

Concept Paper

Putting Order into Our Universe: The Concept of *Blended Learning*—A Methodology within the Concept-based Terminology Framework¹

Joana Fernandes ^{1,*}, Rute Costa ^{2,†} and Paula Peres ^{3,†}

¹ ISCAP | CICE | NOVA CLUNL—Instituto Politécnico do Porto, R. Dr. Roberto Frias, Porto 4200-465, Portugal

² NOVA CLUNL—Department of Linguistics, Universidade Nova de Lisboa, Lisbon 1069-061, Portugal; rute.costa@fcsh.unl.pt

³ ISCAP | CICE—Instituto Politécnico do Porto, R. Dr. Roberto Frias, Porto 4200-465, Portugal; pperes@iscap.ipp.pt

* Correspondence: joanaf@iscap.ipp.pt; Tel.: +351-96-678-98-48

† These authors contributed equally to this work.

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Abstract: This paper aims at discussing the advantages of a methodology design grounded on a concept-based approach to Terminology applied to the most prominent scenario of current Higher Education: *blended learning*. Terminology is a discipline that aims at representing, describing and defining specialized knowledge through language, putting order into our universe (Nuopponen, 2011). Concepts, as elements of the structure of knowledge (Sager, 1990) emerge as a complex research object. Can they be found in language? A concept-based approach to Terminology implies a clear-cut view of the role of language in terminological work: though language is postulated as being a fundamental tool to grasp, describe and organize knowledge, an isomorphic relationship between language and knowledge cannot be taken for granted. In other words, the foundational premise of a concept-based approach is that there is no one-to-one correspondence between atomic elements of knowledge and atomic elements of linguistic expression. This is why a methodological approach to Terminology merely based upon specialized text research is regarded as biased (Costa, 2013). As a consequence, we argue that interactional strategies between terminologist and domain expert deserve particular research attention. To our mind, the key to concept-based terminological work is to carry out a concept analysis of data gathered from a specialised text corpora combined with an elicitation process of the tacit knowledge and concept-oriented discursive negotiation. Following such view, we put forward a methodology to answer the question: how is *blended learning* defined in the Post-Bologna scenario? Even though there are numerous high-quality models and practical descriptions for its implementation (similarly to other concepts related to *distance learning*), the need to understand, demarcate and harmonize the concept of *blended learning* against the current Higher Education background results from the premise that the theoretical reflection on this concept is still insufficient. Therefore, we believe it is vital to understand *blended learning* as the *new normal in Higher Education* (Norberg *et al.*, 2011), or a *negotiable third way* (Peres, 2011; Norberg & Jahnke, 2014). Our methodological model is built in three phases: (1) exploratory phase in the area/ object of the study; (2) conceptual analysis phase of discourse and textual documents; (3) modeling and result validation phase. We support the thesis that the experimental nature of this approach discloses productivity in a cyclical sequence between the discursive and textual analysis with conceptual objectives, collaborative interaction and introspection. In other words, even though the nature of this study does not allow for a generalization (apart from a dual relation in the mediation between the terminologist and the specialist), we advocate the relevance of an action-reflection procedure, both introspective and collaborative, one in which the terminologist will become a conceptualizer, a decision-maker and an interventionist.

Keywords: Concept-based Terminology; blended learning; definition; domain expert; concept; characteristic

1. Introduction

Though somewhat silent and discrete within the European Higher Education scenario, *blended learning* is undoubtedly the most significant development of the 21st century when it comes to delivery modes, but is *blended learning* a temporary fashion or a truly important concept within the sphere of Higher Education? If so, who has got the *power* to establish the content of its definition? The goal of this paper is to provide an overview of the major steps of the process carried out to operationalize a concept-based methodology so as to analyze and define *blended learning*. Looking back, one might ask whether it is worth spending so much time and effort to research a concept that, due to its inevitable association to learning technologies, risks being too volatile. In other words, isn't the idea of reducing conceptual ambiguity by fixing essential characteristics of a given concept through definition a basic and totalitarian desire to create a sort of New Speak? We prefer to believe that the effort is fully worth it, for it is simply a question of believing that the progress of science requires conceptual and linguistic precision and clarity and Terminology can offer a valuable contribution to reach such a desideratum.

2. Terminology and Concept Research

Natural language is a major tool to represent knowledge and knowledge develops in natural language. For such reason, no one will deny that contemporary Terminology is a powerful growing discipline, within the so-called knowledge society. By dealing with description, ordering and transfer of knowledge through language, Terminology emerges, according to Roche [1] (p. 17), as a consistent body of theoretical and methodological frameworks that aim at answering a wide range of challenging problems related to *understand[ing] the world, describe[ing] the objects that populate it and find[ing] the right words to talk about them*. Among such problems, concept definition, along with concept description, are regarded as core issues in Terminology, as stated by Rey [2] (p. 40). After all, conceptual precision and clarity are major prerequisites to all kinds of research areas, which emphasizes the role of Terminology as a linguistic and knowledge-related discipline rather oriented towards instrumental aims.

Defining or describing a concept by delimiting its characteristics (as well as being able to identify its exact position within a concept system) are ancient concerns, as Picht states [3] (p. 7): *Generally speaking the need for terminology has existed for as long as we are able to find evidence of professional communication*. Furthermore, as claimed by Hempel [4] (p. 87): *Theory formation and term formation go hand in hand, neither can be carried out in isolation*.

