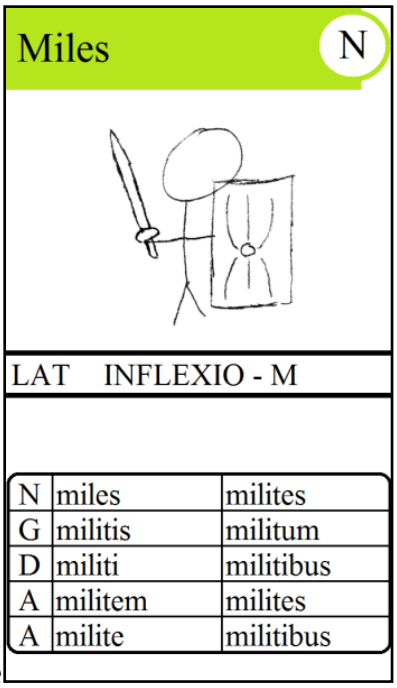
Moore and Dwyer (1997) studied the correlation between colour-coding and students' locus of control. The study involved two sets of material covering the intricacies of the human heart: colour-coded materials, and black-and-white materials. The results showed that, regardless of whether participants had an internal (they believe they are responsible for their own learning), external (they believe chance is responsible for their learning), or neutral locus of control, the students who studied with the colour-coded materials performed better on the examination. This included a drawing test (students had to draw and label the heart), an identification test (students had to label a drawing of the heart), a terminology test (explaining

[1] The first prototype also allowed players to swap out prepositions, but testing revealed them to be less conducive to play; players often ignored the preposition cards, in favour of funnier Word Cards. While the goal is, of course, to help teach students the language, if the game were to forego being fun in order to cover slightly more material, it would lessen the students' experience while playing and thus itself be a less effective learning tool (see section IV.2). Given the volatility of this balance, focusing on prepositions or conjunctions had to be given up.

or defining heart-related terminology), and a comprehension test (students had to explain each part's function). Moore and Dwyer conclude that 'Color remains to be an important instructional variable in improving student achievement'; this study suggests that every type of student benefits significantly from the categorisation of colour-coding.

III.2 Images

Word Cards which represent nouns contain an image of or relating to that particular noun. The card 'Miles' ('soldier') thus includes a stick figure drawing of a Roman legionary, equipped with his trusty *gladius* and *scutum*:



The image thus provides students with a mental representation of the word, and they can more closely associate the word *miles* with their internal concept of soldiery.

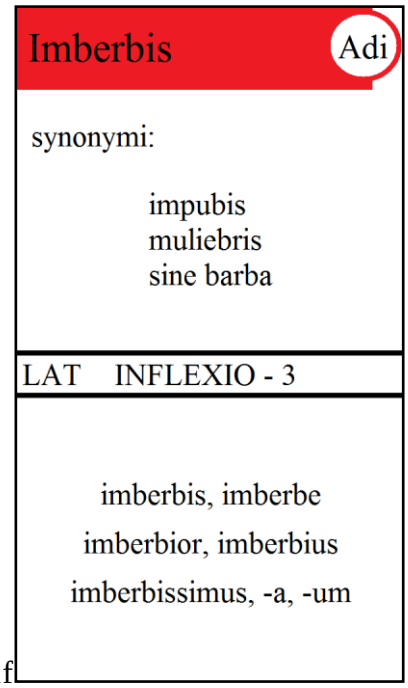
Cohen and Johnson (2011) performed a study attempting to gauge the effectiveness of imagery intervention in acquiring novel vocabulary. The study examined second graders' ability to learn new nouns when either (1) presented with the word and its definition, (2) presented with the word, its definition and an accompanying image or (3) presented the word and its definition, and then asked to attempt to draw it based on the given definition. Those asked to draw the new words themselves showed statistically significant improvement from

the pre-test, as compared to the other two methods. The students who were given images (provided by Google's image search) also showed an improvement compared to students who only had the words and their definitions, but not by a statistically significant margin. Students, however, claimed that the images helped them to learn and remember the vocabulary.

While this study does not conclusively show any statistically significant advantage in image association of the sort used in DBG, students ascribe part of their success to the introduction of an image in juxtaposition with new vocabulary. However, Bransford, Brown and Cocking (2000) assert that people can recall an object better by its image rather than a word which labels it. Even if the images provide only a minor advantage in testing, students find the images comforting and helpful, such that they may see DBG as the 'fun' sort of educational tool, improving their disposition towards learning the language (more about fun in Section IV).

III.3 Synonyms

Each adjective and adverb card comes with three synonyms in the target language to help students identify the new word.



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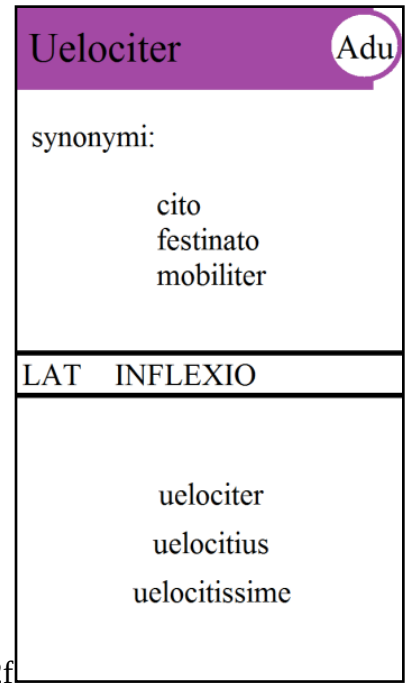
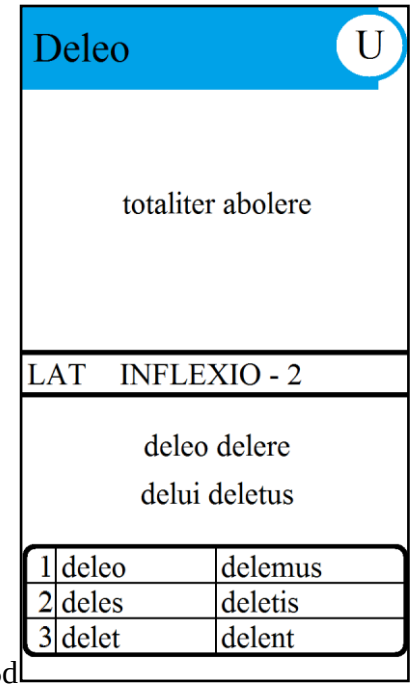


A2f

The synonyms serve two purposes: (1) help students identify the Word Card if they know any of the synonyms, (2) teach students additional vocabulary. While Higa (1963) concludes that learning two synonymous novel words requires more effort than learning two unrelated words, the DBG cards focus on one word, and the others are secondary. For example, coming across the card 'Imberbis' ('beardless'), a student may identify it by the synonymous phrase 'sine barba' (lit. 'without beard'). The student would then deduce the meaning of *imberbis*, and can further increase his vocabulary by taking mental note that *impubis* ('prepubescent') and *muliebris* ('womanly') have similar connotations. Webb (2007) determined that, for L2 learners, introducing new words through already-known synonyms helps students acquire the new vocabulary, just as speakers do in their native languages. Players of DBG who know at least one of the four synonymous words therefore benefit from the existence of synonyms on the cards, facilitating additional vocabulary acquisition (as well as play).

