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Factor Loading in Pakistani Educational Blogs vs. Native Educational Blogs: A Multidimensional Analysis

Carga factorial en blogs educativos pakistaníes frente a blogs educativos nativos: Un análisis multidimensional

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ABSTRACT

Introduction: this study investigates Factor Loading between Pakistani and Native (British) English educational blogs using a corpus-based approach. The study examined a corpus of 300 educational blogs, equally sourced from Pakistani and British contexts. In this quantitative study, co-occurring sets of linguistic traits were identified through factor analysis, a statistical technique based on the new multidimensional analysis frameworks proposed by Biber .
Method: the blogs were annotated for multidimensional analysis, and over 150 linguistic features were analyzed to identify dimensions contributing to linguistic variation.
Results: the results showed that PEBS (Pakistani Eductional Blogs) use clear, concise and objective language in order to be formal and authoritative in tone while NEBs(Native Educational Blogs) use descriptive and action-oriented discourse. The interesting thing to mention is that in all other dimensions, both PEBs and NEBs have the same discourse strategies. Both PEBs and NEBs use explicit discourse style for direct communication. So far as Involved and Informational dimensions of PEBS and NEBS are concerned, PEBs show that Pakistani bloggers use an informal tone while the NEBs use complex sentence structure to avoid informality.
Conclusions: similarly, both PEBs and NEBs use overt persuasion as persuasion technique. Furthermore, both PEBs and NEBs use abstract language to communicate sophisticated ideas. Last and the least, both PEBs and NEBs use online information Elaboration to convey ideas clearly. These insights can contribute to a deeper understanding of digital educational discourse and its variations across cultures.

Keywords: Factor Loading; PEBs; NEBs.

RESUMEN

Introducción: este estudio investiga la carga factorial entre blogs educativos en inglés pakistaní e inglés nativo (británico) mediante un enfoque basado en corpus. En este estudio, se identificarán conjuntos de rasgos lingüísticos coexistentes mediante el análisis de actores, una técnica estadística. Basándose en los marcos de análisis multidimensional, tanto antiguos como nuevos, propuestos por Biber (1988, 2004), este estudio examina un corpus de 300 blogs educativos, provenientes por igual de contextos pakistaníes y británicos.
Método: además, PEBS utiliza un lenguaje claro, conciso y objetivo para mantener un tono formal y autoritario, mientras que NEBS utiliza un discurso descriptivo y orientado a la acción. Cabe destacar que, en todas las demás dimensiones, tanto PEBS como NEBS comparten las mismas estrategias discursivas. Tanto PEBS como NEBS utilizan un estilo discursivo explícito para la comunicación directa.

Resultados: los blogs se anotaron para un análisis multidimensional, con más de 150 características lingüísticas analizadas para identificar las dimensiones que contribuyen a la variación lingüística mediante un enfoque basado en la adherencia. Estos hallazgos contribuyen a una comprensión más profunda del discurso educativo digital y sus variaciones interculturales. Por lo tanto, en lo que respecta a las dimensiones de Participación e Información de PEBS y NEBS, PEBS muestra que los blogueros pakistaníes utilizan un tono informal, mientras que los blogueros nativos utilizan una estructura oracional compleja para evitar la informalidad.
Conclusiones: de igual manera, tanto PEBS como NEBS utilizan la persuasión explícita como técnica de persuasión. Además, tanto PEBS como NEBS utilizan un lenguaje abstracto para comunicar ideas complejas. Por último, y no menos importante, tanto PEBS como NEBS utilizan la elaboración de información en línea para transmitir ideas con claridad.

Palabras clave: Carga Factorial; PEBS; NEBS.

INTRODUCTION

The examination of Pakistani and Native educational blogs' content is a crucial aspect of this research. The level of the content on these blogs varies greatly; it might include everything from thoughtful essays and policy criticisms to introspective pieces and tales from the classroom. Global Partnership for Education blogs such as "Education in Pakistan" concentrate on governance and policy matters, including comprehensive evaluations of state-level school changes and their effects on academic results.[1] Some blogs, like the ones run by the World Bank, emphasize the value of focused policies and greater public spending on education by showcasing real-world interventions and success stories.[2] Such platforms are important, according to recent studies.

In addition to sharing knowledge, good educational blogs connect with their audience on social media and encourage comments and debates. EdTech Hub and similar platforms use a range of digital technologies to improve continuity of instruction and tackle educational issues, particularly during calamities such as the floods in Pakistan in 2022.[3] These blogs use interactive features to reach a wider audience, including educators, students, and policymakers. Examples of these features include video courses and real-time debates. The importance of interactive material in raising student engagement and learning results is shown by recent research by Ali et al.[4] According to their research, blogs that include interactive conversations and multimedia components outperform conventional text-based blogs in terms of user engagement. One of the main reasons educational blogs work so well is that they use technology well. Multimedia material, interactive tools, and social media integration are common features of blogs that increase reader reach and engagement. For instance, blogs may discuss contemporary issues, cultural topics, and language nuances that enrich the learning experience. This aligns with studies that suggest diverse and relevant materials can significantly enhance student engagement and motivation in EFL settings.[5,6]

The current study focuses on the linguistic variations within Pakistani educational blogs by utilizing the MDA framework to explore the linguistic features of the selected corpora. The current research aims to explore Factor Loading across PEBs and NEBs through new MD analysis proposed by Biber.[7]

Such a study has already been conducted by Wong et al.[8] in Hong Kong setting which focuses on the linguistic analysis of blogs in Hong Kong English, utilizing the Corpus of Global Web-based English and W matrix for corpus analysis. This study identifies significant parts-of-speech categories and semantic domains in blog posts, providing insights into how bloggers use language to achieve specific communicative goals. Such methodologies can be applied to Pakistani educational blogs to identify how linguistic features vary across different educational contexts and purposes.

The consistent use of Biber's[9] MDA framework across various researches highlights its robustness and adaptability in analyzing diverse textual data. In order to place this research within established theoretical and methodological grounds, it is essential to draw on previous studies and various research models that explain linguistic variation in order to strengthen the study's framework and bring it into line with scholarly discourse on linguistic variation. Biber et al.[9] MDA framework, which has shown great efficacy in assessing linguistic aspects across many registers, is heavily relied upon in this study. By using statistical co-occurrence analysis, Biber's MDA model makes it possible to pinpoint language dimensions that represent both structural and functional variations because it organizes co-occurring linguistic variables into dimensions that highlight subtle patterns in Pakistani English. This method is especially well-suited for investigating digital registers such as educational blogs. MDA is an effective method for identifying linguistic variety in this situation since dimensions draw attention to structural and functional differences.