In short, concepts, as elements of the structure of knowledge, emerge as an exciting but complex research object. Can they be directly found in language? Can one trust languages as analytical methods... *à l'aide desquelles nous procédons du connu à l'inconnu*? As pointed out by Lavoisier [5] (p. 357)? This study is framed by the epistemological view that Terminology has both a linguistic and a conceptual dimension, though it is claimed that an isomorphic relationship between language and knowledge cannot be taken for granted. This is the exact reason why one needs to specify the theoretical view that is encapsulated in the idea of a concept-based Terminology, whose primary aim is first to understand and then to name a given object. In other words, the foundational premise of a concept-based approach is that there is no one-to-one correspondence between atomic elements of knowledge and atomic elements of linguistic expression.

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Following such view, a methodological approach to Terminology merely based upon specialized text research is regarded as biased. We are fully aware that as argued by Costa *et al.* [6] (p. 13): *The need for a conceptual organization has to do with the indispensability of moving away from linguistic manifestations to better encompass the concepts that exist regardless of language.*

As already stated, studying a concept implies challenging options. This paper aims at presenting the methodological model grounded in the premise that interactional strategies between terminologist and domain experts deserve particular research attention. To our mind, the key to concept-based terminological work is to carry out a concept analysis of data gathered from specialized text corpora combined with an elicitation process of the tacit knowledge and concept-oriented discursive negotiation. In this paper we share a path to understand, describe, delimit and define the concept of *blended learning* believing that, though it is a particular case study, it can allow for a certain level of generalization and replication for researchers interested in going deeply in the investigation of fuzzy and unclear concepts.

3. Contextualizing *Blended Learning* Fuzziness

The point of departure of this research was the perception that, though *blended learning* is not exactly a new concept both in the North American and the European Higher Education scenarios, there is still a lack of precision when it comes to define what it means. Even though for North Americans, according to Norberg *et al.* [7], *blended learning* is accepted as the *new normal in Higher Education*, the authors believe that European educational researchers are missing something important about its relevance.

Everyone will agree with the broad understanding that *blended learning* is a combination of traditional face-to-face learning with online learning. But does such of a minimalistic and straightforward description not carry the risk of simply promoting its adoption as an *easy take-away solution* (Norberg & Jahnke, [8]) often described as *the best of both worlds*? We believe there is nothing wrong in perceiving *blended learning* as a negotiable third way between the traditional education practices and a *pure* e-learning option, but it seems vital to understand what is precisely at stake: A mere combination of two delivery modes with flexibility of time or place? A complex integration of pedagogical theories? A disruptive and transformational change in the teaching and learning processes? Despite the growing interest in discussing such views, academic research on the *blended learning* model still shows a huge disconnection between the empirical and the theoretical studies, the first being much more pervasive (Drysdale *et al.* [9]).

Besides, shifting terminology reinforces the idea that there is a lack of homogeneity at least at the designation level: both in English and in Portuguese one can find different alternatives, such as *blended/mixed/hybrid/flexible* or *blended/misto/combinado/híbrido* to name this design and delivery model.

We carried out a literature review in these two languages, comprising the time span between 2002 and 2014, together with interviews to domain experts and these procedures allowed us to obtain corpora of descriptions and definitions (both in English and in Portuguese), showing that in the Higher Education landscape there are many competing perceptions of *blended learning* that, despite their apparent singularity, reduce *blended learning* to the broad understanding of mixing face-to-face activities with online interaction. In the same fashion, within the Portuguese Higher Education context *blended learning* is also perceived as a nebulous combination of face-to-face and online instruction.

Corpora gathered and scrutinized have also shown that as Picht & Draskau point out, [3] (p. 62): *... a concept may not be viewed as an isolated unit in terminology.* In this fashion, literature review and elicitation of data gathered through exploratory interviews to practitioners and domain experts, allowed us to find out that, as far as Higher Education delivery modes are concerned, there is a fuzzy spectrum of modes and models whose exact place has not yet been fixed within the *continuum* presence/distance. As a matter of fact, different types of delivery modes, such as *e-learning*, *blended learning*, *online learning*, *technology enhanced learning*, *web-facilitated learning*, *hybrid learning*, *face-to-face learning* show a certain degree of overlap and tend to be interchanged within the Higher Education

context, as reported by Moore *et al.* [10] (p. 129). Their research identified the existence of a fuzzy conceptual space when they put forward the question: *e-learning, online learning, and distance learning environments: Are they the same?* Their research pointed out that terms and the concepts that underlie them were often interchanged without meaningful and consistent definitions. According to them, practitioners and researchers need to agree on common definitions and terms. Obviously this lack of agreement makes it difficult to perform accurate cross-study comparisons. To solve such an overlap some authors and institutions believe that defining a percentage criterion can be a straightforward solution to delimit the concepts integrating the spectrum of delivery modes. For instance, according to Allen *et al.* [11] (p. 5), *blended learning* implies that between 30 and 79% of the program content is delivered online. However, even the idea of percentage lacks consensus. To give an example, Smith & Kurten [12] (p. 460), propose different percentages: Online activities must cover less than 45% of time. Furthermore, their categorization implies a distinction between *hybrid* and *blended learning*, which seems a peculiar differentiation.

As we can see, the *blended learning* concept itself seems to exist in a *continuum* of minimal online learning and minimal face-to-face learning. If we analyse the problem at an institutional level there is indeed a lack of transparency and regulation. But no matter the relevance of dimensions that have been discussed, as it will be shown in coming sections, *blended learning* is fundamentally, as Garrison & Vaughan [13] remark, a *transformational redesign of teaching and learning* and such a view must be encapsulated in its definition.

