

LEXICAL KNOWLEDGE AND LEXICULTURE AS ELEMENTS OF CURRICULAR INTEGRATION: EXPERIENCES IN PRE-SERVICE TEACHERS TRAINING CONTEXT

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Abstract

In recent decades, there have been various endeavours in Europe and the United States to rejuvenate curricular development practices, aiming to reinstate didactic-curricular integration as a methodological approach to explicit lexical teaching. The genesis of the curricular integration concept we adopt stems from a phenomenological understanding of this issue and technical-didactic approaches to vocabulary teaching and learning within initial teacher education contexts.

Building upon the multidimensional relationship between curricular integration and lexical knowledge architecture, we explore how different conceptions of curricular integration, applicable to students in initial teacher education, manifest during supervised teaching practice in primary education.

Approaching this from a technical-didactic standpoint, we delineate the key domains shaped by the interface of Curricular Integration and Lexical Knowledge Architecture at this educational stage. Here, the transversal nature and explicit dimension of word teaching are pivotal for declarative knowledge, encompassing phonetic form, graphic and orthographic representation, inflectional paradigms, meaning in context, word class, and usage restrictions.

Our research, grounded in Design-Based Research (DBR) principles, aims methodologically and investigative to cultivate processes and cycles of didactic action within initial teacher education. We focus on producing and implementing integrated curricular units that feature didactic-curricular integration, specifically targeting explicit vocabulary teaching. Our goal is to scrutinize and comprehend the connections between explicit vocabulary teaching, reading practices, and learning success across various curricular domains. The primary investigative objective is to propose and test integrated practical interventions for explicit vocabulary teaching, viable within supervised teaching practice settings.

The specific cycles of DBR experimentation seek to operationalize and demonstrate the efficacy of technical-didactic development in approaches to explicit vocabulary teaching processes. We view this as a crucial integrating element, bringing prospective teachers closer to developing lexical awareness and promoting inclusive education and integrated academic success. This entails deep immersion in the linguistic and cultural contexts of the school communities they engage with.

Through our research experiences, we have unveiled a direct impact relationship among these three realms, underscoring the technical-didactic importance of considering two key aspects related to explicit vocabulary teaching in early schooling:

- The criteria for selecting vocabulary for explicit teaching, alongside reading and writing practices, considering semantic features and shared cultural significance of chosen words.
- The methodological approach process, emphasizing, from a didactic perspective, fundamental knowledge of phonetic form, semantic and categorial selection properties, syntactic category, meaning, and selection constraints.

Keywords: Lexical knowledge architecture, Lexical awareness, Lexiculture, Primary Teachers Training.

1 INTRODUCTION

In this study, we focus on the didactic perspective of the interrelation between the fundamental elements of curriculum integration and explicit vocabulary instruction in the early years of schooling, designing and implementing an analysis observatory based on a Design-Based Research (DBR) process, developed over three micro cycles of didactic-investigative action. These micro cycles are fundamental elements that relate not only to the practice of curriculum integration and explicit vocabulary instruction but also to the potential effectiveness of didactic units that implement them in the classroom context.

The rationale and essence of this observational-investigative work are grounded in the increasing relevance that curriculum integration has assumed in educational studies, as a privileged approach to the cross-cutting dimension of explicit vocabulary instruction and its impact on learning quality across different curriculum areas. Works by Bear et al. (2023), Pais (2012), Baumann (2004), and Biemiller (2005) demonstrate a pressing need to delve deeper into the didactic interconnections between defining and selecting elements of curriculum integration and the processes of explicit vocabulary instruction didactization.

The central objective is to subject to critical observation analysis, from the didactic reasoning perspective, and through the DBR methodology developed in the context of the classroom by teachers in initial training, the main technical-didactic domains determined by the Curriculum Integration/Lexical Didactics interface in the early years of schooling, where curricular cross-cutting and the explicit dimension of vocabulary instruction play a fundamental role in the development of global learning processes with reference to the architecture of lexical knowledge construction in children and young people.