Biber et al.[9] was the first to utilize a multi-dimensional method to language analysis in 1985 and 1986 while in 1988 for the second. Biber et al.[9] stated that "MD analysis was established as a methodological technique in first step identify the underlying linguistic dimensions of variation in a language in empirical/quantitative terms, and in second step compare spoken and written registers in the linguistic space described by those

dimensions".[10] The perception of linguistic co-occurrence is important for the MD method, since "distinct patterns of co-occurrence are examined as primary 37 aspects for diversity". As a result, co-occurring traits are the heart of this strategy. This approach is highly empirical and quantitative, as the findings rely on the frequency and co-occurrence of linguistic traits, which outline the comparative distribution patterns of these elements across texts.[11,12,13,14]

Numerical analysis was conducted to identify dimension-based patterns from these results. Techniques such as two-way ANOVA, correlations, and other statistical methods are employed. When the results of quantitative studies require qualitative or functional evaluation by humans, the focus shifts to explaining the findings in a meaningful way. This approach is based on the assumption that underlying communicative functions depend on the co- occurrence of certain linguistic elements with others. Consequently, the research now aims to identify and interpret these functions in functional terms.[15,16,17,18] The features of the MD approach emphasize the significance of co-occurrence as deliberate rather than random, a concept that supports most mathematical theories and natural principles. The validity of this method is strengthened by triangulating quantitative data with accurate analyses based on consistent findings drawn from a diverse range of passage types.[19,20,21]

The dimensions found include both linguistic and functional substances, such as a set of often co-occurring nominalizations, prepositional phrases, and so on. The efficient content is a stairway ahead in the explanation stage, since it is considered that this co-occurrence is thoughtful of a few common purpose, which might be conditional, society, or cognitive in character. For example, the often co-occurring primary person pronoun, next person pronoun, express queries, and imperative all contribute to the text's interactivity, demonstrating the text's interactivity.[22,23,24]

There are several short-term goals to concentrate on the multifaceted character of the study. Biber et al.[11] stated MDA aims in the following terms during his recent conversation at UCREL Summer School. The first and most important purpose of such an analysis is to discover and understand significant linguistic characteristics, or scope, of a language, catalog, or any dialogue domain.[25] Second, every measurement must consist of collection of linguistic traits that occur together. Many registers, languages, or conversation domains can be compared based linguistic traits, functional relationships, or quantitative similarities/differences. The linguistic composition of each dimension determines the comparison of linguistic traits, whereas the functional connections are established by the scores on each dimension. Similarities and differences are analysed in terms of the entire collection of proportions.[26] Finally, every language is examined on its own expressions, depending on the grammatical and lexico-grammatical elements that happen in the language, as well as the registers that exist in the culture.

The co-occurrence of linguistic elements, on which it significantly depends, is the nexus of this multidimensional method. It employs mathematical issue analysis to determine the co- occurrence of linguistic characteristics and then interprets them based on their fundamental communicative functions, which are referred to as "dimensions of variation." On this point, the examination triangulates qualitatively, now like a traditional register analysis, by interpreting these predictive relationship patterns in functional terms, based on the same assumption that such co-occurrence is not random, but rather manifests some shared function.[27,28]

The MDA framework is methodical, follows the task hierarchy. Biber et al.[12] outline eight stages that must be followed to conduct MDA effectively. To begin, the corpus must be created and designed in such a manner that it is representative of the demographic group it serves, whether it is a language or a specialized discourse area. Although deciding on an ideal representative corpus is difficult, there are several criteria to consider when constructing a corpus. For example, how are book samples chosen, or what will be the quantity of texts, or what extent of text should be included, or how large should the quantity be, all while keeping a study aim in mind. Furthermore, the selected content must be reviewed and rechecked by removing non-essential text components and correcting typographical problems, either using computational approaches and software or manually. Second, to determine the sets of significant linguistic elements of the text, past research must be considered.[29,30,31]

The text is then subjected to automatic tagging, which grammatically annotates it. The texts are subjected to interactive tag editing once again to establish adequate levels of reliability, though this can or not be relevant to all texts.

Factor Analysis

Factor analysis identifies clusters of co-occurring linguistic features, or components, that reveal systematic patterns among linguistic variables within a text and the frequency of their co-occurrence. Each linguistic feature within a component is assigned a factor weight or factor loading, which reflects the degree of correlation between that feature and others within the same factor. These loadings may be positive or negative, with a crucial threshold, known as the cutoff point, set to determine the significance of factor loadings. The set of positive features on each dimension corresponds to a set of negative features, and their co-occurrence establishes their relative positions along two extremes. For a factor to be interpretable, it must contain a minimum of five linguistic features, including both positive and negative elements.[9]

METHOD

The current study is empirical and quantitative in nature. A corpus of Pakistani and Native English educational blogs was developed having a population of 300 online blogs. The developed corpus was analyzed using new MD analysis framework proposed by Biber et al.[7] across these corpora. Pakistani Educational Blogs Corpus (PEBC) was created by using online availble research blogs of Pakistani teachers ,academics and researchers.

In this quantitative study, co-occurring sets of linguistic traits were identified through the use of factor analysis, a statistical technique. A text has fewer negative qualities if it contains many good ones, and vice versa.[10]

For Factor Analysis, 150 linguistic characteristics were chosen initially from Biber's Tagger. These elements were included in both the most recent and previous versions of Biber's Tagger. After examining the prior research on MDA of academic writing, 60 linguistic characteristics were selected and incorporated in the final analysis.. Using Biber's criteria, linguistic characteristics were allocated to the factors where they loaded the highest: The factor score on which each linguistic trait had the largest loading (measured in absolute magnitude, without taking into account plus or minus signs) was included.

Analytical Framework

The MDAframework, as established by Biber et al.[7] and further refined for this study, was employed to analyze the linguistic features of the blog entries. This framework involved the following steps:

TaggingLinguisticFeatures

The blog entries were tagged for various linguistic feature using computational tools. These features w included part-of-speech tags, syntactic structures, and lexical items.The frequencies of the tagged linguistic features were calculated to identify patterns and variations across different categories of blog entries.