III.4 Definitions

To further diversify the methods of identifying Word Cards, every Verb Card comes with a definition, written in Latin.

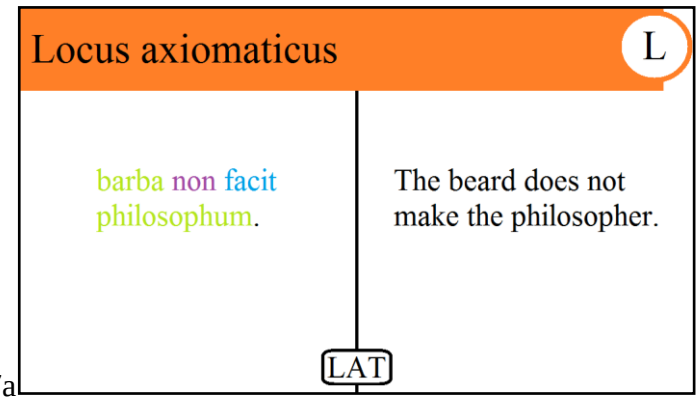


A5d

'Deleo' ('destroy') bears the definition *totaliter abolere* 'completely obliterate'—a simple definition, for ease of comprehension. The cards bear Latin definitions rather than English definitions for immersive reasons (see section V.1).

III.5 Translations

As an absolute last resort to convey meaning, Sentence Cards feature not only the Latin sentence, but an English translation.



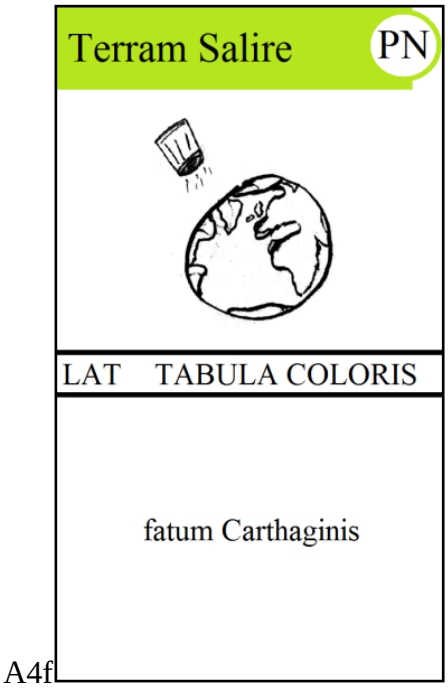
A7a

In order to keep the game moving swiftly, especially for less advanced students, students can use the English as a crutch. This is therefore a major concession simply to facilitate access, at the expense of the educational benefit of having to work through the sentence by oneself. For the iOS version of the game, a grey box automatically covers the English translation, which the player can remove if he wants to verify the translation he worked out (or, I suppose, if he simply wants to be lazy).

III.6 Modularity

For the more ambitious students, and for the teachers who wish to expand the game's repertoire of quotes and vocabulary, DeSalvo Enterprises, Ltd. also offers expansion packs. Currently, one can add the *Advanced Expansion*, or create one's own cards using the blank cards (*Chartulae Rasae)* expansion. Other (future) modules might focus on one particular author, adding common vocabulary and quotes exclusively from that writer, or they might focus on thematic vocabulary.

The *Advanced Expansion* adds three new types of card: the *Phrasis Nominalis* (noun phrase), *Verbum Difficile* (lit. 'difficult verb'), and the *Locus Difficilis* (lit. 'difficult quote'). These three card types cater specifically to advanced players, making it the perfect addition to use for an upper-level class.



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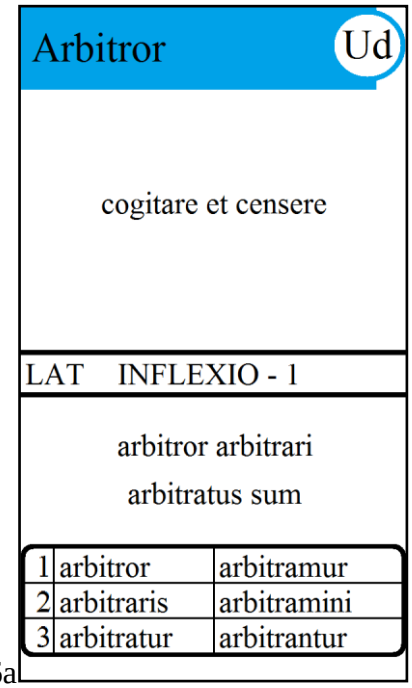

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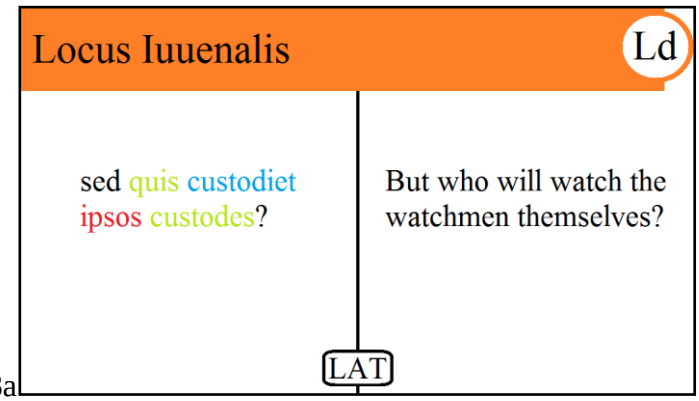

A8a

Phrasis Nominalis (PN) cards work just as Noun cards, but feature phrases (e.g. 'salting the earth'), and, instead of inflectional data, have 'flavour text', to teach (or remind) students to what the phrase refers (e.g. 'the fate of Carthage'). PN cards cover historical or cultural aspects of the language, and can refer to events, persons, or literary characters (Appendix A, Item A8; more on history and culture in Section V).