Initially, the development of DBR microcycles focuses on the analysis and selection processes of didactic elements essential to curriculum integration practice and the characteristics that underpin, from a technical-didactic perspective, the construction of didactic units for explicit vocabulary instruction in context, with obligatory reference to the specific cultural load of the words selected for the design of these units (lexiculture).

Subsequent microcycles of action focus on the strategic-didactic forms of cross-cutting integration of specific vocabulary, considering various linguistic-lexical and lexicultural approaches: (i) phonetic form: phonological word (phoneme, syllable, and accent); (ii) graphic and orthographic representation; (iii) inflectional paradigm - morphological word (grammatical morphemes - inflection processes, lexical morphemes - new word formation processes); (iv) meaning in relation to context and other words: morphosyntactic word and word group; (v) word class; (vi) usage restrictions.

In the results, based on the critical analysis of the development of DBR microcycles, we will present a matrix for the construction of integrated curriculum units, including the elements identified as essential for explicit vocabulary instruction practice. Such proposals aim to achieve the central objective of this observational-investigative work: explicit vocabulary instruction in the context of curriculum integration and globalized teaching in the early years of schooling.

2 METHODOLOGY

The research line developed is grounded in the principles of Design-Based Research (DBR) and aims, from a methodological-investigative perspective, at the development in the context of initial teacher education of the processes and cycles of didactic action for the production and implementation of integrated curricular units. These units integrate explicit vocabulary instruction within context, with the objective of studying and understanding the relationships between explicit vocabulary instruction, reading practice, and learning success across different curriculum areas.

The primary research purpose is to propose and test integrated practical interventions for explicit vocabulary instruction that can be implemented within the context of supervised teaching practice in the first cycle of primary education. Additionally, it aims to observe their potential efficacy in terms of learning development across different curriculum areas.

The specific cycles of DBR experimentation aim to operationalize and demonstrate the effectiveness of the technical-didactic development of approaches to explicit vocabulary instruction as an integrative element and a factor in bringing future teachers closer to the processes of lexical awareness development and the promotion of inclusive education and integrated school success in the early years of schooling, through deep immersion in the linguistic and cultural realities of the school communities with which they work.

The specific design of the developed observation/investigation microcycles is based on the foundational principles of DBR applied to educational innovation, particularly those advocated by McKenney and Reeves (2012): theoretically oriented, interactive, relational, interventionist and collaborative, as outlined in the following DBR panel:

2.1 Microcycle 1: structural elements for the construction of integrated curriculum units in the early years of schooling

Phase 1: data collection and analysis

Characterization of the state of the art regarding the principles of curricular integration and their application in the early years of schooling.

Collection and analysis of examples of existing didactic units, including those integrated into textbooks (Portuguese, mathematics, and environmental studies), and identification of the structural elements present.

Group discussions (teachers, cooperating mentors, and supervisors) using the focus group methodology to gain insights into the construction of potentially effective integrated curriculum units.

Phase 2: analysis and synthesis

Analysis of collected data to identify patterns and trends in the structural elements of integrated curriculum units.

Synthesis of results into a matrix or framework representing key elements for the design of integrated curriculum units.

Phase 3: validation

Presentation of the developed matrix to a group of experts in didactic planning (supervisory team and experienced teachers) to validate scientific correctness, didactic relevance, and quality.

Editing of the matrix based on received feedback to ensure quality and robustness.

2.2 Microcycle 2: strategic procedure for explicit vocabulary instruction with reference to lexiculture

Phase 1: resources development

Research on lexiculture principles and their applications to explicit vocabulary instruction in context in the early years of schooling.

Creation of didactic objects and tasks incorporating explicit vocabulary instruction according to lexiculture principles.

Phase 2: pilot implementation in supervised teaching practice context

Pilot implementation of previously developed didactic units in a controlled educational environment during supervised teaching practice.

Observation and recording of student and teacher reactions and perceptions towards proposed explicit vocabulary instruction methodologies.

Phase 3: evaluation and edition

Analysis of pilot implementation results, including student performance and teacher feedback.

Redesign of resources, didactic objects, and tasks based on observations and identified needs during evaluation.