FactorAnalysis

A factor analysis was conducted to identify sets of co-occurring linguistic features,which were then interpreted as dimensions of variation.

Calculating Dimension Scores

Scores for each dimension were calculated for all blog entries, allowing for comparisons across different categories.

ANOVATesting

Analysis of variance (ANOVA) tests were conducted to determine the statistical significance of differences among categories of blog entries.

Data analysis

A new MDA based on fresh elements of the present corpus was carried out in order to discover new textual aspects. The process involved the following steps: first, the data were tagged for linguistic features of Pakistani educational blogs; second, the linguistic features were counted; third, a factor analysis was performed to reducethese features into sets of factors; fourth, dimension scores were computed; and, finally, the ANOVA test was used to investigate differences between categories of Pakistani educational blogs on new MD analysis. The information was forwarded to Northern Arizona University in the United States for thorough tagging and Biber Tagger analysis of new MDs.

RESULTS

Factor Loading Across Pakistaní Educacional Blogs

The "Involved vs. Informational" dimension reveal a spectrum between personal, engaging discourse and objective, information-focused communication. In the context of Pakistani educational blogs, this dimension is vividly illustrated bythe factor loadings presented in table 1. Features with positive loadings, such as demonstrative pronouns (DEMP) with a loading of 0,43, WH-clauses ([WHCL]) at 0,62, and attributive adjectives (JJ) scoring 0,75, indicate a tendency towards involved discourse. These elements contribute to a more conversational and engaging style, where the use of demonstratives and descriptive language fosters a direct connection with the reader. Additionally, the presence of split infinitives ([SPIN] at 0,83) and present tense verbs (VPRT) with a substantial loading of1,13 further enhance the immediacy and relatability of the content. Private verbs ([PRIV] at 1,47) and a high frequency of prepositional phrases (PIN) averaging 2,33 per blog underscore a personalized and nuanced expression, while the use of hedges (HDG) with a loading of 2,51 and contractions ([CONT] at 4,26) contribute to a more informal and approachable tone, making the discourse feel less authoritative and more interactive.

Table 1. Factor Loading of Dimension 1 across Pakistani Educational Blogs					
Involved Discourse	**Tag**	**Positive Loading**	**Informational Discourse**	**Tag**	**Negative Loading**
Demonstrative pronouns	DEMP	0,43	Subordinator that deletion	[THATD]	-2,27
WH-clauses	[WHCL]	0,62	Emphatics	EMPH	-1,40
Attributive adjectives	JJ	0,75	Possibility modals	POMD	-0,73
Split infinitives	[SPIN]	0,83	Discourse particles	DPAR	-0,60
Present tense	VPRT	1,13	Direct WH-questions	[WHQU]	-0,56
Private verbs	[PRIV]	1,47	Token Type Ratio	TTR	-0,56
Total prepositional phrases	PIN	2,33	Second person pronouns	SPP2	-0,55
Hedges	HDG	2,51	Indefinite pronouns	INPR	-0,43
Contractions	[CONT]	4,26	Word Length	AMP	-0,39
			Stranded preposition	[STPR]	-0,38
			Pronoun-it	PIT	-0,31
			Total other nouns	NN	-0,30

Conversely, the negative loadings associated with informational discourse highlight features that contribute to a more formal and objective presentation of information. The most significant negative loading is subordinator that deletion ([THATD] at -2,27), which streamlines sentence structures and enhances clarity by omitting unnecessary words. Emphatics (EMPH) with a loading of -1,4 and possibility modals (POMD) at -0,73 suggest a reduction in expressive and speculative language, fostering a more definitive and assertive tone. Minimal use of discourse particles (DPAR at -0,6) and direct WH-questions ([WHQU] at -0,56) further reinforce a focus on delivering information without engaging the reader interactively. A lower type-token ratio (TTR) of -0,56 indicates less lexical diversity, contributing to a more stable and clear informational style. Additionally, reduced usage of second person pronouns (SPP2 at -0,55) and indefinite pronouns (INPR at -0,43) creates a more impersonal and detached narrative, suitable for objective information dissemination. Shorter word lengths (AMPat-0,39) and fewer stranded prepositions ([STPR] at -0,38) enhance readability and grammatical precision, while limited use of the pronoun "it" (PIT at -0,31) and fewer other nouns (NN at -0,3) streamline the text to emphasize key informational elements.

Overall, the "Involved vs. Informational" dimension in Pakistani educational blogs reflects a balance between engaging, conversational elements and the clear, objective presentation of information. Positive loadings underscore a style that seeks to connect personally with readers through descriptive language and interactive structures, while negative loadings highlight a commitment to clarity, formality, and the efficient delivery of educational content. This duality allows educational blogs to effectively engage their audience while maintaining the integrity and precision necessary for informative discourse.

Table 2. Factor Loading of Dimension 2 across Pakistani Educational Blogs		
Non-Narrative Style Features	**Tag**	**Negative Loading**
Third person pronouns	TPP3	-0,53
Perfect aspecto	[PEAS]	-0,38
Present participial clauses	[PRESP]	-0,30
Past tense	VBD	-0,29
Synthetic negation	SYNE	-0,06
Public verbs	[PUBV]	-0,05

The "Non-Narrative Style" dimension, as part of Douglas Biber's framework, highlights a preference for objective and information-focused communication over storytelling in Pakistani educational blogs, as evidenced by the factor loadings presented in table 3. All the linguistic features associated with this dimension exhibit negative loadings, indicating their alignment with a more formal and expository discourse. Notably, third person pronouns (TPP3) have a loadingof-0,53, suggesting that these blogs minimize personal references to maintain an impersonal and objective tone. The perfect aspect ([PEAS] at -0,38) and present participial

clauses([PRESP] at - 0,3) are used less frequently, favoring straightforward and concise sentence structures that enhance clarity and focus on current and ongoing information rather than past events or narratives. Similarly, the reduced use of past tense verbs (VBD at -0,29) underscores a focus on present knowledge and facts, aligning with the educational intent of the blogs. Synthetic negation (SYNE at -0,06) and public verbs ([PUBV] at -0,05) are also less prevalent, contributing to a more affirmative and direct presentation of information without the complexity of negated statements or external references. Collectively, these features demonstrate that Pakistani educational blogs prioritize clear, concise, and objective language to effectively disseminate knowledge, ensuring that the content remains focused and accessible to their audience. By minimizing narrative and personal elements, these blogs maintain a formal and authoritative tone, which is essential for their role in education and information dissemination.