Verbum Difficile (Ud) cards similarly function as normal Verb cards, but feature deponent, semi-deponent, defective or simply irregular verbs (e.g. the deponent *Arbitror* 'to think/arbitrate'). Avoiding delving too deeply into Latin grammar, suffice it to say that these verbs behave differently than the majority of Latin verbs, and most textbooks save many of them for later in the curriculum.

Locus Difficilis (Ld) cards (predictably) showcase more difficult sentences. Because Verb cards' inflectional sections list only the Present Active Indicative forms, some Ld sentences simply use a different tense (e.g. 'But who will watch...'). Alternatively, they might include more grammatically complex constructions (such as periphrasis), or merely odd vocabulary.

The Blank Cards expansion allows players (or teachers, or whole classrooms) to add their own vocabulary to their copy of DBG. Some players may find this particularly useful if they feel like studying some of the less classroom-friendly poems of Catullus. Several surveyed students suggested the addition of 'dirtier' words, to 'spice up' the game. As DBG is directed towards classroom usage, a line must be drawn between the acceptable and the unacceptable, but blank cards enable players to further shape the game into a more personalised (and thus more enjoyable) experience.

IV. The Fun Factor

As is evident from the myriad educational games which exist, instructors have long striven to make learning fun for kids. Although enjoyment is subjective, often 'educational games' start off by trying to fulfil the role of instructor, under the guise of entertainer. While clearly one cannot neglect the importance of conveying adequately the appropriate content, the exercise intends to serve the purpose of engaging learners whom otherwise the material would not entice. More recently, people refer to this process as 'gamification': 'the idea of taking the principles of play... and using them to make real-world activities more engaging'

(Portnow). Though 'gamification' generally deals with video games, some of the same principles can still apply to card games. Further, Portnow writes, 'It sounds like it could be our answer to solving all the problems of education. Perhaps we can bring the same ideas that make you play *World of Warcraft* for twenty hours a week, and instead use them to make learning another language... just as engaging, just as exciting', suggesting that even language educators can indeed apply these principles to incentivise their students to continue practising the language.

IV.1 Is it Actually Fun?

While not everyone shares the same tastes and likes the same things, polling players about their experiences gives an indicator as to how certain demographics may view the game. Every time people play-tested the various versions of DBG, they either stated their opinions to me personally, or, in the case of secondary school students and their teachers, filled out anonymous surveys (see Appendix C, Items C1-2). These surveys are also currently distributed online on the game's official store.

In order to determine accessibility to players of all proficiency levels, these surveys query specifically for years of experience in the target language. Beta testers ranged in proficiency from 0 years (having no experience in Latin) to >30 years of study in the language, but only the poll for secondary school students (the intended demographic) asked participants to rate the game for its entertainment value. Table 4.1 compares the average survey result of 'level of fun' on the arbitrary scale of 1-10 (in relation to other games the students played in their language classes) with each demographic of student. 46 students completed the survey after playing a demo version of the game, who ranged from 0-7 years of instruction in either French or Latin.

DEMOGRAPHIC	**'FUN RATING' (from 1-10)**
0-1 year of Latin or French	9

2 years of Latin or French	9
3 years of Latin or French	8.5
4 years of Latin or French	6.81
5 years of Latin or French	6.6
6 years of Latin or French	8.17
7 years of Latin or French	7
All levels	7.37

Table 4.1

Clearly such an arbitrary scale does not show whether students find DBG more fun than video games or sports, but it does reveal that, among the students polled, average secondary school students among every proficiency level derive at least some enjoyment from playing the game. The surveyed students on average rated the game at no less than 7/10, so one may extrapolate that the average student finds the game fun enough to consider it a leisure activity rather than a forced learning experience. For a better sense of relative 'fun', the survey further asks whether students would rather play DBG or study, and, unsurprisingly, ninety-one percent of polled secondary school students prefer playing the game.

Further, the surveys asked both instructors and students whether they would play DBG at their leisure, to determine if students enjoyed the game so much that they would go out of their way to play it, outside of the classroom environment. One hundred percent of Latin[2] survey participants admitted that they liked the game enough to play it of its own merits, rather than just as an exercise in the classroom. These metrics provide the insight that, without external academic motivators, students of the language would use this study tool just

[2] Only 38% of the polled French students said they would play it at their leisure. I am marginalising this data because the commonest comment these students furnished was a suggestion that I add English translations on all the cards (see my reasoning on why I won't do that in Section V.1). I came to the conclusion that perhaps these French students are less enthusiastic about having to practise their French skills when not in the classroom.

for fun; students think of DBG as more than just a method of study and value it as a form of entertainment.

IV.2 Why it Should be Fun

This intrinsic incentive results in the benefit of additional exposure to the language, as the fun factor motivates additional play—a form of self-instruction, as the game doubles as an academic tool. Dickinson (1987) defines self-instruction as 'situations in which a learner, with others, or alone, is working without the direct control of a teacher'. Which, while normally used in the context of a whole course whereby students, with little intervention from instructors, study on their own from texts, can include a learning tool such as DBG. However, DBG does not intend to replace a curriculum, but to supplement one, as becoming proficient in a language takes more than sitting in a classroom and listening to lectures. Dickinson remarks that 'the act of learning something must always be a personal, individual act'. Thus, in motivating play, the game encourages further study, and by extension incentivises learning.

Learning and mastering a language requires more time and effort than most secondary school programmes can offer. Eaton (2012) examines the efficacy of the secondary school French programmes in Alberta, Canada, concluding that 95 hours per year for the entirety of students' high school experiences will not lead to expertise in and mastery of the language:

> Developing expertise in . . . a second language . . . requires an investment of hours far beyond what is achievable by the end of high school, if one relies on formal classroom education alone. Deliberate practice for acquiring language proficiency means engaging in informal learning outside of classes.

Evidence suggests that students must practise the language informally in order to improve proficiency. A game such as DBG which students enjoy playing outside the classroom then contributes to greater language proficiency, and therefore, higher test scores.

Another study, among Cypriot university students studying for their English examinations in a self-instruction programme, suggests a clearer correlation between games and academic success. In questionnaires at the end of the course, students found the educational games incorporated in the curriculum the most useful aspect of the programme. Further, students described the experience 'interesting, exciting and amusing', and the interactive games 'motivating' (Papadima-Sophocleous 2013). In general, students in various language learning courses perceive educational games as productive. In the case of the Cyprus University of Technology Language Centre, the programme also resulted in academic success, with all students reporting that the course helped them achieve language proficiency for their exams, even if they did not complete the programme (Papadima-Sophocleous 2013). Clearly, games have their place in the language classroom.

