

The Different Aspects of English Language Teaching and Learning: A Scientometric Analysis

Engin Arik*, Beril Tezeller Arik

Nuh Naci Yazgan University, College of Arts and Sciences, Department of Psychology, Kayseri, TURKEY.

ABSTRACT

We analyzed publications in English as a Foreign Language (EFL), English as a Second Language (ESL), Teaching English as a Foreign Language (TEFL), Teaching English as a Second Language (TESL), and Teachers of English to Speakers of Other Languages (TESOL) between 1900 and 2016 as indexed by Web of Science. We found that there were 1,839, 2,143, 44, 46, and 414 publications, respectively. Moreover, language and English were the common words in almost all the EFL, ESL, and TESOL abstracts. EFL and ESL shared study and students, while learning and learners appeared in almost all the EFL abstracts and teachers appeared in almost all the TESOL abstracts. Topics such as motivation, self-efficacy, and anxiety were significantly more frequently examined in EFL than in ESL but not in TESOL. Research related to non-English-speaking countries such as Taiwan, Iran, China, and Turkey were significantly more frequently considered in EFL than in ESL but not in TESOL. However, research on diverse populations within the same country such as immigrants, kindergarten, children, and adults was significantly more frequently conducted in ESL than in EFL.

Keywords: English as a Foreign Language (EFL), English as a Second Language (ESL), Teaching English as a Foreign Language (TEFL), Teaching English as a Second Language (TESL), Teachers of English to Speakers of Other Languages (TESOL), Bibliometrics.

Correspondence

Engin Arik

Nuh Naci Yazgan University, College of Arts and Sciences, Department of Psychology, Kayseri, TURKEY.
Email id: enginarik@enginarik.com

Received: 22-09-2020

Revised: 21-02-2021

Accepted: 29-03-2021

DOI: 10.5530/jscires.10.1.10

INTRODUCTION

English has become the lingua franca of today's world.^[1] Due to the rise of globalization and the internationalization of higher education, the use of English as an academic language has grown. One of its effects can be observed in the proliferation of academic fields related to English-language teaching and learning. These fields include English as a Foreign Language (EFL), English as a Second Language (ESL), Teaching English as a Foreign Language (TEFL), Teaching English as a Second Language (TESL), and Teachers of English to Speakers of Other Languages (TESOL). For ease, we give a table for the acronyms below and definitions of these fields come from the website of the TESOL International Association (see also)^[1-3] (Table 1).

Given the definitions, there can be similarities in the applications of knowledge obtained from the scientific studies from these five fields: EFL, ESL, TEFL, TESL, and TESOL. However, little is known about the extent to which these fields converge in their scope and research areas. To investigate this, we focus on the scientific studies in these fields of English to

explore trends, popular topics, and gaps in the literature and to turn the lens to the research outputs to reflect the history and current status of these fields. Considering the rise of many cross- and multi-disciplinary studies in the academic fields, the present study may also shed light on the extent to which closely related fields diverge in their research topics. Our bibliometric data came from all the publications with those abbreviations as topics published between 1900 and 2016 in Clarivate Analytics' Web of Science (WoS): Social Sciences Citation Index (SSCI) and Arts and Humanities Citation Index (A&HCI) and ranked in Journal Citation Reports (JCR). We chose WoS because its databases are among the most extensively investigated in the field of bibliometrics and because it could respond to our research questions:

- What are the bibliometric characteristics of publications from EFL, ESL, TEFL, TESL, and TESOL? To answer this question, we examined publication dates, categories and research areas, sources, languages, author affiliations, citations, and references of the publications as they appeared in SSCI and A&HCI from 1900 to 2016.
- What is the main focus of EFL, ESL, TEFL, TESL, and TESOL publications? To answer this question, we examined the abstracts and keywords of those publications and analyzed them using corpus linguistics tools.

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Table 1: Acronyms of the subfields of English Language Teaching and Learning.

EFL	English as a Foreign Language	“English language programs in non-English-speaking countries where English is not used as the lingua franca.”
ESL	English as a Second Language	“English language programs in English-speaking countries where students learn English as a second language.”
TEFL	Teaching English as a Foreign Language	“Often used to refer to teacher education programs in EFL.”
TESL	Teaching English as a Second Language	“Often used to refer to teacher education programs in ESL.”
TESOL	Teachers of English to Speakers of Other Languages	“Teaching English to speakers of other languages. A professional activity that requires specialized training.”