Table 3. Factor Loading of Dimension 3 across Pakistani Educational Blogs					
Explicit Discourse	**Tag**	**Positive Loading**	**Situation-Dependent Discourse**	**Tag**	**Negative Loading**
Predicative adjectives	PRED	5,00	Place adverbials	PLACE	-0,90
Phrasal coordination	PHC	0,10	Concessive adverbial subordinators	CONC	-0,57
			Nominalizations	NOMZ	-0,46
			Time adverbials	TIME	-0,41
			WH-relative clauses (subject position)	[WHSUB]	-0,37
			Total adverbs	RB	-0,35
			That-relative clauses (subject position)	TSUB	-0,23
			Pied-piping relative clauses	[PIRE]	-0,13
			WH-relative clauses (object position)	[WHOBJ]	-0,12

The "Explicit vs. Situation Dependent" dimension in Pakistani educational blogs, as illustrated by table 4, highlights a clear preference for explicit discourse over situation-dependent communication. Explicit discourse is characterized by the use of predicative adjectives (PRED) with a substantial positive loading of 5, which enhances the clarity and precision of the content by providing specific and vivid descriptions. Additionally, phrasal coordination (PHC) with a positive loading of 0,1 supports the construction of well-structured and coherent sentences, facilitating the clear articulation of relationships between different ideas.

Conversely, the dimension reveals a significant avoidance of situation-dependent discourse, as evidenced by the negative loadings of various linguistic features. Place adverbials (PLACE)have a strong negative loading of-0,9, indicating that Pakistani educational blogs minimize references to specific locations or contexts, thereby maintaining universal relevance and applicability of the content. Concessive adverbial subordinators (CONC) with a loading of -0,57 are used less frequently, suggesting a preference for straightforward statements without acknowledging exceptions or contrasts, which contributes to the directness of the information presented.

Nominalizations (NOMZ) show a negative loading of -0,46, reflecting a tendency to avoid turning verbs or adjectives into abstract nouns, thus promoting a clearer and more direct presentation of ideas. Time adverbials (TIME) with a loading of -0,41 indicate a focus on present and ongoing information rather than situating content within specific temporal contexts, enhancing the immediacy and relevance of the educational material. The reduced use of WH relative clauses on subject (WHSUB) and object positions (WHOBJ) with loadings of-0,37 and -0,12 respectively, along with pied-piping relative clauses (PIRE) at -0,13, further demonstrate a move towards simpler and more comprehensible sentence structures.

Additionally, the overall lower frequency of total adverbs (RB) with a loading of -0,35 and that relative clauses on subject position (TSUB) at -0,23 indicate a preference for concise and direct language, minimizing potential ambiguities and ensuring that the information is conveyed efficiently. By avoiding stranded prepositions and complex relative clauses, Pakistani educational blogs maintain a streamlined and accessible style that prioritizes clear knowledge dissemination over context-heavy or implicit language.

In summary, the linguistic patterns observed in table 4 reveal that Pakistani educational blogs favor explicit discourse, utilizing predicative adjectives and phrasal coordination to ensure clarity and precision. At the same time, they deliberately minimize situation-dependent features such as place adverbials, concessive

subordinators, and nominalizations to maintain a direct and universally understandable communication style. This approach effectively balances the need for clear, detailed information with the goal of making educational content accessible and relevant to a broad audience.

Table 4. Factor Loading of Dimension 4 across Pakistani Educational Blogs					
Overt Expression of Persuasion	Tag	Positive Loading	Covert Expression of Persuasion	Tag	Negative Loading
Predictive modals	PRMD	0,58	Infinitives	TO	-0,71
Split auxiliaries	[SPAU]	1,60	Suasive verbs	[SUAV]	-0,62
			Necessity modals	NEMD	-0,56
			Conditional adverbial subordinators	COND	-0,54

The "Overt vs. Covert Expression of Persuasion" dimension in Pakistani educational blogs, as depicted in table 5, highlights the strategies these blogs employ to influence and engage their readers. This dimension contrasts explicit, direct methods of persuasion(overt) with more subtle, indirect techniques (covert). The factor loadings reveal a clear preference for overt persuasive strategies over covert ones within these blogs.

On the overt side, predictive modals (PRMD) have a positive loading of 0,58, indicating that Pakistani educational blogs frequently use modals such as "will," "shall," and "must" to convey certainty and obligation. These modals serve to assert recommendations, directives, or expectations clearly and forcefully, directly guiding the reader's understanding and actions. Additionally, split auxiliaries ([SPAU])exhibit a substantial positive loading of 1,6

The "Abstract vs. Non-Abstract Information" dimension in Pakistani educational blogs, as illustrated by table 5, underscores the balance between theoretical, conceptual language and concrete, specific details within the content. This dimension is bifurcated into Abstract Information and Non-Abstract Information, each associated with distinct linguistic features that influence the clarity and depth of the educational material.

Abstract Information is prominently featured through several linguistic elements with positive loadings. Agentless passives ([PASS], 0,19) are utilized to emphasize actions and processes without specifying the actors involved, thereby focusing the reader's attention on the procedures or outcomes rather than on individuals. This impersonal construction enhances the theoretical nature of the discourse. Past participial WHIZ deletion relatives ([WZPAST], 1,09) streamline sentences by omitting relative pronouns, resulting in more concise and generalized statements that facilitate the presentation of complex ideas without unnecessary specificity. By-passives ([BYPA], 1,5) further this abstraction by incorporating the preposition "by" to introduce agents in passive constructions, subtly shifting the focus from the actor to the action itself. Additionally, other adverbial subordinators (OSUB, 2,25) such as "therefore," "however," and "moreover" are frequently employed to connect clauses and convey nuanced, abstract relationships between concepts, thereby enriching the intellectual rigor of the content.

Conversely, Non-Abstract Information is characterized by features with negative loadings, indicating a preference for concrete and specific language that grounds the educational material in tangible details. Conjuncts (CONJ, -0,69) like "and," "but," and "or" are used to link specific ideas, actions, or objects, fostering a more detailed and interconnected narrative that enhances the reader's understanding through clear, direct connections. The presence of past participial clauses ([PASTP], -0,09) adds temporal and causal specificity to sentences, providing concrete examples and detailed descriptions that make abstract concepts more relatable and easier to grasp.