Perhaps the epitome of self-instruction language courses, Duolingo, implements 'gamification' techniques while also achieving academic advancement. The site provides grammar and vocabulary lessons, as well as paradigms for students to study, but its true goal is to crowd-source the translation of the Internet into as many languages as possible. The site tracks student progress by awarding experience points for completing lessons and translations, so students 'level up' as they learn more. Users can share their progress across social media, and compete with their friends, if they want that incentive. In addition, Duolingo rewards them with a currency called 'lingots' for various accomplishments, such as levelling up, finishing all the lessons in a particular skill tree, completing a lesson without any errors (tracked by hearts, as Hit Points in video games), or keeping up a streak (using Duolingo at least once per day). Players then purchase upgrades with this currency, to do things such as

regaining lost hearts in a lesson. These tactics hook students and keep them playing, with the result that they improve their language proficiency. In a study funded by Duolingo, the unaffiliated Vesselinov and Grego (2012) comparing Duolingo users with university Spanish students, concluded that, on average, in 34 hours of Duolingo, students effectively learn the material covered in one semester of a college Spanish course, as gauged by the WebCAPE placement exam in Spanish, covering listening, reading and writing the language. A four-credit introductory Spanish course includes about 60 hours of instruction (excluding time spent outside the classroom). Not only does a 'gamified' self-instructional course take fewer hours to achieve similar results as a classroom, but it motivates students to continue using the learning tool, making the experience less painful (for people who, for some reason, do not take immense pleasure in studying a language).

V. Immersion

Most people agree that, to most effectively learn and become fluent in a language, one must immerse oneself in that language. Instructors of upper-division language courses at universities lecture in the target language, and many secondary-school programmes' teachers do the same; students in these immersive environments must learn to speak (and therefore think) in the target language.

V.1 Omnes in Latina

While some question the efficacy of curricula which promote communication in dead languages, Overland (2004) examined a seminary course on Biblical Hebrew which emphasised communication. His study concluded that, much like for modern spoken languages, these communicative activities (among those in the study included collaborative games) improved students' intrinsic understanding of the language: 'students... embed that language at a deeper level than would a classmate attaining only grammatical competence. Consequently communicative competence can accelerate skills such as literacy.' This focus

on using the language communication only meets opposition by those who cling to the classical emphasis on rote memorisation of forms and grammar, followed by translation.

V.2 History and Culture

If the purpose of learning a language is intercultural communication, every language education programme should teach about the history and culture of the language and its speakers. Mughan (1998) even goes so far as to say that, 'for language learners to apply language skills fruitfully and effectively, a knowledge of the cultural environment is essential'. In practical usage (such as in business, as Mughan writes of), rather than classroom usage, culture pervades speech and interpersonal interaction.

Further, providing the historical and cultural context for language usage proves useful also for an ancient language, such as Latin. Without knowledge of Greco-Roman theology, history, or the epic tradition, students reading Vergil's *Aeneid* can hardly be expected to contextualise the poetry their teachers ask them to scan and translate. Literature draws upon both history and culture, even ignoring historical texts and treatises on law; Vergil follows Homer's poetic style, Catullus writes in Sapphic strophe, Hugo and Dante (and countless others) allude to the Bible and reference Christian theology. Without a basic understanding of the corpora upon which these works were built, how can a student be expected to appreciate and truly understand the language?

VI. Conclusions and Applicability in Other Languages

After reviewing various studies regarding language pedagogy, it is apparent that many courses do not engage secondary school students enough for them to achieve a high level of proficiency. Learning a new language, like any skill, takes a great amount of effort and practice. *De Bello Grammatico* cannot replace a language course, but it can supplement one. Being a product built from the combined disciplines of education and game theory, teachers can use DBG to foster in their students additional interest in language education, and their

pupils, by playing the game, practise a new language through collaboration. Assuming enough students like the game in class enough to play it in their leisure, this can solve the issue of not devoting enough time to becoming proficient in the language.

Although I created *De Bello Grammatico* with the Latin language and Roman culture in mind, the game is easily adaptable into other languages (with French already in production). The actual game mechanics can work with almost any language, though languages which lack one or more of the parts of speech utilised in the game may pose a slight problem (easily remediable by simply removing that card type for that language). A separate issue might arise for languages with minimal inflection, whose Word Cards seem emptier. In Latin, with its seven noun cases (of which the cards list five, in both singular and plural), having a nominal inflection paradigm seems obviously helpful, whereas the French cards bear a paltry list of two forms (singular and plural). Because no two languages are the same, every new adaptation of the card game would require additional tweaking, some more than others.

Despite the necessity of such minor changes, *De Bello Grammatico* could only have a positive effect on language education in the classroom. While many educational games exist, DBG's focus on sentence mutation rather than on memorisation or quiz-style competition opens the door for struggling students to improve their language skills in a more subliminal way, without ostracising them from their peers who can better memorise and recall a set list of words. Many teachers already incorporate the usage of games into their curricula, and this unique card game exercises several important aspects of the target language (grammar, vocabulary, history and culture) in the most organic ways: exposure and immersion, rather than rote memorisation of forms and rules from a book.

References

Bransford, John, Ann L. Brown, and Rodney R. Cocking. *How People Learn: Brain, Mind, Experience, and School*. Washington, D.C.: National Academy, 2000.

Cohen, Marisa, and Helen Johnson. "Improving The Acquisition Of Novel Vocabulary Through The Use Of Imagery Interventions." *Early Childhood Education Journal* 38.5 (2011): 357-366.

Dickinson, Leslie. *Self-instruction in Language Learning*. Cambridge UK: Cambridge University Press. 1987.

Eaton, Sarah Elaine. "How Will Alberta's Second Language Students Ever Achieve Proficiency?." *Notos* 12.2 (2012): 2-12. *Education Source*.

Higa, Masanori. "Interference Effects of Intralist Word Relationships in Verbal Learning."*Journal of Verbal Learning and Verbal Behavior* 2.2 (1963): 170-75.

Portnow, James. "Gamification." *Extra Credits*. Perf. Daniel Floyd and Erin Siegel. *Penny Arcade*. Penny Arcade TV, 10 May 2012. [accessed 4 Oct. 2013]

Moore, David M., and Francis M. Dwyer. "Effect of Color-Coding On Locus Of Control." *International Journal of Instructional Media* 24.2 (1997): 145-151. *Education Source*.