4. Towards a Concept-based Approach

Getting back to methodology, Terminology offers different possibilities when it comes to selecting design and methods to carry out terminological work. No matter what options are taken, specialized knowledge, as we have just demonstrated, whether obtained verbally or textually, is rarely presented as precisely as terminologists would enjoy: conceptual and terminological fuzziness tend to occur. In our particular case, in order to study the *blended learning* concept and propose an intensional definition, one stating its superordinate concept and naming the delimiting characteristics (Kockaert & Steurs [14]), we embraced a mixed methodology as an overall strategy. Such a method has been largely implemented by Costa ([6] *et passim*), and entails the recognition that though specialized text is a very important source for gathering empirical evidence, it is not a faithful mirror of a given conceptualization. In a similar fashion, as Nuopponen pointed out [15] (p. 3), texts are relevant resources when it comes to performing a concept analysis, however, when describing a given material or immaterial object and its relationships with other objects, they often produce presuppositions and entailments that correspond to tacit knowledge that may not always be easy for the terminologist to infer.

Thus, a mixed methodology sets the possibility of combining text and discourse analysis with concept analysis. The immediate advantage is that it allows for triangulation of the data collection. As Costa [16] (p. 9) states: *We start off with the text, in order to, through it, process, organize and represent knowledge, that is to say that we distance ourselves from the text, so as to come back to it later on in our workflow.*

In short, a mixed methodology implies a cyclical, iterative, recursive procedure managed by the terminologist who establishes the set of planned interactions with specialised text and the domain expert (see Figure 1):

According to the ISO/FDIS 704 standard [17] (p. 5), terminology work must fundamentally focus on *a clarification and standardization of concepts and terminology for communication between humans*. Nonetheless, within the academic community, the understanding of the terminologist *praxis* and epistemological status is not always a matter consensus. Depecker materialized such a controversy during the *Disputatio* of TOTh Conference (<http://www.porphyre.org/>), by wondering whether the terminologist is an heir of Saussure or Aristotle. In our opinion, s/he definitely is both. If Terminology as theory has a double dimension—linguistic and conceptual—as Costa & Roche [18] (p. 1) clearly explain, the terminologist inherits these two theoretical backgrounds: *Les terminologues jouent donc un*

rôle central dans toute activité professionnelle où les compétences discursives, le transfert et l'organisation de connaissances sont requis.

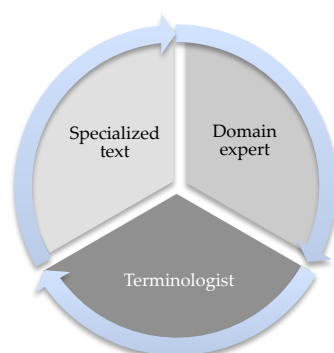


Figure 1. Interaction terminologist-text-domain expert.

In brief, in our study, when performing the role of terminologist we tried to combine evidence gathered from text and to elicit knowledge from experts by grasping hidden assumptions and clearly identify areas of consensus, correspondence, conflict and contrast, as proposed by Shaw & Gaines [19]. Interactional strategies were regarded as mechanisms selected or conceived by the terminologist to elicit, discuss and negotiate tacit knowledge and allowing for the construction of an intersubjective representation of the object-domain being studied. As Costa *et al.* [6] (p. 7) show, there is a very desirable symbiosis between domain expert and terminologist (see Table 1):

Table 1. Interactions between terminologist and domain expert.

Process Phases	Parties
domain understanding	terminologist
identification of sources	terminologist with expert validation
collect specialized texts	terminologist
construction of a textual typology, extraction of terminology	terminologist with expert validation terminologist
selection of candidate terms	terminologist with expert validation
maps of concepts	terminologist with expert validation
writing definitions	terminologist with expert validation
terminology management	terminologist

In accordance with the proposal stated in the table, we hold the view that it is important to develop an action-reflection procedure, both introspective and collaborative, in which the terminologist will become a conceptualizer, a decision-maker and an interventionist, as it will be shown in the following section.

5. Researching and Defining the Concept of *Blended Learning*: A Methodology

Taking the above into consideration, researching and defining *blended learning* was a long, intensive but thrilling academic challenge, in great measure possible thanks to the effort spent in building a methodological model to shape the whole process—three major phases were predicted: (1) an exploratory phase in the area/ object of the study; (2) a conceptual analysis phase of discourse and textual empirical data; and (3) a modeling and result validation phase (see Figure 2):

The workflow now represented with more detail combined different strategies that led to the ultimate *blended learning* definition, which intends to be a faithful representative of the diachronic inheritance and that simultaneously improves the accuracy of the concept. As schematically expressed in Figure 3, the terminologist interacted in a cyclical and iterative fashion with text and domain experts, eliciting and negotiating tacit and explicit knowledge:

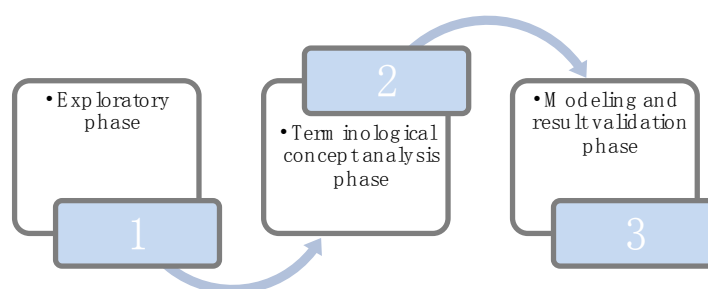


Figure 2. A three-phase model to define *blended learning*.