Overall, the factor loadings for Dimension 5 reveal that Pakistani educational blogs predominantly favor abstract discourse, leveraging agentless passives, by-passives, and adverbial subordinators to convey complex, generalized ideas with clarity and sophistication. This approach facilitates the discussion of theoretical concepts and broad principles essential for educational purposes. At the same time, the selective use of non-abstract features like conjuncts and past participial clauses ensures that the content remains accessible and grounded, striking a balance between intellectual depth and practical clarity. By prioritizing abstract language, these blogs effectively communicate sophisticated ideas while maintaining the necessary specificity to engage and inform their audience, thereby fulfilling their educational objectives with precision and depth.

The "Online Informational vs. Online Involved Elaboration" dimension in Pakistani educational blogs, as depicted in table 5, highlights the strategies these blogs utilize to elaborate on information. This dimension contrasts Online Informational Elaboration, which emphasizes clear, detailed, and fact-based content, with Online Involved Elaboration, which focuses on personal engagement and interactive communication. The factor loadings for various linguistic features provide insights into how these blogs balance informative precision with reader engagement.

Table 5. Factor Loading of Dimension 6 across Pakistani Educational Blogs					
Online Informational Elaboration	Tag	Positive Loading	Online Involved Elaboration	Tag	Negative Loading
Gerunds	GER	0,53	That adjective complements	THAC	-0,39
Seem / Appear	[SMP]	0,77	Present participial WHIZ deletion relatives	[WZPRES]	-0,31
Demonstratives	DEMO	0,05			
That-relative clauses (object position)	TOBJ	0,15			
That-verb complements	THVC	0,28			

Online Informational Elaboration is prominently featured through several linguistic elements with positive loadings. Gerunds (GER) with a loading of 0,53 facilitate the discussion of ongoing processes and activities, enhancing the informational depth by emphasizing continuous actions related to educational content. The use of seem and appear verbs([SMP],0,77) introduces a level of analysis and observation, allowing bloggers to present information in a tentative or exploratory manner. This usage contributes to a balanced and research-based presentation, making the content appear well-considered and evidence-backed. Although the loading for demonstratives (DEMO) is relatively low at 0,05, their use helps specify and clarify particular points or examples, directing the reader's attention to specific elements within the discourse. That relative clauses on object position (TOBJ) with a loading of 0,15 provide additional information and context, enhancing the informational richness and specificity of the content. Similarly, that verb complements (THVC) with a loading of 0,28 allow bloggers to present assertions and statements with a degree of formality and clarity, contributing to the informative nature of the discourse by clearly conveying the blogger's viewpoints and conclusions.

Conversely, Online Involved Elaboration is characterized by features with negative loadings, indicating a preference for more personal, engaging, and interactive language use. That adjective complements (THAC) with a loading of -0,39 are used less frequently, suggesting a tendency towards more straightforward and less embellished language. By minimizing descriptive modifications, the content remains clear and direct, avoiding unnecessary complexity that could detract from the primary informational focus. Additionally, the reduced use of present participial WHIZ deletion relatives ([WZPRES], -0,31) indicates a tendency to avoid complex sentence structures that might engage readers in more nuanced or involved discourse. This supports amore streamlined and direct presentation of information, ensuring that the content remains easily comprehensible and focused on key educational objectives.

Overall, the factor loadings for Dimension 6 reveal that Pakistani educational blogs predominantly favor Online Informational Elaboration, as evidenced by the use of gerunds, seem/appear verbs, and relative clauses that enhance clarity and detail in information delivery. These linguistic features facilitate a clear and comprehensive conveyance of educational content, ensuring that readers receive well-structured and thorough information. On the other hand, the reduced use of that-adjective complements and present participial relative clauses highlights a lesser emphasis on personal or involved elaboration strategies. This balance ensures that while the content remains highly informative and precise, it does not overly engage in personal or interactive language that might distract from the primary educational goals. By prioritizing informational elaboration, Pakistani educational blogs effectively communicate complex ideas with clarity and depth, making their content both accessible and authoritative for their audience.

Factor Loading Across Native Educational Blogs
In factor analysis, loadings represent the strength of the association between each variable (or linguistic feature in this case) and the underlying factor (dimension 1 in this scenario). A positive loading indicates that the variable is positively correlated with the factor, meaning that as the factor increases, the frequency or prominence of that feature also increases. Conversely, a negative loading suggests an inverse relationship—when the factor increases, the occurrence of that feature decreases.

Linguistic features with a positive association to Dimension 1 tend to appear more frequently as this dimension becomes more prominent (e.g., in native educational blogs). Native educational blogs display characteristics that suggest complexity and interactivity. These include the use of richer vocabulary, more complex sentence structures (e.g., sentence relatives and coordinated clauses), and a conversational tone characterized by direct questions. These blogs engage the audience through interactive language, employing adjectives and modals to add detail and subtlety to the discourse.

Table 6. Factor Loading of Dimension1 across Native Educational Blogs					
Involved Discourse	**Tag**	**Positive Loading**	**Informational Discourse**	**Tag**	**Negative Loading**
WH-clauses	[WHCL]	0,50	Be as main verb	[BEMA]	-1,28
Attributive adjectives	JJ	0,66	Present tense	VPRT	-0,66
Possibility modals	POMD	0,86	Indefinite pronouns	INPR	-0,65
Interdependent Clause Coordination	ANDC	0,96	Word Length	AMP	-0,58
Direct WH-questions	[WHQU]	1,00	Pro-verb *do*	[PROD]	-0,51
Token Type Ratio	TTR	1,37	Stranded preposition	[STPR]	-0,44
Word Length	AWL	1,40	Discourse particles	DPAR	-0,43
Total other nouns	NN	1,67	Hedges	HDG	-0,38
Sentence relatives	[SERE]	2,00	Total prepositional phrases	PIN	-0,35
Split infinitives	[SPIN]	5,00	Contractions	[CONT]	-0,32
			Analytic negation	XX0	-0,30

Linguistic features with a negative association to Dimension 1 are less frequent as the prominence of this dimension increases (e.g., in native educational blogs). Features with negative loadings indicate that native blogs lean towards a more formal and structured discourse. The reduced use of present tense, contractions, hedges, and simpler sentence structures (such as "be" as the main verb) implies that these blogs favor a more formal, precise, and complex writing style. The lower frequency of general pronouns and discourse particles further suggests that these blogs prioritize specificity and clarity over casual or conversational language.