The present study is the first in-depth bibliometric analysis of publications in EFL, ESL, TEFL, TESL, and TESOL. Nonetheless, there are bibliometric studies in fields related to these five areas, from Linguistics to World Englishes. Linguistics and Applied Linguistics are the main fields that include all language-related studies. One study examined linguistics publications between 1900 and 2013, indexed in SSCI and A&HCI.^[4] It found that Linguistics is one of the major fields covered in these indices: the 21.69th in SSCI and the 7.92th in A&HCI, on average, and the number of linguistics publications in SSCI had increased more rapidly as compared to A&HCI. Another study focused on publications in language and Linguistics between 1996 and 2015, indexed in Scopus, from Southeast Asian countries.^[5] This study found that the number of outputs from these countries was very low because only 2% of all published articles and only 1% of citations in language and linguistics were from these countries.

Another study carefully examined articles published in 42 journals in the field of Applied Linguistics from 2005 to 2016, indexed in SSCI.^[6] The results showed that although many common topics were examined in the articles during this period, some topics such as language policy, language ideology, and multilingualism gained more prominence over the years, while others such as phonological awareness, phonological process, and word order gained less prominence over the years. This study also identified highly cited publications and researchers (e.g., R. Ellis, N. Chomsky, and M. Swain) and the countries of the authors, showing that researchers from the USA and the UK led these fields in terms of the number of publications.

While Linguistics and Applied Linguistics are the mother fields of language studies, there are specialized fields that focus on the use of English by nonnative speakers of English. A few bibliometrics studies examined some of these fields. One study focusing on publications in Second Language Acquisition (SLA)

published between 1987 and 2018 and covered by SSCI used CiteSpace to identify the relationship between SLA and other fields and to conduct citation analysis.^[7] The results indicated that SLA is a field close to fields such as psychology, education, and health. The results also indicated that major SLA research areas included topics such as second language classroom, working memory capacity, and reading comprehension, among others. Another study focused on corpus-based studies in SLA, including foreign language acquisition and pedagogy, between 1990 and 2015.^[8]

Two studies examined the publications in the field of Second Language Writing (SLW). The first one analyzed SLW publications between 1900 and 2013 as indexed in SSCI and A&HCI.^[9] It was found that the first publication in this field appeared in 1992, with a steady increase due to the inclusion of new journals such as the *Journal of Second Language Writing*. It was also found that 65% of publications were authored by at least one researcher from the USA. The other study analyzed empirical research articles ($n = 272$) in the *Journal of Second Language Writing* between 1992 and 2016.^[10] It was found that the participants of these mostly qualitative studies were usually college students with a focus on writing instruction and feedback for essay drafts. It was also found that the authors of these articles generally took a socio/cognitive perspective or benefitted from genre, contrastive rhetoric, and critical theories. Moreover, about 45% of the articles were written by authors affiliated with an institution in the USA. In SLW, there were also regular works classified as bibliography, e.g., a list of recent relevant publications, authored by Silva and colleagues.^[11]

World Englishes (WE) is another field related to the use of English. One study examined publications in this field from a bibliometric perspective.^[12] This study focused on publications from 1975 to 2013 in SSCI and A&HCI. The results showed that the earliest work in WE was published in 1989 and that the majority of the works (96.7%) were published very recently, between 2005 and 2013. In this field, too, authors affiliated with an institution in the USA had the highest number of publications as compared to authors affiliated with an institution in other countries/territories.

In addition to bibliometric studies in the major fields of language studies, other studies focus on: theoretical debates and shifts;^[13] the disciplinary characteristics of the fields of TESOL^[2] and Applied Linguistics;^[14] publication qualities in TESOL and Applied Linguistics;^[15] bibliometric studies focusing on specific methods such as eye-tracking;^[16] and language learning skills such as comprehension^[17] Therefore, the present study fills a gap in the bibliometric studies focusing on the fields related to English learning and teaching and provides a fresh perspective on how very closely related fields emerge and diverge in their research interests.