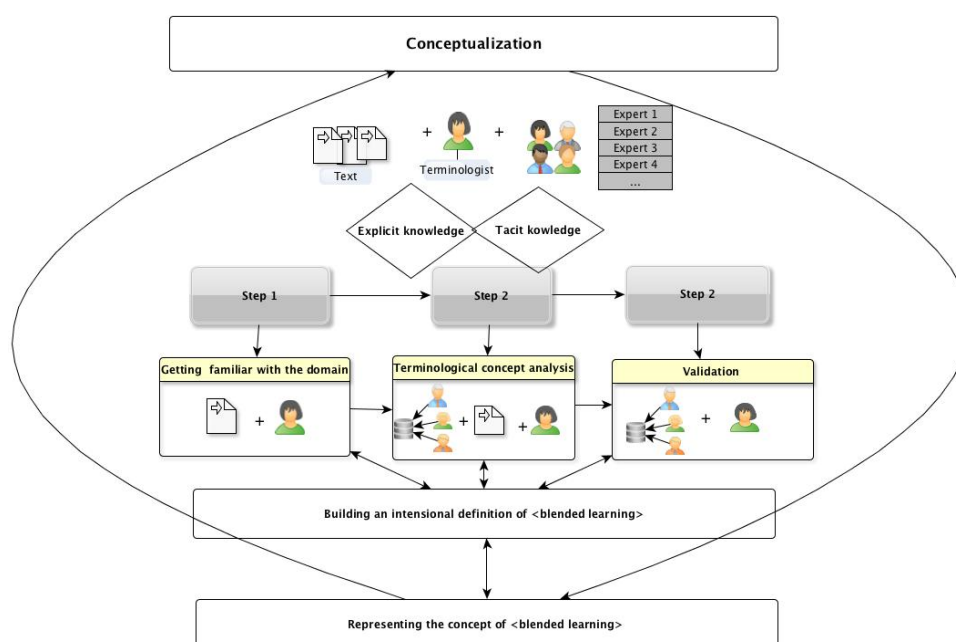


Figure 3. A workflow to research and define *blended learning*.

The exploratory phase was regarded as the starting point, having the goal of identifying all sorts of evidence, in other words, obtaining a primary decoding of reality. This approach gets close to phenomenology and grounded theory that are based on collecting views from a number of participants in order to describe what they have in common. (Creswell *et al* [20] (p. 252)). Among other strategies, a questionnaire was conducted in order to grasp Higher Education practitioners perceptions, particularly concerning distinctions between *e-learning* and *blended learning* and *blended learning* and *distance education*. Other empirical data used in this phase included a collection of individual interviews conducted with Portuguese domain experts.

Furthermore, a literature review process was also carried out in order to identify possible shifting terms that represent the *blended learning* concept (for instance, *formação combinada*, *ensino semi-presencial*, *ensino combinado*, *formação mista*, *metodologia de formação mista*, *aprendizagem híbrida*, *modelo combinado*, *b-learning*, *blended learning*, *hybrid learning*, among others). This review was performed by carrying out an exhaustive analysis of works published between 2002 and 2014. The text corpora gathered include authorial and institutional perspectives both in English and in Portuguese. Major aims of this phase were: (a) to establish explicit correlations between *blended learning* and the Post-Bologna scenario; (b) to identify the spectrum of delivery modes that range from entire face-to face interaction mode, to a distance mode (*traditional*, *web-enhanced*, *web-facilitated*, *blended*, *hybrid*, *fully online*); (c) to contextualize *blended learning* according to a diachronic approach; (d) to discover candidate characteristics of the

concept that deny the dualist perception of *blended learning* as a mere *combination of classroom learning and e-learning*; (e) to discuss the contribution of a *blended learning* definition to quality standards, as far as Higher Education is concerned.

The second phase - terminological concept analysis—implied the amplification of the elicited knowledge, by using a panel of domain experts who were individually interviewed by means of a common protocol. Interviews were subsequently transcribed and scrutinized (see Table 2):

Table 2. Portuguese domain experts that took part in the exploratory phase.

Code	University	Department	Category
Expert 1	Universidade do Minho	Departamento de Sistemas de Informação	Professor Auxiliar
Expert 2	TecMinho	Centro de <i>e-learning</i>	Director
Expert 3	Universidade de Lisboa	Instituto de Educação (<i>curriculum</i> , Formação de professores e Tecnologia)	Professor Auxiliar
Expert 4	Universidade Fernando Pessoa, Porto	Faculdade de Ciência e Tecnologia (Tecnologias, redes e sociedade)	Professor Associado com agregação
Expert 5	Académica da Força Aérea	(Pedagogia, <i>e-learning</i>)	<i>e-formador</i>
Expert 6	Universidade de Lisboa	Faculdade de Psicologia e de Ciências da Educação	Professora Auxiliar
Expert 7	Instituto Politécnico de Leiria	Escola Superior de Educação (Multimédia em Educação)	Professor Adjunto

A semi-structured interview script was produced with eight questions that helped conduct the interactions and compare and contrast perceptions obtained. Answers provided to questions 1, 2, 3 and 6 were particularly relevant to identify possible candidate characteristics and to predict their level of distinctiveness (see Table 3):

Table 3. Excerpt from the Portuguese expert's interview script.