Mughan, Terry. "Integration of Foreign Culture Awareness into Business Language Teaching Materials and Methods." *The Language Learning Journal* 17.1 (1998): 41-47.

Overland, Paul. "Can Communicative Methods Enhance Ancient Language Acquisition?." *Teaching Theology & Religion* 7.1 (2004): 51-57. *Education Source*.

Papadima-Sophocleous, Salomi. "Self-Access Language Learning Programme: The Case Of The English Language Voluntary Intensive Independent Catch-Up Study." *Studies In Self-Access Learning Journal* 4.2 (2013): 125-140. *Education Source*.

Skorton, David, and Glenn Altschuler. "America's Foreign Language Deficit."Forbes. Forbes Magazine, 27 Aug. 2012.

Stevick, Earl W. Memory, Meaning & Method: Some Psychological Perspectives on Language Learning. Rowley, MA: Newbury House, 1976.

Vesselinov, Roumen and John Grego. "Duolingo Effectiveness Study." *Duolingo.* 2012. <http://static.duolingo.com/s3/DuolingoReport_Final.pdf>.

Webb, Stuart. "The Effects Of Synonymy On Second-Language Vocabulary Learning." Reading In A Foreign Language 19.2 (2007): 120-136. Education Source.

Appendix A: Inventory of Sample Cards

Item A1: Sample Adjective Cards

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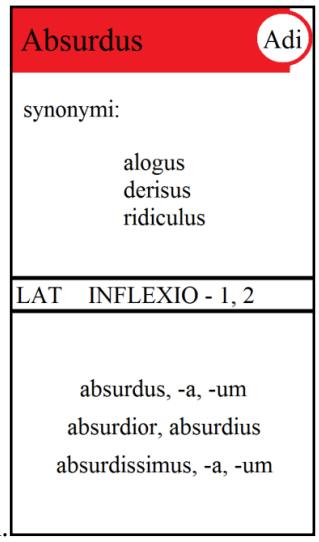

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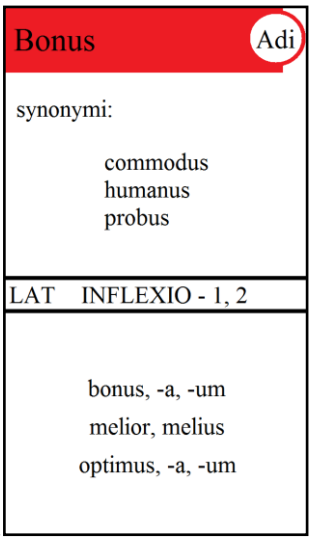

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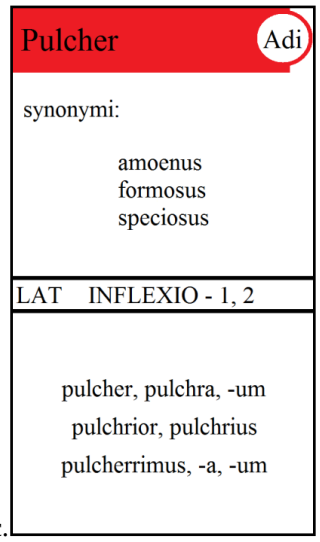

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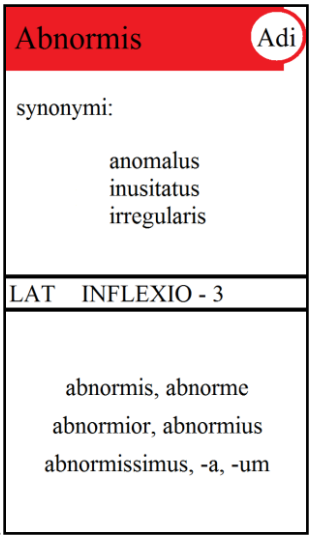

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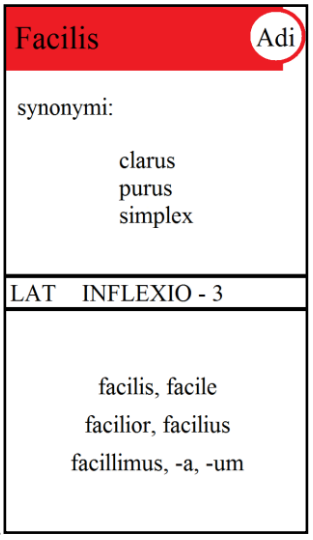

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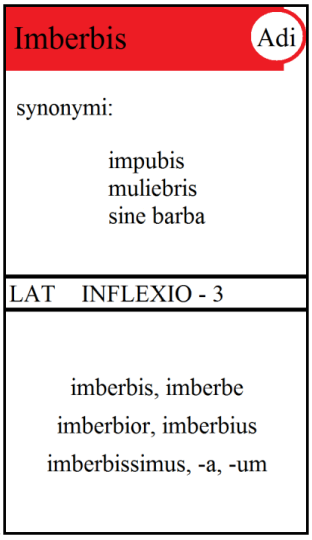

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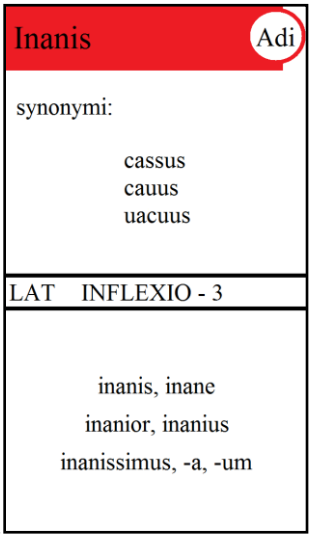

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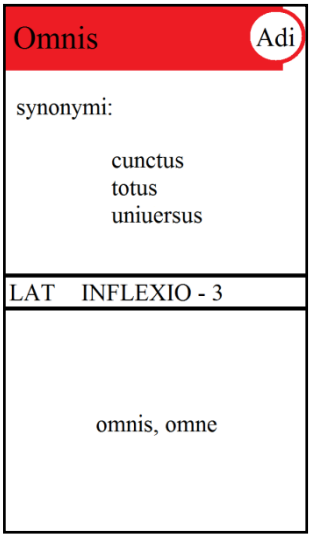

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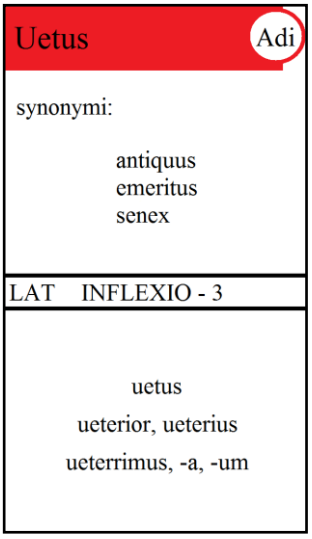


Item A2: Sample Adverb Cards

a.