2.3 Microcycle 3: evaluation of the efficacy potential of didactic units

Phase 1: classroom group implementation during teaching practice

Implementation of designed didactic units in different teaching practice groups.

Additional monitoring (specific supervision cycle) of future teachers/trainees during implementation to ensure fidelity to the proposed matrix.

Phase 2: data collection

Systematic collection/grids for quantitative and qualitative data recording on the impact of didactic units on student performance/learning and the efficacy of explicit vocabulary instruction transversality.

Utilization of standardized assessment tools and classroom observations for progress measurement.

Phase 3: analysis and dissemination of results

Triangulated analysis of collected data to evaluate the efficacy potential of didactic units.

Staged and final teaching practice presentations to share results with stakeholders involved in supervised teaching practice and other interested parties.

Identification of areas for future projects and continuous development of the DBR investigative observatory of supervised teaching practice in the first cycle of primary education.

3 RESULTS

The development of DBR microcycles has shown that designing lessons through integrated curriculum units is the methodological-didactic option that tends to most effectively promote respect for the naturally globalized way in which students build knowledge about words at this age range. From a didactic perspective, it represents a methodological proposal with great potential for didactic effectiveness, as research results demonstrate that working with didactic units produces the best results in terms of motivation and learning outcomes in different curricular areas. Additionally, it has a positive impact on the organization of the teaching and learning process from both the teaching and learning perspectives.

In this sense, the systematic use of didactic units with curricular reference to a specific central thematic unit, lexical field, and carefully selected curricular integration elements facilitates the design of didactic objects that should guide the explicit teaching practice of vocabulary. From this methodological perspective, there are two main didactic objects to consider. From a teaching perspective, there is a didactic unit script constructed based on the curricular integration elements identified in the development of microcycles as potentially effective. From a learning perspective, there are learning scripts, which represent nothing more than the technical-didactic transformation of the unit script content (teacher) into working material for the student.

Learning scripts (student tool) should be appealing and motivating and should structurally and content-wise adhere to four main characteristics:

- Present the learning tasks and specific vocabulary that the student must learn initially and in a synthesized and clear manner.
- Be simple and schematic, not to be confused with the usual structure of worksheets or assessments.
- Present learning tasks according to the didactic sequence planned in the unit script, forming a coherent whole.
- Include comprehensive proposals for tasks and recording methods that enable students and teachers to track progress in learning.

Didactic unit scripts (teacher planning tool) should adhere to the following basic technical-didactic principles:

- Refer to real, practical, and useful learning contexts from a language learning perspective.
- Clearly define didactic objectives to be achieved and learning outcomes.
- Methodologically form a coherent whole, based on the interrelation of all didactic elements guiding the explicit teaching of vocabulary in the early years of schooling.
- Respect the principles of progression and didactic sequencing.
- Be flexible, allowing for continuous revision.
- Be appropriate to a specific socio-cultural and lexical-cultural context.
- Be coherent with educational principles and the transversal characteristics and interaction of curricular areas that integrate them, holding all curricular areas responsible for increasing students' lexical capital.
- Be motivating, actively involving students in their linguistic development.
- Be practical, dynamic, and adaptable based on the language teaching and learning experiences of participants.
- Be suitable regarding the expected time for implementation.
- Be assessable, allowing for permanent adjustment to the real communication needs of those involved.

Structurally, the development of microcycles demonstrates that a Didactic Unit, with the use of curricular integration, should include in its transversal and specific dimensions the following basic technical-didactic elements, considered in a comprehensive and integrated manner:

A. Didactic Elements:

A.1. Didactic foundation - brief description and justification of the Didactic Unit, specifying its title, adopted methodological-strategic principles, required prior knowledge for students (prerequisites), expected teaching hours, year, and cycle.

A.2. Characterization of the teaching and learning context - knowledge of the linguistic-didactic context is essential for designing teaching and learning processes, as it implies consequent adaptation to specific students, space, and available materials, affecting a certain time frame.

A.3. Definition of didactic objectives - these are defined according to performance descriptors and learning goals established in the National Curriculum, National Programs, and Grouping/School and Class Curricular Projects.