1	<i>Em que é o <blended learning> se distingue do <e-learning>?</i>
2	<i>Qual é para si a melhor definição lata de <blended learning>?</i>
3	<i>O conceito de <blended learning> apresenta alguma variável quando se aplica ao Ensino Superior?</i>
4	<i>Formação é diferente de ensino?</i>
5	<i>Onde situamos o <blended learning> do ponto de vista epistemológico?</i>
6	<i>Que outras componentes poderão contribuir para singularizar este conceito?</i>
7	<i>Enquanto conceito, o <blended learning> é estático ou evolutivo?</i>
8	<i>Cronologicamente, acha que já se identificam alterações do conceito?</i>

Note: The above table is presented in Portuguese, because the questions were part of the script addressed to Portuguese researchers. Its content corresponds to: (1) What is the main difference between <blended learning> and <e-learning>? (2) What is, according to you, the best broad definition of <blended learning>? (3) Is <blended learning> within the Higher Education scenario a particular concept? (4) Is training different from education? (5) What is the place of <blended learning> within an epistemological viewpoint? (6) What components (other than face-to-face and distance) can be considered when delimiting <blended learning>? (7) Is <blended learning> a dynamic concept? (8) Are there, in diachronic terms, any remarkable changes?

Questions 1, 2 and 6 were particularly useful. The first question aimed at distinguishing between *blended learning* and *e-learning*; the second focussed on grasping an extensional definition, the third one was related to delimit the concept within the higher education landscape and the sixth was meant to extract possible candidate characteristics. This way, interviews were part of text corpora that allowed to identify knowledge rich contexts in the form of descriptions, definitions and defining contexts of

blended learning and were subject to semi-automatic extraction of forms useful to differentiate between essential and accidental characteristic candidates, that is, those that seemed to be indispensable to understanding a concept and those that seemed too broad (see Figure 4):

Candidat de regroupement	Fréquence	Score (Spécificité)	Variantes orthographiques	Matrice
learning	77	192.88	learning	Nom
blended learning	19	179	blended learning	Adjectif Nom
http	13	146.21	http	Nom
online learning	8	111.83	online learning	Adjectif Nom
traditional learning	5	84.87	traditional learning	Adjectif Nom
fundamental redesign	4	73.8	fundamental redesign	Adjectif Nom
blend learning	4	73.8	blended learning	Adjectif Nom
hybrid course	4	73.8	hybrid course	Adjectif Nom
face-to-face learning	4	73.8	face-to-face learning	Adjectif Nom
learning environment	4	66	learning environments	Nom Nom
redesign	5	63.23	redesign	Nom
face-to-face and online learning	3	60.87	face-to-face and online learning	Adjectif Coord_Conjunction Adjectif Nom
instructional technology	3	60.87	instructional technology	Adjectif Nom
instructor-led training	3	60.87	instructor-led training	Adjectif Nom
online course	3	60.87	online courses	Adjectif Nom
face-to-face teaching	3	60.87	face-to-face teaching	Adjectif Nom
in-person	3	60.87	in-person	Nom
combination	22	46.91	combination	Nom
classroom	15	46.76	classroom	Nom
separate model	2	44.73	separate models	Adjectif Nom
apndice	2	44.73	apndice	Nom
combination of instruction	2	44.73	combination of instruction	Nom Préposition Nom
combination of medium	2	44.73	combination of media	Nom Préposition Nom
òa	2	44.73	òa	Nom
one-to-one contact	2	44.73	one-to-one contact	Adjectif Nom
consultado	2	44.73	consultado	Nom
ibidem	2	44.73	ibid	Nom
face-to-face classroom	2	44.73	face-to-face classroom	Adjectif Nom

Figure 4. Extracting forms through *Termostat web*.

Seventeen candidate characteristics emerged from the fruitful process of combining text analysis with oral data analysis, as listed in Table 4. A detailed process of registering linguistic markers in English and Portuguese allowed for a very fine-grained perception of the degree of occurrence of characteristics and a deep understanding of the meaning behind designations:

Table 4. Preliminary shortlist of markers for *blended learning* characteristics.

A	combination	G	learning management system	N	collaborative learning
B	integration	H	Innovation	O	constructivism-oriented
C	redesign	I	formal learning	P	self-regulation
D	distance	J	informal learning	Q	multilinearity
E	presence	L	<i>e-learning</i>	R	multimodality
F	learning model	M	Flexibility		

Each of the characteristics listed above was discussed and analysed in detail, by comparing and contrasting existing views and by extracting a possible common understanding of the underlying meanings. After concluding this extensive analysis and synthesis process, we felt the requirements of the two phases had been fully accomplished. So, with regard to the third phase—modeling and validation a definition—the work was structured by an action-research procedure during which four cycles were conceived to favour the cyclical and iterative process of proposing, getting feedback, reconceptualising, redrafting, and so forth. The ultimate step—validation—comprised the strategy of using a focus group of domain specialists other than the ones previously consulted (see Table 5):

Table 5. Interactions developed within the modeling and validation phase.