Bene	Adu
synonymi: accurate belle commode	
LAT INFLEXIO	
bene melius optime	

b.

Diu	Adu
synonymi: ad infinitum aeterno longe	
LAT INFLEXIO	
diu diutius diutissime	

c.

Feliciter	Adu
synonymi: beate fortunate opportune	
LAT INFLEXIO	
feliciter felicius felicissime	

d.

Taciturne	Adu
synonymi: placide quiete tranquille	
LAT INFLEXIO	
taciturne taciturnius taciturnissime	

e.

Triste	Adu
synonymi: maeste miserabile misere	
LAT INFLEXIO	
triste tristius tristissime	

f.

Uelociter	Adu
synonymi: cito festinato mobiliter	
LAT INFLEXIO	
uelociter uelocitius uelocitissime	

Item A3: Sample Noun Cards

a.

Carthago N

LAT INFLEXIO - F

N	Carthago	
G	Carthaginis	
D	Carthagini	
A	Carthaginem	
A	Carthagine	

b.

Flos N

LAT INFLEXIO - F

N	flos	flores
G	floris	florum
D	flori	floribus
A	florem	flores
A	flore	floribus

c.

Lex N

LAT INFLEXIO - F

N	lex	leges
G	legis	legum
D	legi	legibus
A	legem	leges
A	lege	legibus

d.

Inferus N

LAT INFLEXIO - M

N	inferus	inferi
G	inferi	inferorum
D	infero	inferis
A	inferum	inferos
A	infero	inferis

e.

Miles N

LAT INFLEXIO - M

N	miles	milites
G	militis	militum
D	militi	militibus
A	militem	milites
A	milite	militibus

f.

Mons N

LAT INFLEXIO - M

N	mons	montes
G	montis	montium
D	monti	montibus
A	montem	montes
A	monte	montibus

g.

Conuiuium N

LAT INFLEXIO - N

N	conuiuium	conuiuia
G	conuiuii	conuiuorum
D	conuiuio	conuiuiis
A	conuiuium	conuiuia
A	conuiuio	conuiuiis

h.

Donum N

LAT INFLEXIO - N

N	donum	dona
G	doni	donorum
D	dono	donis
A	donum	dona
A	dono	donis

i.

Holus N

LAT INFLEXIO - N

N	holus	holera
G	holeris	holerum
D	holeri	holeribus
A	holus	holera
A	holere	holeribus

Item A4: Sample 'Noun Phrase' Cards

a.

Alpes Transire PN

LAT TABULA COLORIS

hoc actum melius sit
si elephantes tibi sunt

b.

Cato Maior PN

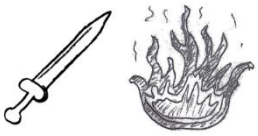
LAT TABULA COLORIS

Marcus Porcius Cato

Censorius, Sapiens, Priscus

c.

Ferrum et Ignis PN



LAT TABULA COLORIS

quomodo ciuitates delere

d.

Idus Martii PN

LAT TABULA COLORIS

et tu, Brute?

e.

Iuppiter PN

LAT TABULA COLORIS

deus deorum

f.

Lucretius PN

LAT TABULA COLORIS

Titus Lucretius Carus

De Rerum Natura scripsit

g.

Rubiconem Transire PN

LAT TABULA COLORIS

factum a Caesare, qui
dictator manere uoluit

h.

Seneca PN

LAT TABULA COLORIS

Lucius Annaeus Seneca

Seneca minor,
philosophus ille

i.

Terram Salire PN

LAT TABULA COLORIS

fatum Carthaginis

Item A5: Sample Verb Cards

a.

Do	U
tradere aliquid alicui	
LAT INFLEXIO - 1	
do dare dedi datus	
1 do	damus
2 das	datis
3 dat	dant

b.

Libero	U
absoluere de captiuitate	
LAT INFLEXIO - 1	
libero liberare liberaui liberatus	
1 libero	liberamus
2 liberas	liberatis
3 liberat	liberant

c.

Nego	U
dicere contra	
LAT INFLEXIO - 1	
nego negare negaui negatus	
1 nego	negamus
2 negas	negatis
3 negat	negant

d.

Deleo	U
totaliter abolere	
LAT INFLEXIO - 2	
deleo delere delui deletus	
1 deleo	delemus
2 deles	deletis
3 delet	delent

e.

Habeo	U
tenere possessionem	
LAT INFLEXIO - 2	
habeo habere habui habitus	
1 habeo	habemus
2 habes	habetis
3 habet	habent

f.

Ago	U
facere aliquid	
LAT INFLEXIO - 3	
ago agere egi actus	
1 ago	agimus
2 agis	agitis
3 agit	agunt

g.

Emo	U
dare pecuniam alicui pro aliquo	
LAT INFLEXIO - 3	
emo emere emi emptus	
1 emo	emimus
2 emis	emitis
3 emit	emunt

h.

Audio	U
sentire per auriculas	
LAT INFLEXIO - 4	
audio audire audiui auditus	
1 audio	audimus
2 audis	auditis
3 audit	audiunt

i.

Seruio	U
facere res pro aliquo	
LAT INFLEXIO - 4	
seruio seruire seruiui seruitus	
1 seruio	seruimus
2 seruis	seruitis
3 seruit	seruiunt

Item A6: Sample 'Advanced Verb' Cards

a.

Arbitror	Ud
cogitare et censere	
LAT INFLEXIO - 1	
arbitror arbitrari arbitratus sum	
1 arbitror	arbitramur
2 arbitraris	arbitramini
3 arbitratur	arbitrantur

b.

Cunctor	Ud
agere lente	
LAT INFLEXIO - 1	
cunctor cunctari cunctatus sum	
1 cunctor	cunctamur
2 cunctaris	cunctamini
3 cunctatur	cunctantur

c.

Confiteor	Ud
dicere secretum alicui	
LAT INFLEXIO - 2	
confiteor confiteri confessus sum	
1 confiteor	confitemur
2 confiteris	confitemini
3 confitetur	confitentur

d.