METHODOLOGY

There are multiple ways to investigate the research trends in scientific fields, e.g., interviewing leading scholars, examining textbooks and dissertations, surveying curricula, examining academic programs, and analyzing scientific outputs. In this study, we chose to analyze scientific outputs. One of the scientific means of doing that is to conduct a bibliometric study, i.e., an analysis of books, articles, and other scientific works. Aiming to contribute to the bibliometrics of EFL, ESL, TEFL, TESL, and TESOL, we accessed Clarivate Analytics' SSCI and A&HCI as well as JCR via a research-first university library in the USA. In Web of Science, we entered EFL, ESL, TEFL, TESL, and TESOL as topics with a timeline between 1900 and 2016. We downloaded all available details of the publications in PDF, Excel, and text formats. In JCR, we selected the latest report, published in 2017, to search for the impact factors (IF) of the journals that frequently publish scientific outputs from these five fields. We entered the data in corpus linguistic software such as AntConc^[18] to analyze words, phrases, and their cooccurrences in Abstracts and Keywords.

RESULTS

We analyzed the number of publications, the types of documents, the addresses and languages of publications, and the journals that frequently publish articles in the fields of English as another language. We found that, from highest to lowest, there were 2,143 ESL, 1,839 EFL, 414 TESOL, 46 TESL, and 44 TEFL publications indexed in SSCI and A&HCI, which suggests that ESL and EFL are more popular than the other three areas. The first publications were in 1959 for EFL, in 1964 for ESL, in 1970 for TEFL, in 1965 for TESL, and in 1967 for TESOL. These findings together suggest that the five fields of English started around the same time, yet most of the studies focused on ESL, EFL, and TESOL. We also found an exponential increase in the number of publications, especially in EFL, ESL, and TESOL ($y_{EFL} = 5.82E-124e^{0.144x}$ $R^2 = 0.965$, $y_{ESL} = 3.78E-53e^{0.0623x}$ $R^2 = 0.907$, $y_{TEFL} = 7.74E-26e^{0.0293x}$ $R^2 = 0.464$, $y_{TESL} = 2.32E-24e^{0.0276x}$ $R^2 = 0.273$, and $y_{TESOL} = 7E-53e^{0.0613x}$ $R^2 = 0.774$). It appears that the expansion of WoS from 2005 on and the increase in research interests among scholars in the field positively affected EFL more than others. Compared to 2005, the number of publications per year quadrupled in EFL and doubled in ESL and TESOL (Figure 1). The general expansion of language-related areas, as indicated by Figure 1, demonstrates a positive development for these five fields and can be attributed to globalization and a growing interest in language education.

Our results showed a variety of document types published in these fields (Table 2). In all five fields, articles were the

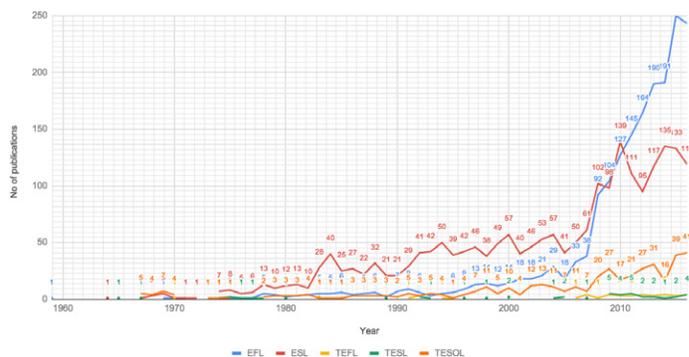


Figure 1: The number of publications in EFL, ESL, TEFL, TESL, and TESOL between 1959 and 2016.

most-published materials. The percentages of the articles, from highest to lowest, were: TESL (95.6%), EFL (88.6%), TEFL (84.1%), ESL (81.4%), and TESOL (74.5%). Conference proceedings were frequently observed in ESL (2.9%), EFL (1.45%), and TESOL (2.4%). Book reviews, editorial materials, and letters were more common in TESOL (12.1%, 10.9%, and 3.9%, respectively) and ESL (9%, 1.5%, and 2.1%, respectively) than in the other three fields. Moreover, meeting abstracts, bibliographies, and discussions were more frequently found in ESL than in the other four fields. The results indicate that, compared to the other areas, TESOL is the most diverse area in terms of the different genres represented in the publications included in this study, while TESL and EFL lean almost exclusively toward articles.

We also examined the countries of the authors who published in these fields (Table 3). We found that the USA was the most frequently found address of authors in the fields of ESL, TESL, and TESOL and the second-most frequently found address in EFL, whereas Taiwan was the most frequently found address of authors in EFL and Iran was the most frequently found address of authors in TEFL. The USA was followed by Canada and Australia in ESL, by Canada and Malaysia in TESL, and by England and Canada in TESOL, while Taiwan was followed by the USA and China in EFL and Iran was followed by China and England in TEFL.