1st Cycle	2nd Cycle	3rd Cycle	4th Cycle
[1 + 1] >	[1 + 1 +] >	[1 + group]	[1 + 1] + >
Terminologist + national expert	Terminologist + international expert	Terminologist + group of domain experts	Terminologist + follow-up focus group expert

As explained, after concluding the identification of *blended learning genus* (generic concept) and *differentia* (essential features), by assessing the relevance of the candidate characteristics, the linguistic challenge of drafting a definition and description took place. This interactional process was particularly thrilling and detailed, implying a continuous decision-making process that would have been impossible without the comfort provided by the deep research conducted beforehand. This sequence of cycles was supported by detailed grids designed to compare and evaluate the degree of agreement or disagreement with the definition proposed. By the end of the process we got the very satisfactory impression of having accomplished this huge task of encompassing in few words a complex of studied, shared and negotiated *analytical judgments*.

6. The Outcomes of the Research: *Blended Learning* Negotiated and Defined

As already stated, distinguishing between what is essential and inessential was a major task in the process of proposing a definition, for we subscribe Rickert's view [21] (p. 232), according to whom only a part of the world is relevant for concept formation. For such a reason, the process of progressive refinement of characteristics was itself very defying. We kept in mind that, according to ISO /FDIS 1087-1 (2000: 3.2.4) [22] standard, a concept is a *unit of knowledge created by a unique combination of characteristics* and a characteristic is an essential feature *indispensable to understanding a concept*. Interviews definitely made choices easier, as it can be seen in the table content (Table 6):

Table 6. Identifying *blended learning* linguistic markers evoking essential characteristics.

	Identifying <i>differentia</i> : essential characteristics' candidates				
	Combination	Distance	Presence	Learning Model	Varia
Interviewee 1	de métodos e ferramentas	componente... a distância	aulas presenciais	Multiplicidade (quanto mais, tanto mais.)	é uma consciência de multiplicidade
Interviewee 2	de modalidades	mediação tecnológica	sessões presenciais proximidade física do sistema	modelação criteriosa ao contexto	é uma sinfonia é gradativo
Interviewee 3	de regimes	trabalho síncrono e assíncrono	presencialidade	_____	é flexível
Interviewee 4	de novas praticas	internet e redes	mediação humana	_____	é uma prática é um instrumento
Interviewee 5	alterna dois tipos de sessões	momentos online	sessões presenciais com componente pedagógica	_____	_____
Interviewee 6	regime misto de combinação de duas possibilidades	componente a distância	as actividades presenciais podem ser de mera socialização	objectivos de aprendizagem claramente definidos	implica trabalho autónomo

Note: The above table is presented in Portuguese, because it represents linguistic markers extracted from Portuguese interview transcriptions. The content corresponds to: combination (methods and tools, modes, systems, new practices, two types of courses, mixed system combining two types of classes); distance (distance component, technology enhanced, synchronous and asynchronous work, internet and technology, online sessions, distance component); presence (face-to-face sessions, physical presence, presence, human mediation, face-to-face delivery, face-to-face activities in order to socialize); learning model (multilinear, modelling context, clear-cut definition of learning outcomes; varia (multiple learning opportunities, scalar, flexible, a practice, an instrument, autonomous work).

Having reached an extended understanding and a satisfactory level of consensus, we started cycle 1 and sent to the national expert involved three alternatives of a *blended learning* definition with slight differences of content and expression (see Table 7):

Table 7. Drafting definition possibilities for *blended learning*.

Phase II: Definition Drafting Proposals		8–10	5–7	0–4
1	<i>modelo pedagógico, no âmbito da educação a distância, ancorado numa flexibilidade física e temporal, o qual combina, admitindo possibilidade de variação percentual, uma componente presencial e uma componente online.</i>		x	
2	<i>modelo de ensino e aprendizagem formal, no âmbito e-learning, que pressupõe um desenho pedagógico o integrador, combinando em percentagens a definir contextualmente, sessões presenciais e sessões a distância, ambas com objetivos de aprendizagem.</i>		x	
3	<i>modelo multimodal e multilinear, ancorado na integração de teorias e práticas da educação presencial e da educação a distância e promove tanto auto-regulação como a dimensão colaborativa da aprendizagem.</i>		x	

Note: The drafting process concerned Portuguese language. The content presented corresponds to: (1) the learning model, within distance education, based on time and space flexibility, combining physical presence with online sessions; (2) paradigm, within e-learning, which implies an integrative design combining face-to-face sessions with distance delivery modes; (3) the multimodal and multilinear delivery instructional approach, implying the integration of face-to-face and distance theory and practice promoting self-regulation and collaborative learning.

At this stage, there was a very fine-grained co-analysis and negotiation of the three proposals, so, each characteristic was deeply explained and re-evaluated. Proposals were assessed within a scale (8–10 representing the higher score and 0–4 being the worst). The three proposals were subsumed to a single one and two scripts were designed to conduct follow-up interviews and a focus group.

As for the second cycle, three international domain experts were invited to take part of the modeling and validation process, by expressing their personal views concerning the essential nature of the characteristics selected to be linguistically represented through the definition. Some interesting considerations were brought to discussion. Overall, there was a broad consensus concerning the content proposed, but there were different views, to quote some examples, about the choice between *model* and *paradigm*, or the identification of the generic concept that entails *blended learning*: *distance education* and *online learning*, or *e-learning* were considered (see Table 8).

Table 8. Excerpts from the international expert's interview scripts.