Overall, the analysis of native educational blogs reveals a strong preference for linguistic complexity. These blogs frequently employ longer words, a richer vocabulary, more intricate sentence structures, and interactive features like WH-questions, indicating an intention to engage readers through detailed and nuanced writing. At the same time, they tend to avoid informal linguistic elements such as the present tense, contractions, hedges, and simpler sentence constructions. The reduced use of general terms, discourse particles, and negations reflects a more formal and precise writing style that prioritizes clarity and detail over casual or conversational tones. This combination of positive and negative loadings suggests that native demonstrating a prominent use of constructions like "can easily" or "should definitely." This emphasis on split auxiliaries enhances the persuasive force of statements, making the messages more compelling and assertive.

In contrast, covert expressions of persuasion are characterized by negative loadings, suggesting that these indirect methods are less prevalent in Pakistani educational blogs. Infinitives (TO) show a negative loading of -0,71, indicating a reduced emphasis on phrases like "to achieve" or "to understand," which subtly guide readers without explicit directives. Similarly, suasive verbs ([SUAV]) such as "encourage," "suggest," and "recommend" carry a negative loading of -0,62, reflecting their diminished use in favor of more direct persuasive language. Necessity modals (NEMD) like "need to" and "have to" also exhibit a negative loading of -0,56, suggesting that these less forceful expressions of obligation are less common. Lastly, conditional adverbial subordinators (COND) with a loading of -0,54, which introduce conditions and scenarios (e.g., "if, "unless"), are used less frequently, further indicating a preference for straightforward persuasive techniques over conditional or hypothetical statements.

Table 7. Factor Loading of Dimension 5 across Pakistani Educational Blogs					
Abstract Information	**Tag**	**Positive Loading**	**Non-Abstract Information**	**Tag**	**Negative Loading**
Agentless passives	[PASS]	0,19	Conjuncts	CONJ	-0,69
Past participial WHIZ deletion relatives	[WZPAST]	1,09	Past participial clauses	[PASTP]	-0,09
By-passives	[BYPA]	1,50			
Other adverbial subordinators	OSUB	2,25			

Overall, the factor loadings for Dimension 4 reveal that Pakistani educational blogs prioritize overt persuasive methods to communicate effectively and authoritatively with their audience. The prominent use

of predictive modals and split auxiliaries underscores a commitment to clear and direct guidance, while the reduced reliance on covert strategies like infinitives and suasive verbs highlights a focus on unambiguous and assertive communication. This approach aligns with the educational objectives of these blogs, ensuring that messages are conveyed with clarity and conviction, thereby enhancing their effectiveness in informing and influencing readers.

Educational blogs adopt a complex, structured, and interactive style, emphasizing precision and reader engagement through sophisticated linguistic choices.

Table 8. Factor Loading of Dimension 2 across Native Educational Blogs					
Narrative Style	Tag	Positive Loading	Non-Narrative Concerns	Tag	Negative Loading
Present clauses	participial	[PRESP]	1,00	Perfect aspect	[PEAS]	-0,75
				Past tense	VBD	-0,64
				Synthetic negation	SYNE	-0,50
				Third person pronouns	TPP3	-0,50
				Public verbs	[PUBV]	-0,44

Associated with a narrative style and those tied to non-narrative concerns within native educational blogs. The positive loading for present participial clauses (e.g., *walking, running*) suggests that Dimension 2 is characterized by a more dynamic, ongoing action or descriptive style, which is often a hallmark of narrative discourse. This feature implies that native blogs tend to engage readers by creating vivid, action-oriented scenes or sequences, which are commonly seen in storytelling or when describing processes in an unfolding manner.

On the other hand, several linguistic features exhibit negative loadings in this dimension, signaling a move away from non-narrative concerns. These include grammatical structures like the perfect aspect (e.g., *has walked*), past tense, and synthetic negation (e.g., *didn't, hasn't*). The diminished presence of these features suggests that native blogs focus less on completed actions or past events and instead emphasize ongoing or immediate contexts. The lower frequency of third-person pronouns also reflects a reduction in reference to specific individuals, which is more typical in narrative styles where the focus may be on a direct, personal voice rather than abstract or distant subjects. Additionally, the lower use of public verbs (e.g., *say, argue*), which often serve to attribute actions or statements to others, further highlights the less formal, less distanced narrative nature of the discourse in these blogs.

Overall, dimension 2 appears to favor a present-focused, descriptive, and action-oriented style typical of narratives, while downplaying structures related to past events or formal exposition. This dimension reveals a preference for immediacy and engagement through direct description in native educational blogs, distinguishing them from styles that rely more heavily on reflection or attribution of external voices.

Table 9. Factor Loading of Dimension 3 across Native Educational Blogs		
Explicit Discourse	Tags	Positive Loading
Predicative adjectives	PRED	1,19
Nominalizations	NOMZ	1,42
Phrasal coordination	PHC	3,41
That relative clauses on subject position	TSUB	3,88
Situation Dependent Discourse	Tags	Negative Loading
Total adverbs	RB	-1,86
WH relative clauses on object position	[WHOBJ]	-0,76
Time adverbials	TIME	-0,69
WH relative clauses on subject position	[WHSUB]	-0,3

In dimension 3, there is a strong contrast between linguistic features associated with explicit discourse and those linked to situation-dependent discourse in native educational blogs. The positive loadings inthisdimension indicate atendencytoward clarity, structure, and formality in the text. Features such as predicative adjectives (e.g., *the book is interesting*), nominalizations (e.g., *decision* from *decide*), and phrasal coordination (e.g.,

and, or linking phrases) show a preference for clear, explicit descriptions. The high loading for that-relative clauses on subject position (e.g., *the person that runs*) further emphasizes structured, detailed discourse where the subject and its actions are clearly defined. This style typically enhances formalityand precision, making the content more accessible and explicit for the reader, which is common in educational writing.

On the other hand, features with negative loadings, such as total adverbs and WH-relative clauses on object position (e.g., *the person whom I saw*), are less prominent in dimension 3. The reduced presence of time adverbials (e.g., *yesterday, soon*) and WH-relative clauses on subject position also suggests that native educational blogs tend to minimize context-dependent references, which might rely on shared knowledge or a specific temporal frame. Instead, the focus remains on creating text that isclear and less reliant onsituationalcuesorexternalcontext.