Tueor	Ud
protegere aliquem	
LAT INFLEXIO - 2	
tueor tueri tuitus sum	
1 tueor	tuemur
2 tueris	tuemini
3 tuetur	tuentur

e.

Egredior	Ud
ire	
LAT INFLEXIO - 3	
egredior egredi egressus sum	
1 egredior	egredimur
2 egrederis	egredimini
3 egreditur	egrediuntur

f.

Morior	Ud
finire uitam	
LAT INFLEXIO - 3	
morior mori mortuus sum	
1 morior	morimur
2 morieris	morimini
3 moritur	moriuntur

g.

Demolior	Ud
delere aedificium	
LAT INFLEXIO - 4	
demolior demoliri demolitus sum	
1 demolior	demolimur
2 demoliris	demolimini
3 demolitur	demoliuntur

h.

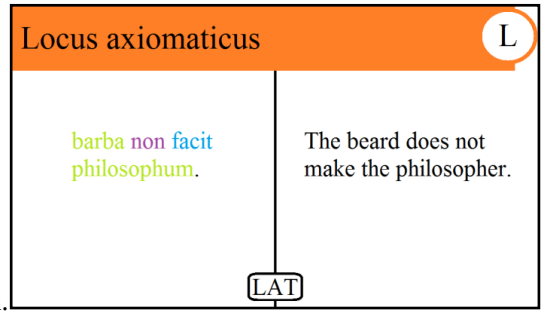
Mentior	Ud
dicere fraudulenter	
LAT INFLEXIO - 4	
mentior mentiri mentitus sum	
1 mentior	mentimur
2 mentiris	mentimini
3 mentitur	mentiuntur

i.

Memini	Ud
reuocare	
LAT INFLEXIO - IRR	
memini meminisse	
1 memini	meminimus
2 meministi	meministis
3 meminit	meminerunt

Item A7: Sample Sentence Cards

a.



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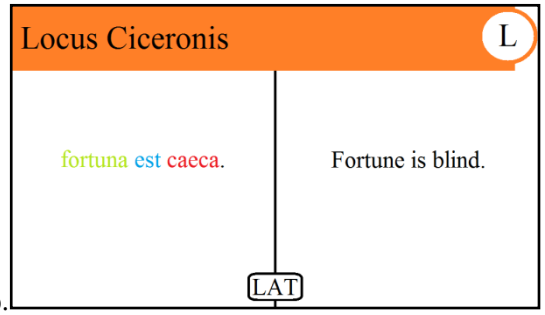

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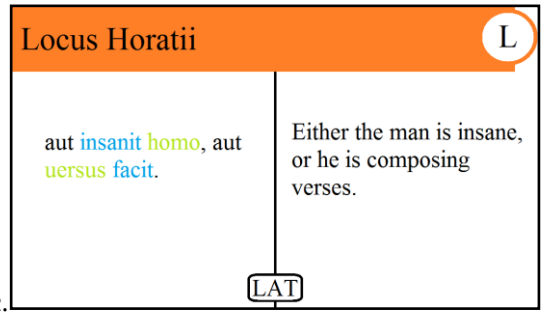

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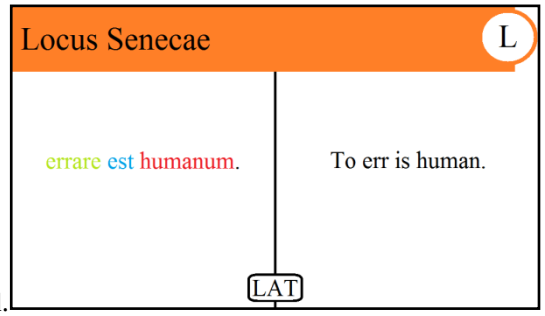
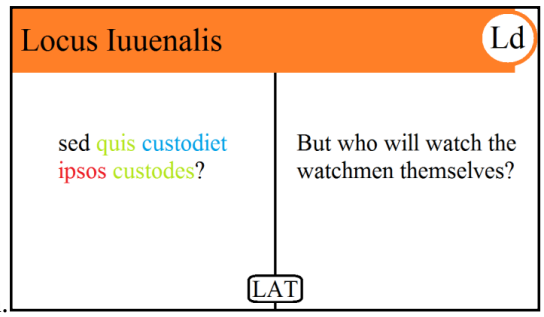


Item A8: Sample 'Advanced' Sentence Cards

a.



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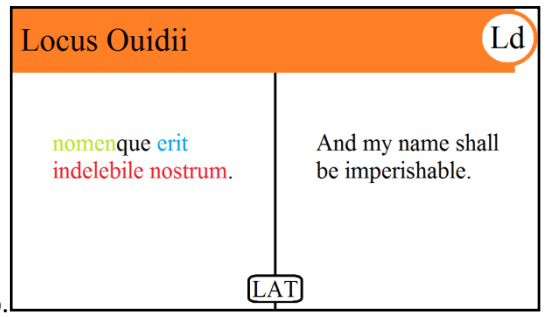

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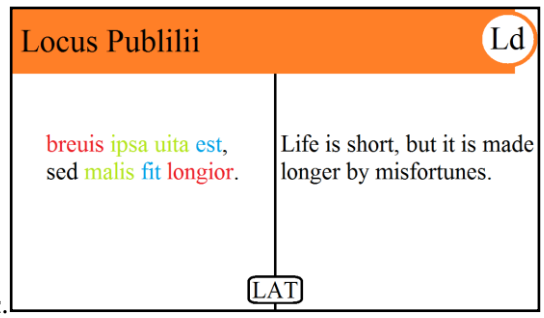
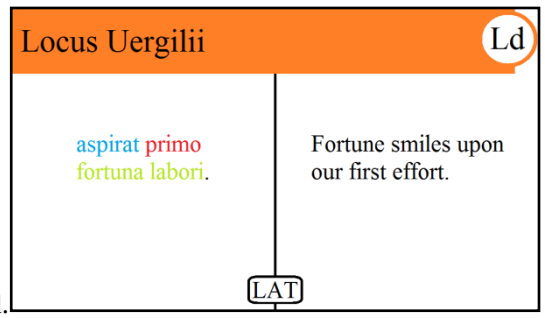


d.



Appendix B: Instructions

HOW TO PLAY
De Bello Grammatico™, the game of word play and sentence mutation

Players: 4+
Ages 12+
Game length: 30-90 minutes*

Setting Up:

- Separate the Word Cards (red backs) from the Sentence Cards (purple backs), and shuffle each pile separately.
- Each player draws 8 cards from the Word Cards pile.
- Randomly decide which player will act as the first *Praetor*.