International Expert 1	International Expert 2	International Expert 3
(a)... with regard to BL (Blended Learning) as a paradigm or model, I would have to favor it as a paradigm if it is done in a way that capitalizes on the real advantages/potential of BL to transform approaches to education. If it does not transform BL is largely an add-on and does not significantly change how educators approach learning.	(a) My current thinking is that having a simple global definition is important because locally everyone will operationalize the definition and there probably isn't anything that can be done to change that.	(a) BL, as covered in the proposal, is generally accepted to be the combination of face-to-face, classroom teaching and online, despite the wide range of definitions
(b) With regard to your definition I would probably use another term than distance education as this is becoming difficult to define. I prefer to use mediated forms of communication (e.g., online learning)? To be consistent, I would use the terms self and co-regulation. I have recently used these terms to describe shared metacognition in a collaborative learning environment.	(b)... self-regulation and collaboration are certainly very important factors... what exactly do you mean by multi-linear in this context? If it is related to different students taking different learning paths, then I would say yes	(b) I am aware of when BL is seen as 'disruptive' in the sense that mobile phones have been described as disruptive. (c)... I favour the term 'pedagogical model'; I don't feel happy calling BL a 'method' per se, in the sense of a 'methodology'

After scrutinizing the outputs of this cycle, some suggestions were incorporated and the definition content was reorganized and redrafted (see Example 1):

Example 1. Blended learning definition redrafted after Cycle 2.

blended learning (b-learning) (s./m.) <educação distância>	<i>paradigma de ensino e aprendizagem semi-presencial que integra teorias e práticas de e-learning e de educação presencial ancoradas num redesenho multimodal, multilinear e flexível, promotor da auto-regulação e da aprendizagem colaborativa.</i>
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Translation note: blended learning (b-learning)- N-noun <distance education> mixed learning paradigm that integrates e-learning with traditional learning theories and practices, materialized in a flexible, multimodal and multilinear redesign that promotes self-regulation and collaborativeness.

The validation process—here understood as a group of close interactions between terminologist and domain expert intending to reach a consensus about the options comprised by a given conceptualization—took place in the third cycle in order to go deeper with the definition harmonization. By promoting a focus group discussion to carry out the ongoing process of collective thinking, experts were invited to express their opinion about the general content of the definition and then assessed each of the characteristics put forward (see Table 9):

Table 9. Validating the definition: focus group grids.

Characteristics	Yes/No	Validation Phase: Expert Remarks
Grau de concordância com a definição (Level of agreement with the definition)	✓	100%
Blended learning é um tipo de e-learning (Blended learning is a type of e-learning)	✓	Sim (Yes)
Modelo (Model)	✓	Modelo é uma escolha adequada. (Model is an appropriate choice).
Mistura (Mix)	✓	Sim (Yes)
Integração (Integration)	✓	Sim (Yes)
Teoria e prática (Theory and practice)	✓	Sim (Yes)
Educação online (Online education)	✓	Adequado (Appropriate)
Educação presencial (Face-to-face education)	✓	Adequado (Appropriate)
Redesenho (Redesign)	✓	Distintivo (Distinctive)
Multimodal (Multimodal)	✓	Distintivo (Distinctive)
Multilinear (Multilinear)	✓	Distintivo (Distinctive)
Flexível (Flexible)	✓	Sim (Yes)
Auto-regulação (Self-regulation)	✓	Retirar. Não essencial. (Remove. Not essential)
Aprendizagem colaborativa (Collaborative learning)	✓	Retirar. Não essencial. (Remove. Not essential)

The output obtained made it possible to outline different concept maps that followed different evolution stages of the concept definition negotiation process and helped clarify concept relations that underlie it. Such a visualization strategy was used as a technique to explicit the definition content and when it comes to experts it makes it easy to see beyond words. They were sent together with the validation grid to experts who participated in the fourth cycle. Perceptions and suggestions were carefully analyzed and, once again, the output of the cycle led to some decisions. After assessing different suggestions concerning the relevance and the order of the essential characteristics, we came up with the final linguistic output: an intensional definition which specifies the *genus* (distance education) and a *differentia* set up by eight traits aiming at being truly distinctive (see Example 2):

Example 2. A harmonized blended learning definition.

<i>blended learning (b-learning)</i> (s./m.) <educação distância>	<i>modelo de ensino e aprendizagem semi-presencial que integra teorias e práticas de educação online e de educação presencial ancoradas num redesenho multimodal, multilinear e flexível.</i>
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Note: The blended learning (b-learning) (N) <distance education> mixed learning model that integrates online learning with face-to-face learning theories and practices, materialized in a flexible, multimodal and multilinear redesign.

As we can see, the approach suggested here truly benefited from a meaningful dialogic interaction between terminologist and domain experts. As Rickert states: *The truth does not lie in a discovery by an individual, but truth is what these discoveries have in common, and the way to establish truth is to determine what is agreed among the many different opinions.* ([21] (pp. 203–204).

7. Concluding Remarks

With this study we have engaged in contributing to harmonize the definition of a concept that seems to encompass a major trend in the present and near future Post-Bologna Higher Education landscape. It was shown that understanding, analyzing and defining a concept implies working with Terminology theoretical and methodological frameworks. Thus, through *blended learning* we tried to demonstrate that definition work involves a set of logical as well as linguistic operations that result in the production of a string of natural language which is expected to accommodate the density of inherited and shared knowledge (Rey, [2] (p. 41)).

We also believe the macrostructure of arguments put forward in this paper clearly shows that the process and the outcomes of this work were regarded as equally relevant. As Ziman [23] (p. 27) states *science is more than personal knowledge. To achieve the ultimate goal of consensuality science must be capable of expression in an unambiguous public language.* This way, a mixed methodology as designed by Costa ([16] *et passim*) revealed a very resourceful framework for encouraging a challenging combination between specialized text and expert knowledge.