Overall, the pattern of positive and negative loadings in dimension 3 suggests that native educational blogs favor an explicit, formal discourse style. The emphasis on structured sentences, nominalization, and precise coordination points to a writing approach that prioritizes clarity and direct communication, typical of educational content that aims to convey information in a clear and unambiguous manner. At the same time, there is a diced reliance on adverbs, time references, and certain types of relative clauses reflects a move away from discourse that depends on situational or contextual understanding. This combination allows for the creation of text that is both highly structured and broadly accessible, enhancing the clarity and explicit nature of the discourse.

Table 10. Factor Loading of Dimension 4 across Native Educational Blogs		
Over Expression of Persuasion	**Tags**	**Positive Loading**
Suasi veverbs	[SUAV]	0,55
Infinitives	TO	1,8
Covert Expression of Persuasion	Tags	Negative Loading
Split auxiliaries	[SPAU]	-0,76

In dimension 4, the factor loadings reveal a clear distinction between linguistic features associated with the over expression of persuasion and those tied to more covert forms of persuasion in native educational blogs. The positive loadings in this dimension highlight an inclination toward more explicit persuasive strategies. The presence of suasive verbs (e.g., *advise, suggest, recommend*) with a positive loading suggests that native blogs frequentlyemploy direct language to guide or influence the reader's actions or opinions. Additionally, the high loading for infinitives (e.g., *to learn, to succeed*) further supports the idea of explicit directionorinstruction, asthese formsareoftenusedto expressgoals, intentions, oractions, thus reinforcing a clear and direct persuasive tone.

On the contrary, the negative loading for split auxiliaries (e.g., *has not been, will not go*) represents a covert expression of persuasion, where the structure tends to be more subtle and indirect. The lower prominence of split auxiliaries suggests that native blogs are less likely torely on indirect, nuanced forms of persuasion that leave room for interpretation or hedging. Instead,theyseemto favormoreovert methods, where the persuasive intent isclear and direct to the audience.

In summary, dimension 4 reflects a tendency in native educational blogs to use clear, overt persuasion throughexplicit language, suchas suasiveverbsand infinitives, whilerelying lesson more indirect formsofpersuasionlike split auxiliaries. Thispatternsuggeststhatthese blogsaim to be persuasive in a straightforward manner, making their intentions and directives clear to the reader, rather than leaving room for ambiguity or subtlety in their persuasive efforts.

Table 11. Factor Loading of Dimension 5 across Native Educational Blogs		
Abstract Information	**Tags**	**Positive Loading**
Past participial clauses	[PASTP]	0,75
Conjuncts	CONJ	0,94
Other adverbial subordinators	OSUB	1
Non-Abstract Information	Tags	Negative Loading
Agentles spassives	[PASS]	-0,53
Past participial WHIZ deletion relatives	[WZPAST]	-0,35

In dimension 5, the factor loadings reveal a distinction between linguistic features linked to abstract information and those related to non-abstract information in native educational blogs. The positive loadings

point to a greater reliance on linguistic structures that convey abstract or conceptual information. For example, past participial clauses (e.g., *written, completed*) witha positive loading suggest that native blogsoftenuse constructionsthat describe actions or states in a more removed, generalized manner. This allows the text to reference abstract or completed events without specifying the agent responsible. Similarly, the use of conjuncts (e.g., *however, therefore*) and adverbial subordinators (e.g., *although, because*) signals a higher level of abstraction, as these devices help connect ideas and provide logical relationships between clauses, focusing on the conceptual flow of information rather than concrete actions or events.

On the other hand, the negative loadings reflect a lower occurrence of linguistic features that emphasize non-abstract or concrete information. The reduced use of agentless passives (e.g., *it was done*) suggests that native blogs tend to avoid structures that obscure the subject performing the action, which isa hallmark ofnon-abstract, more direct expression. Additionally, the infrequent use of past participial WHIZ deletion relatives (e.g., *the book [that was] written*) further indicates a preference for avoiding forms that simplifyor reduce the explicitness of agent or action, which typically aligns with non-abstract, straightforward descriptions.

Overall, dimension 5 demonstrates that native educational blogs favor an abstract, conceptual style of discourse. The frequent use of past participial clauses, conjuncts, and adverbial subordinators supports a focus on higher-level, generalized information that links ideas and events ina moretheoreticalor abstract way. Conversely, the avoidance ofagentless passives and WHIZdeletionrelatives highlightsa moveawayfromconcrete, simplifiedexpressionsthat focus on specific, tangible actions. This indicates a preference for a more sophisticated, abstract presentation of information in native educational blogs.

Table 12. Factor Loading of Dimension 6 across Native Educational Blogs		
Online Informational Elaboration	**Tags**	**PositiveLoading**
That relative clauses on object position	TOBJ	0,64
Present participialWHIZdeletionrelatives	[WZPRES]	0,67
Gerunds	GER	0,79
OnlineInvolvedElaboration	Tags	Negative Loading
Seem|appear	[SMP]	-0,4
Demonstratives	DEMO	-0,38

In dimension 6, the factor loadings highlight a contrast between linguistic features associated with online informational elaboration and those tied to online involved elaboration in native educational blogs. The positive loadings reflect a tendency toward more informational and formal elaboration. Features such as that-relative clauses on object position (e.g., *the ideathat we discussed*), present participial WHIZ deletion relatives (e.g., *the man [who is] walking*), and gerunds (e.g., *writing, reading*) all suggest a preference for detailed, formal exposition. These structures help to extend sentences, adding more layers of information and creating a more elaborate, precise style. The use of these forms points to an emphasis on providing in-depth explanations or descriptions, typical of educational writing that aims to convey detailed information clearly and thoroughly.

Conversely, the negative loadings for online involved elaboration features like seem\|appear and demonstratives (e.g., *this, that*) suggest that native educational blogs tend to minimize the use of more interactive or subjective expressions. These features are often used to introduce uncertaintyor engage the reader in a more informal, conversational manner. The lower presence of demonstratives and verbs like *seem* or *appear* indicates a preference for objective, concrete descriptions over subjective or evaluative statements, whichaligns witha more formal, detached style of information presentation.