B. Selection and sequencing of the curriculum content:

B.1. Definition of the theme and integrating element(s) - as basic categories of cohesion and curricular integration.

B.2. Selection of curriculum content - selecting areas, general and specific competencies, contents, and specific vocabulary to work on, as fundamental elements that will underlie the design of teaching and learning paths.

C. Designing teaching-learning paths:

C.1. Definition of criteria for sequencing and integration of teaching and learning tasks, considering the theme, lexical fields, integrating elements, and principles of didactic-curricular progression and integration.

C.2. Selection of teaching and learning tasks for the explicit teaching of words, based on areas, curriculum content, targeted objectives, and the diversity and completeness of different types of activities.

C.3. Elaboration of integrated learning scripts for their execution.

D. Evaluation - this step is fundamental for reflecting on and adjusting educational practice, enhancing the effectiveness of student learning in terms of building lexical capital and the teacher's performance:

D.1. Evaluation of student learning.

D.2. Meta-evaluation or reflection on the evaluative practice itself.

The analysis and reflection on word knowledge and metalinguistic awareness thus assume, in the transversal dimension, the fundamental factor in developing students' lexical awareness and communication skills, progressively transforming their implicit knowledge about words into explicit knowledge. It is argued that the construction of lexical capital should be considered essential, as it should be understood as a factor for academic success and as a contribution to mastering the basic tools necessary for life in the knowledge society.

Regarding the basic elements for the early years of schooling, we identified throughout the observation-investigative process as fundamental for teaching and learning vocabulary:

- 1 iPhonetic form - how it is pronounced: phonological word (phoneme, syllable, and accent)
- 2 Graphical and orthographic representation - how it is written
- 3 Inflectional paradigm - variations on the same word through grammatical morphemes: morphological word (grammatical morphemes - inflection processes, lexical morphemes - processes of forming new words)
- 4 Meaning in context and relation to other words: morphosyntactic word and word group
- 5 Word class
- 6 Usage restrictions

Another important aspect concerns the identification of explicit techniques and specific tasks with the potential for effectiveness to facilitate access to word knowledge. The proposal on which we worked defines four major types of vocabulary teaching and learning tasks, namely:

- 1 Explicit presentation of basic elements - explicit teaching throughout the unit of each basic element for each of the selected words
- 2 Contextual systematization - functional use in context of the new words learned
- 3 Assessment - determination of vocabulary acquisition level
- 4 Expansion/reinforcement - based on progression in learning.

These different types of activities should be combined in sequential cycles, forming integrated learning paths for the explicit teaching of words. The inclusion of these lexical work cycles in integrated curriculum units also requires their contextualization in the central theme of the unit (specific lexical fields of the unit) and the definition of didactic integration elements. From the perspective of integrated lexical teaching, texts (literary and non-literary) and the didactic use of objects, images, problem situations, etc., extracted from their content, are configured as excellent integrating elements.

In order to illustrate the work developed and the results achieved, we will provide an exemplification through the brief presentation of a proposal elaborated during the development of the DBR Cycles and subsequently implemented and evaluated in a internship context. It is intended that this practical exemplification, designed within the framework of a didactic unit for the 3rd grade, serves to explain the curricular articulation of the following aspects of lexical didactics: - processes of forming new words (increasing basic lexical capital), through the manipulation of words and word constituents (lexical morphemes) and observing the effects produced; explicit rules and procedures for nominal, adjectival, pronominal, and verbal inflection (regular verbs, through the manipulation of grammatical morphemes). The reason for proposing exemplification only for these contents lies in the fact that it is materially impossible to present the full proposal of the didactic unit on the pages of this text.

From a didactic perspective, the proposal we present starts from the thematic unit: "Discovering Others - the value of friendship" and uses José Vaz's work "The Word-Making Machine" as a curricular integration element. It integrates content from disciplinary curricular areas: Language, Environmental Studies, Mathematics, and Dramatic Expression; and from the non-disciplinary curricular area: Citizenship Education. Conceptually, from the perspective of curricular integration, the proposal is based on the articulated network of teaching and learning tasks presented in Figure 1, which underpins and determines the forms of didactic intervention.