Our interpretative analysis focused on understanding and categorizing already existing *blended learning* definitions, available in different sources and scrutinizing them in terms of *genus* and *differentia* (accidental and essential characteristics). Such an option goes deep into already existing knowledge and aims at improving it, by adding new insights into it. As for *blended learning*, the need to improve the accuracy in Portuguese Higher Education landscape proved to be very fruitful, because researchers and practitioners who contributed to the definition fully recognized that the importance of an unambiguous public language concerning this domain will not restrict freedom of thought. Inversely, they deeply agree that definitions are themselves the basis for transparency in public and insightful debate.

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References and Notes

1. Roche, C. Should Terminology Principles be Re-examined? In Proceedings of the 10th Terminology and Knowledge. Engineering Conference (TKE 2012), Madrid, Spain, 19–22 June 2012.

2. Rey, A. Defining definition. In *Essays on Definition*; Sager, J., Ed.; Johns Benjamins Publishing: Amsterdam, The Netherlands, 2000; pp. 1–14.
3. Picht, H.; Draskau, J. *Terminology: An Introduction*; Department of Linguistic and International Studies, University of Surrey: London, UK, 1985.
4. Hempel, C.G. *Aspects of Scientific Explanation—And Other Essays in the Philosophy of Science*; The Free Press: San Francisco, CA, USA, 1970.
5. Lavoisier Lavoisier, A.; de Morveau, L.; Berthollet, C.L.; Fourcroy, A.F. *Méthode de Nomenclature Chimique*; Académie des Sciences: Paris, France, 1787.
6. Costa, R.; Silva, R.; Barros, S.; Soares, A.L. Mediation strategies between terminologists and experts. In *Proceedings of the GLAT 2012—Terminologies: Textes, discours et accès aux savoirs spécialisés*, Genoa, Italy, 14–16 May 2012.
7. Norberg, A.; Dziuban, C.D.; Moskal, P.D. A time-based blended learning model. In *Horizon*; Emerald Group Publishing Limited: Bradford, UK, 2011; Volume 19, pp. 129–135.
8. Norberg, A.; Jahnke, I. Are you Working in the Kitchen? European Perspectives on Blended Learning. In *Blended Learning—Research Perspectives*; Picciano, A.G., Dziuban, C.D., Graham, C.R., Eds.; Routledge: New York, NY, USA, 2014; Volume 2, pp. 251–267.
9. Drysdale, J.; Graham, C.; Spring, K.; Halverson, L. An analysis of research trends in dissertations and theses studying blended learning. *Internet High. Educ.* **2013**, *17*, 90–100. [[CrossRef](#)]
10. Moore, J.L.; Dickson-Deane, C.; Gaylen, K. E-Learning, online learning, and distance learning environments: Are they the same? *Internet High. Educ.* **2011**, *14*, 129–135. [[CrossRef](#)]
11. Allen, E.I.; Seaman, J.; Garret, R. *Blending in: The Extent and Promise of Blended Education in United States*; Sloan Consortium: Newburyport, MA, USA, 2007.
12. Smith, G.G.; Kurthen, H. Front-stage and back-stage in hybrid e-learning face-to-face courses. *Int. J. E Learn.* **2007**, *6*, 455–474.
13. Garrison, D.R.; Kanuka, H. *Blended Learning in Higher Education. Framework, Principles and Guidelines*; Jossey-Bass: San Francisco, CA, USA, 2008.
14. Kockaert, H.J.; Steurs, F. *Handbook of Terminology*; John Benjamins Publishing Company: Amsterdam, 2015.
15. Nuopponen, A. Methods of concept analysis-tools for systematic concept analysis (part 3 of 3). *LSP J. Lang. Spec. Purp. Prof. Commun. Knowl. Manag. Cogn.* **2011**, *2*, 4–15.
16. Costa, R. Plurality of Theoretical Approaches to Terminology. In *Modern Approaches to Terminological Theories and Applications—Linguistic Insights*; Picht, E., Ed.; Peter Lang: Bern, Switzerland, 2006; Volume 36, pp. 77–89.
17. ISO. *ISO/FDIS 704:2009 (E). Terminology Work—Principles and Methods*; International Standards Organization: Geneva, Switzerland, 2009.
18. Costa, R.; Roche, C. Formations en Terminologie: Quels besoins. In *International Conference, Training in Terminology—Academia de Studii Economice (ASE) of Bucharest in collaboration with EAFT*, Bucharest, Romania, 3–4 November 2013.
19. Shaw, M.; Gaines, B. Comparing Conceptual Structures: Consensus, Conflict, Correspondence and Contrast. *Knowl. Acquis.* **2006**, *1*, 341–363. [[CrossRef](#)]
20. Creswell, J.W. *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches*, 3rd ed.; Sage Publications: Thousand Oaks, CA, USA, 2009.
21. Rickert, H. The Theory of definitions. In *Essays on Definition*; Sager, J., Ed.; John Benjamins Publishing: Amsterdam, The Netherlands, 2000; pp. 196–249.
22. ISO. *ISO/FDIS 1087–1:2000 (E/F). Terminology Work—Vocabulary—Part 1: Theory and Application*; International Standards Organization: Geneva, Switzerland, 2000.
23. Ziman, J. *Reliable Knowledge. An Exploration of the Grounds for Belief in Science*; Cambridge University Press: Cambridge, UK, 1991.