A closer examination of the data revealed that these countries can be divided into two groups: English as a Common Language countries (Australia, Canada, England, New Zealand, and the USA) versus Others. To investigate whether there was a difference in the number of publications by field between these two groups, we first conducted a Friedman's test and then a Mann-Whitney test excluding TEFL and TESL because these areas contained fewer publications. The Friedman test revealed a significant difference among EFL, ESL, and TESOL, $\chi^2(2) = 34.76$, $p < .001$, Kendall's $W = 0.909$. Conover's post-hoc test showed that the number of EFL publications was significantly higher than those of both ESL, $t(48) = 2.961$, $p = .005$, and TESOL, $t(48) = 10.171$, $p <$

Table 2: The number of document types by field.

Document Type	EFL		ESL		TEFL		TESL		TESOL		Total	
	N	%	N	%	N	%	N	%	N	%	N	%
Article	1,690	90.52	1,744	79.06	37	84.09	44	93.62	301	67.79	3,816	82.81
Book Review	82	4.39	191	8.66	4	9.09			50	11.26	327	7.09
Proceedings Paper	28	1.50	63	2.86			1	2.13	10	2.25	102	2.21
Review	24	1.29	50	2.27	1	2.27			17	3.83	92	1.99
Editorial Material	19	1.02	33	1.50	1	2.27	1	2.13	45	10.14	99	2.14
Correction	9	0.48	5	0.23					1	0.23	15	0.32
Note	6	0.32	47	2.13	1	2.27	1	2.13	3	0.68	58	1.25
Meeting Abstract	4	0.21	12	0.54							16	0.34
Letter	4	0.21	45	2.04					16	3.60	65	1.41
Poetry	1	0.05	1	0.05							2	0.04
Bibliography			5	0.23							5	0.11
Correction Addition			3	0.14							3	0.06
Software Review			2	0.09							2	0.04
Reprint			2	0.09							2	0.04
Discussion			2	0.09					1	0.23	3	0.06
Art Exhibit Review			1	0.05							1	0.02
TOTAL	1,867	100	2,206	100	44	100	47	100	444	100	4,608	100

Table 3: The number of publications in EFL, ESL, TEFL, TESL, and TESOL by the country of the authors.

Country	Number of Publications					Total
	EFL	ESL	TEFL	TESL	TESOL	
USA	284	1,137	1	17	208	1,647
Canada	62	316	1	12	42	433
Taiwan	311	56	0	2	12	381
People's Republic of China	204	114	6	1	32	357
Japan	155	54	1	3	14	227
Australia	61	112	3	0	33	209
England	89	66	6	2	45	208
Iran	134	25	7	1	5	172
Spain	128	34	3	0	1	166
South Korea	76	45	1	0	12	134
Turkey	96	19	4	1	5	125
New Zealand	43	43	0	0	13	99
Singapore	33	25	1	0	2	61
Malaysia	16	22	2	6	4	50
Germany	28	8	1	0	2	39
Israel	30	3	1	0	4	38
Belgium	25	6	1	0	1	33
Sweden	13	6	1	0	1	21
United Arab Emirates	7	6	1	0	4	18
Portugal	5	3	1	0	1	10
Croatia	3	1	1	0	0	5
Cambodia	1	1	1	0	0	3
Libya	2	0	1	0	0	3
Nigeria	0	2	0	1	0	3
Papua New Guinea	0	1	0	1	0	2

.001. These, in turn, were significantly fewer in number than ESL, $t(48) = 7.210, p < .001$.

Furthermore, the Mann-Whitney test revealed that the number of ESL and TESOL publications by English as a Common Language countries was significantly higher than those by

the Other countries, $W = 6, p = .003$ and $W = 2, p = .001$, respectively. No difference was found between the number of EFL publications by the English as a Common Language countries versus the Other countries. Moreover, when the USA data were excluded because of their high frequency, similar significant results were obtained. Although it is not surprising that the USA plays a major role in English language education, it appears that researchers in English-speaking countries focus more on teaching English to non-native speakers such as immigrants and their English learning processes.

When we examined the languages of publications, we observed the dominance of English: 98.4% of EFL, 99.2% of ESL, 95.4% of TEFL, and 100% of TESL and TESOL publications. Moreover, very few languages other than English were used in the publications: 10 at most (Table 4).