Playing:

- The *Praetor* draws a card from the Sentence Cards pile, and reads it aloud.
- All of the other players choose a Word Card from their hands to submit face-down as replacements in the Sentence Card, then they draw to replace it.
- The *Praetor* then shuffles the submissions, then reads aloud the Sentence Card, swapping out one word of the same part of speech in the sentence with one of the submitted Word Cards. The *Praetor* does this for each Word Card separately, and then decides which he prefers. The player who submitted that card gets one point.
- The played Word Cards then get placed into a discard pile.
- The next person clockwise from the *Praetor* becomes the *Praetor* for the next round.

The first player to reach a pre-determined point count wins, or see who can get the highest score under a set time limit.

Suggested Score Limits:

Players	4	5	6	7	8	9+
Points to win	10	8	6	5	4	3

*With lower score limits, game can be played within the course of a normal class period.

FURTHER CLARIFICATION

About the cards:

Each Word Card contains grammatical information, such as case inflection, grammatical gender, part of speech, etc.. At the top-right corner of the card, embedded in a coloured bar is the part of speech:

- Adi - *Adiectiuus* (Adjective) - red
- Adu - *Aduerbium* (Adverb) - purple
- L - *Locutio* (Sentence) - orange
- N - *Nomen* (Noun) - green
- U - *Uerbum* (Verb) - blue

Words are colour-coded for part of speech on both Word Cards and Sentence Cards, in order to facilitate play for players still learning parts of speech. Generally, cards should be played under the assumption that they will only be acting as the part of speech on the card (e.g., while a verb could be used as a gerund, it should only be played as a verb unless all players consent prior to the start of the game).

In sentences without adjectives or adverbs, players can still play Adjective Cards or Adverb cards. They can modify any word in the sentence which adjectives and adverbs can normally modify—in effect, they are added to the sentence.

Grammaticality:

Players (especially students) should attempt to remain grammatically correct in their language usage. Word Cards contain some inflectional data (e.g. nominal declension or verbal conjugation) to help students less familiar with inflection.

External Resources:

If you can't figure out what a word means by the clues given on the card, feel free to consult an encyclopædia, dictionary, or your Latin teacher.

Appendix C: Surveys

Item C1: Student survey

1. From 1-10, how would you rate your proficiency in the target language (10 being near-native competence)? _____

2. For how many years have you studied this language? _____

3. Have you studied any other foreign languages, and, if so, which? _____
_____

4. Out of all of the games you've played in your language class, where on the 'fun' scale would you rank *De Bello Grammatico*™ on a scale from 1-10 (10 being most fun)? _____

5.Would you rather play *De Bello Grammatico*™ than study? Yes/No

6. Would you play *De Bello Grammatico*™ at your leisure (in a non-scholastic environment)? Yes/No

7. On a scale from 1-10 (10 being most helpful), how effective would you rank the synonyms on the cards in terms of helping you understand unfamiliar vocabulary? _____

8. On a scale from 1-10 (10 being most helpful), how effective would you rank the illustrations on the cards in terms of helping you understand unfamiliar vocabulary? _____

9. On a scale from 1-10 (10 being most helpful), how effective would you rank the definitions on the cards in terms of helping you understand unfamiliar vocabulary? _____

10. On a scale from 1-10 (10 being most helpful), how effective would you rank the colour-coding on the cards in terms of helping with Part of Speech? _____

11. On a scale from 1-10 (10 being most helpful), how helpful do you find the inflectional data on the cards (e.g. noun declension and verb conjugation)? _____

12. Would you buy 'expansion packs' for the game (such as ones which add new vocabulary and authors)? Yes/No

13. Would you buy 'blank cards' which let you customise your game with your own submissions? Yes/No

14. Would you like to see *De Bello Grammatico*™ as an iOS app? Yes/No

15. How interesting (on a scale of 1-10, 10 being most interesting) do you find the history and culture cards? _____

16. What would you change about the game if you could change anything? _____
_____
_____
_____
_____

17. Do you have any other comments? _____
_____
_____
_____
_____

Item C2: Instructor Survey

1. At what level(s) and at what sort of institution (public/secular private/parochial) do you teach the target language? _____

2. For how many years have you studied this language? _____

3. Have you studied any other foreign languages, and, if so, which? _____
_____

4. Would you consider employing *De Bello Grammatico*™ as a teaching tool for general reinforcement of the language? How frequently? _____
_____

5. Would you play *De Bello Grammatico*™ at your leisure? Yes/No

6. Do you teach history and culture to help your students understand the language? Yes/No

7. On a scale from 1-10 (10 being most helpful), how effective would you rank the synonyms on the cards in terms of helping your students understand unfamiliar vocabulary? _____

8. On a scale from 1-10 (10 being most helpful), how effective would you rank the illustrations on the cards in terms of helping your students understand unfamiliar vocabulary? _____

9. On a scale from 1-10 (10 being most helpful), how effective would you rank the definitions on the cards in terms of helping your students understand unfamiliar vocabulary? _____

10. On a scale from 1-10 (10 being most helpful), how effective would you rank the colour-coding on the cards in terms of helping your students with Part of Speech? _____

11. On a scale from 1-10 (10 being most helpful), how helpful do you find the inflectional data on the cards for your students? _____

12. Would you buy 'expansion packs' for the game (such as ones which add new vocabulary and authors)? Yes/No

13. Would you buy 'blank cards' which let you customise your game with your own submissions? Yes/No

14. Would you like to see *De Bello Grammatico*™ as an iOS app? Yes/No

15. Do you have any sort of pedagogical concerns with the game (e.g.' Colour-blind students might have a problem distinguishing between the red and green cards', 'Stop spelling things weirdly, you might confuse my students')? _____
_____
_____

16. Do you have any concerns about the content, quality or quantity of the sentences (e.g. 'Your sentences are ridiculous', 'Needs more Vergil/Lucretius/Mediaeval Latin', 'Too many original compositions in ratio to the classical sentences')? _____
_____
_____

17. Do you think instructors of other languages would like a version of this game for their language? Yes/No

18. Do you have any other comments? _____
_____
_____
_____

Appendix D: Web Resources

Official Website:	http://www.desalvoltd.com
Official Store:	http://store.desalvoltd.com
Facebook Page:	http://www.facebook.com/debellogrammatico