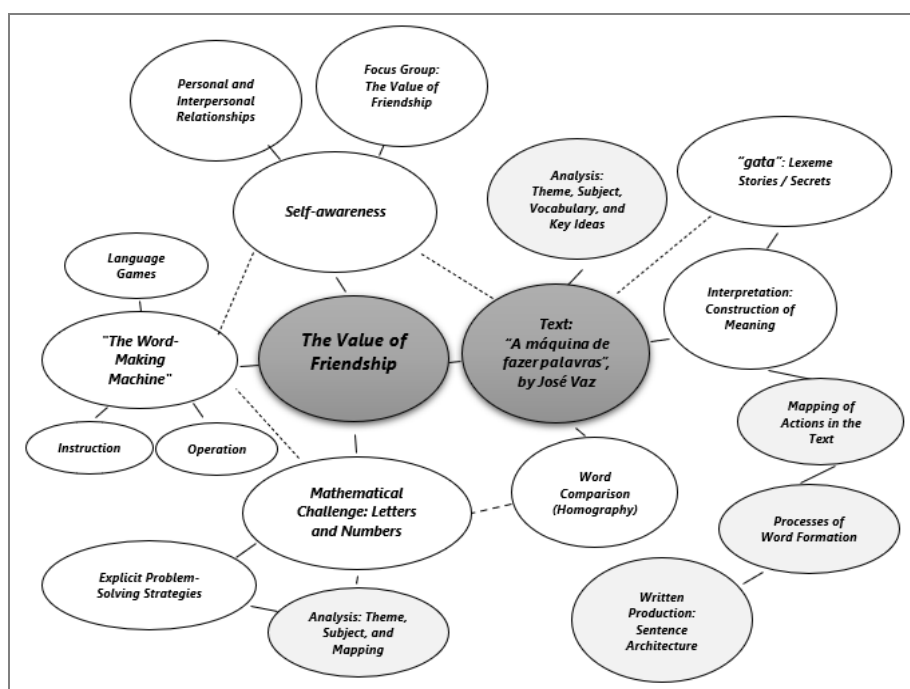


Figure 1 - Didactic Unit 'The Word-Making Machine': Network of Teaching and Learning Tasks

As we can see, the approach to explicit vocabulary teaching is carried out through the articulation of teaching and learning tasks in the curriculum areas of Environmental Studies, Language, and Mathematics, based on the defined transversal theme and the integrating element used. From a technical-didactic point of view, the selected curricular integration elements fall within the scope of Literary Education and are based on the use of text as a learning context. The proposed approach to the text follows the classic structure of three steps: analysis, interpretation, and commentary. Through the analysis process, using explicit techniques to access textual content, the aim is to lead the student to identify the theme, subject, and to develop mental and written mappings of the same. This step is objective and aims to prepare the student to access, according to the text type, the information, procedures, arguments, actions, etc., key to a text. It also aims to guide and train the student in defining explicit knowledge organization strategies. The main didactic purpose of the interpretation and commentary stages is to guide students in the practice of building meanings they construct about a text in the analysis process they have performed on it.

Now let's move on to the presentation of the specific proposal for didactic action for the explicit teaching of vocabulary within the presented unit. The practical exemplification refers to the lexical-didactic itinerary integrated in the development of the approach to the selected text as an integrating element - "The Word-Making Machine" by José Vaz. From a didactic perspective, the proposal aims to lead students to master the architecture of lexical knowledge based on the processes of forming new words through the manipulation of their constituents (lexical morphemes).

Proposal for didactic action (teaching and learning tasks): "The Word-Making Machine."

The Word-Making Machine is an activity within the lexical development scope that relies on students' creative and projective abilities to, through the creation of a *pseudo machine*, implicitly work on different word formation processes. The explanation of how the machine works, through graphic projection and the elaboration of the respective instruction manual, represents the link between declarative knowledge (word formation processes) and the didactic foundation of the task (expanding lexical capital).