Table 13. Dimensions					
	mean	**min**	**max**	**range**	**std**
Dimension 1	-12,51	-16,14	-8,88	7,26	5,13
Dimension 2	-1,53	-1,83	-1,22	0,61	0,43
Dimension 3	7,51	6,26	8,76	2,50	1,77
Dimension 4	0,27	-0,52	1,05	1,57	1,11
Dimension 5	1,60	1,06	2,14	1,08	0,76
Dimension 6	-0,34	-0,52	-0,15	0,37	0,26

Overall, dimension 6 reveals that native educational blogs favor informational elaboration that is more formal and precise, using linguistic structures that allow for detailed and extended explanations. By minimizing

the use of features associated with conversational involvement or subjective expression, the se blogs aim to maintain an objective, informative tone, which is crucial for clarity and depth in educational content. The emphasis on gerunds, relative clauses, and WHIZ deletion structures supports the development of clear, detailed narratives, while avoiding subjective or involved engagement with the reader.

Dimension 1

This dimension shows a substantial difference between native and Pakistani blogs, as indicated by the large range (7,26) and high standard deviation (5,13). The overall negative mean (-12,51) suggests that both blog types exhibit similar patterns, but the variability is significant. This could point to a notable distinction in the complexity or style of writing, with one group potentially using more narrative or expository styles that are common in academic or educational content.

Dimension 2

Dimension 2 shows minimal variation, with a narrow range (0,61) and low standard deviation (0,43). The near-zero mean (-1,53) implies that both blog types behave similarly along this dimension. This could indicate consistent use of particular structures, such as sentence length or grammatical constructs, across both groups.

Dimension 3

With a positive mean (7,51) and moderate standard deviation (1,77), dimension 3 reveals some variation between the two blog types. This suggests that Pakistani educational blogs might be using more formal or "learned" exposition, as indicated by their higher values in this dimension compared to native blogs. The variation could be linked to the formality of language, vocabulary complexity, or the use of specialized terminologies.

Dimension 4

The values for dimension 4 range from -0,52 to 1,05, showing moderate variation. With a balanced mean (0,27) close to zero, this dimension suggests that both blog types use a mix of textual features. This could point to differences in how argument actioner evidence is presented in educational content, with some fluctuation between styles of reasoning or organization.

Dimension 5

Dimension 5 shows relatively small but consistent positive values, with a moderate range and low variability. This indicates that the linguistic characteristics measured by this dimension, perhaps related to modality or register, are generally stable across both blog types. The positive mean suggests a tendency toward more assertive or formalized language in both groups.

Dimension 6

The low variability and small range in dimension 6 indicate that this dimension remains relatively stable across both blog types, with both groups showing slight negative tendencies. This could reflect shared patterns in the use of specific linguistic features, such as passive voice or nominalizations that are common in both educational contexts.

DISCUSSION

The linguistic variation between native and Pakistani educational blogs is subtle but noteworthy. Two dimensions (dimension 1 and dimension 3) show significant variability, indicating that these texts may differ in the complexity and style of exposition. The high variation in dimension 1 suggests that native blogs may utilize more narrative or informal styles, while Pakistani blogs might adopt a more structured and formal style, often found in "learned exposition."

Dimension 3 further supports this, as Pakistani blogs appear to employ more specialized vocabulary and advanced linguistic structures, which could reflect the more formal nature of educational content in this context. This aligns with the idea that Pakistani blogs might be oriented toward a more academic tone, while native blogs lean toward general or narrative styles.

On the other hand, dimensions 2, 5, and 6 show little variation between the groups, suggesting shared patterns in linguistic features such as grammatical structures, register, and modality. These dimensions reveal that both groups maintain a degree of consistency in their use of language, which could be due to the common purpose of educational communication, regardless of the cultural or regional context.

CONCLUSIONS

This study explored linguistic variation in Pakistani and Native (British) English educational blogs with a corpus-based approach. Using frameworks of Biber's multidimensional analysis (1988, 2004), the research

identifiedd grammatical and semantic differences and offered a new textual dimensions by statistically analyzing significant variations between two different contexts. Results indicated that Pakistani educational blogs follow a very unique set of grammatical and semantic patterns characteristic of adjustment to localized needs in education and culture. Difference in elaboration, interaction, and objectivity between disciplines form the unique strategies of communication followed by Pakistani bloggers. New dimensions of text were also found emphasizing on the adaptability nature of the linguistic practice involved. Native British blogs, in contrast, contained more linguistic variations characteristic of numerous styles of rhetoric as well as purposes of communication.

This research contributes toward a broader understanding of linguistic diversity in digital educational discourse. Documentation of the linguistic features of Pakistani educational blogs advanced the application of multidimensional analysis to digital contexts, offering insight into underexplored genres and enriching knowledge of how localized discourse practices adapt to and reflect cultural and educational demands.

RECOMMENDATIONS

To make educational blogs better for learning and teaching, teachers, policy makers, and content creators need to do some special things. First, adding blogs to the curriculum can give students real language experience and help them learn together. Blogs can help regular teaching by showing real-life examples, making students think critically, and getting them involved in digital skills. Ensuring uniformity in school blog content is also essential. Making rules for being steady, trust worthy, and including everyone can help make sure these sites give right and culture- friendly info.

But, it is also very important to mix standard rules with the need to be flexible, so bloggers can show local culture and real-life things while still being credible. Addressing the digital divide is crucial. People whom a ferules and schools should help more people get technology and the internet, especially in poor and country places. Also, teaching teachers and students how to use blogs good for learning is important so these blogs can be really useful. Classes, talks, and tools about digital skills can help people make, understand, and use blog stuff better. Incorporating various topics into blogs is highly beneficial. Things like videos, pictures with info, and tools you can play with can make people more interested and help different ways of learning. When blogs have these mixed things, they can be more fun and reach more people, and they can explain learning ideas better.

Additionally, educational blogs should be utilized to facilitate rule changes. The results from language studies can help change rules that make digital reading better, give everyone the same access to resources, and mix technology into teaching. By showing good examples of how blogs are used in schools, people can ask for more money and help for digital learning projects. Finally, we should promote collaboration between local and non-local bloggers. This can help share good ideas, make everyone feel included, and help different language and culture groups understand each other better. By working together, bloggers from different backgrounds can make a richer and more connected global education talk. If we use these ideas, educational blogs can become strong places to help with language, culture, and school differences. They can also facilitate innovation and ensure inclusivity in online education. This study is good and gives a strong look at things, but we need more research to understand better. Future studies can look at more types of Pakistani English to see how language changes on different online and school platforms. Adding more local and cultural parts to the study will help us see how education talks change around the world. Also, long-term studies can watch how language features in blogs change over time, showing how technology and school ideas change too.

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