Knowledge, Skills, and Attitudes:

- Read independently, in various formats, different types of instructions.
- Manipulate words and word constituents and observe the effects produced.
- Explicitly state rules and procedures for nominal, adjectival, pronominal, and verbal inflection (regular verbs).

Material:

- Prototype of a word-making machine and respective instruction manual.

Source:

- Created from the reading of "The Word-Making Machine" by José Vaz.

Target audience:

- Students in 3rd/4th grade.

Strategic Teaching Action and Learning Products

1st Stage

- Presentation to the large group (class) of the prototype (example) of a word-making machine:
 - Physical description of the prototype
 - Main characteristics
 - Operating objectives
 - Instruction manual
 - Reading and analysis of the instruction manual
 - Practical demonstration of different exercises demonstrating the operation of the machine
- Formulation and recording of hypotheses for redefining or creating new machines that use other word formation processes (e.g., a machine that adds prefixes and/or suffixes to a base form; a machine that transforms adjectives into adverbs; a machine that transforms each word in a sentence or a short text into the corresponding definition presented in the dictionary, with students elaborating the material for the machine to function by reconstructing the sentences).

2nd Stage

- Formation of working groups according to the class characteristics
- Explanation of work objectives to students, specifying each stage of the group work development cycle: 1) elaboration of the project for redefining or creating a new word-making machine; 2- graphic representation of the prototype; 3- elaboration of the instruction manual; 4- experimentation.
- Development of group work, fulfilling each of the stages outlined in the previous point.
- Demonstration to the class group, by each of the teams, of how the different word-making machines created operate.
- Didactic use of the created prototypes for carrying out different word formation exercises.

4 CONCLUSIONS

The processes of teaching and learning vocabulary, as demonstrated by the research conducted through the development of DBR microcycles, are not only critical for students' academic success but also complex from psycholinguistic and learning progression perspectives. The development of lexical competence is inherently an "unfinished" process, requiring teachers to have technical-didactic competence in defining approaches.

The analysis of the results of the learning assessment tests of the involved classes and their cross-relationship with internal assessment results proves that the explicit knowledge of words in specific and transversal dimensions among the involved classes is not satisfactory. For this reason, it is crucial to reflect on and investigate new approaches to vocabulary teaching and learning processes with reference to lexical-cultural aspects. In this context, we have been working to define new strategic-didactic approaches to explicit vocabulary teaching, contextualizing them within curricular integration processes, which characterize globalized teaching in the early years of schooling.

Therefore, according to the research process, the technical-didactic foundations for constructing integrated curricular units based on explicit vocabulary teaching processes in context were presented. Within the scope of this work, this proposal was concretized through a practical exemplification aimed at working with lexico-cultural references. It should be noted that the presented proposal is purely illustrative, and teachers should analyse the nature of the contents to be learned and consider the profile of the group they are working with before using it. Additionally, we believe that it will always be useful and productive for teachers in initial teacher training to plan diversified learning moments in the construction of lexical knowledge.

The theme we have developed is not exhausted in the analysis of curricular documents or in didactic proposals. It is important to emphasize that reference materials do not always help, sometimes deviating from official indications or opting for fragmented and incoherent methodological approaches without constituting true proposals for curricular integration in the practice of explicit vocabulary teaching. This methodology of organizing the teaching and learning process has been slow to establish itself in different educational systems increasingly marked by linguistic and cultural diversity, with consequent losses for students and for the quality of the school itself.

Finally, and in accordance with the above, we strongly advocate: i) greater articulation and conformity between texts regulating pedagogical practice and between these and textbooks at the level of explicit vocabulary teaching in the early years of schooling; ii) a greater emphasis on curricular integration through the methodology of planning through integrated curricular units as a way to respect the natural way in which students build declarative knowledge and develop lexical competence at this age; iii) greater investment in initial and ongoing teacher training, as critical actors in scenarios of change in approaches to the study of fundamental lexicon. Lastly, and equally important, it seems necessary for higher education institutions with responsibilities in training teachers for the early years of schooling to make a strong investment in research lines in the field of curricular integration and globalized teaching, which has long been the organizational choice of European education systems.

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