The journals that most frequently published articles from these fields are given in Table 5. Our analysis of the journals that published articles in these five fields showed that, as expected, most of the publications were classified as linguistics and/or education journals except for Expert Systems with Applications and Brain and Development. A closer examination also showed that some of these journals were among the top journals according to the Linguistics rankings of JCR 2017: Journal of Second Language Writing the 2nd, Applied Linguistics the 3rd, and Modern Language Journal the 6th. Of these top journals, some of them specialize primarily in the five fields on which we focused. These journals included TESOL Quarterly, ELT Journal, Language Teaching Research, Journal of Second Language Writing, Language Learning, IRAL-International Review of Applied Linguistics in Language Teaching, and English Teaching-Practice and Critique.

Abstracts

To investigate common topics and trends, as well as differences, in these fields, we focused on the abstracts and analyzed the frequencies of words and word clusters. We then compared all the abstracts according to their fields. We found that 1,601 EFL, 1,541 ESL, and 250 TESOL articles had abstracts. A corpus analysis of these abstracts showed that the EFL abstracts consisted of 11,135 types and 279,518 tokens, indicating that

the length of an EFL abstract was around 175 words on average. The most frequently appearing words in the EFL abstracts were language (2,923, 1.05%), English (2,763, 1.05%), students (2,462, .98%), EFL (2,323, .83%), study (2,210, .79%), learning (1,898, .68%), learners (1,798, .64%), teachers (1,335, .48%), writing (1,050, .38%), and results (999, .36%), suggesting that the first seven of them appeared in almost all the abstracts.

The analysis also showed that the ESL abstracts consisted of 11,274 types and 257,762 tokens, indicating that the length of an ESL abstract was around 167 words on average. The most frequently appearing words in the ESL abstracts were language (2,712, 1.05%), students (2,252, .87%), English (2,220, .86%), ESL (2,136, .83%), study (1,760, .68%), learners (1,400, .54%), writing (1,282, .50%), learning (1,049, .41%), second (1,026, .40%), and teachers (1,002, .39%), suggesting that the first five appeared in almost all the abstracts.

The analysis also showed that the TESOL abstracts consisted of 4,592 types and 42,807 tokens, indicating that the length of a TESOL abstract was around 171 words on average. The most frequent words in the TESL abstracts were language (448, 1.05%), English (400, .93%), teachers (362, .85%), TESOL (299, .70%), teaching (243, .57%), research (224,

Table 4: The number of publications in EFL, ESL, TEFL, TESL, and TESOL by the language of publication.

Language	Number of Publications				
	EFL	ESL	TEFL	TESL	TESOL
English	1,809	2,126	42	46	434
Spanish	10	8			
German	7	2			
Turkish	4	1	1		
Portuguese	3				
Japanese	2				
Swedish	1				
Slovenian	1				
French	1	6	1		
Afrikaans	1				

Table 5: The number of publications in EFL, ESL, TEFL, TESL, and TESOL by the name of the journal including their impact factors in 2017.

Journal	JCR 2017			Number of Publications				
	IF	Ling. Rank (181)	Edu. Rank (238)	EFL	ESL	TEFL	TESL	TESOL
System	1.547	36	98	180	104	6	0	18
TESOL Quarterly	2.256	10	42	117	419	1	11	210
ELT Journal	1.276	52	134	83	22	1	2	20
Computer Assisted Language Learning	1.928	20	58	73	22	1	3	1
Modern Language Journal	2.789	6	20	69	127	1	1	19
Language Teaching Research	2.086	16	50	65	44	2	3	14
Journal of Second Language Writing	3.324	2	n/a	47	88	0	1	9
Porta Linguarum	0.457	125	220	44	6	3	0	0
Language Learning	1.655	32	85	43	89	1	1	1
Language Learning Technology	2.113	14	47	40	20	0	0	4
Canadian Modern Language Review	0.816	92	n/a	31	124	0	5	10
Applied Linguistics	3.225	3	n/a	37	41	1	0	3
Foreign Language Annals	0.802	93	187	28	35	0	1	2
Journal of Reading	n/a	n/a	n/a	4	25	0	0	0
IRAL-International Review of Applied Linguistics in Language Teaching	1.242	56	139	25	19	2	0	1
English Teaching-Practice and Critique	0.442	127	221	20	6	2	1	2
Expert Systems with Applications	3.768	n/a	n/a	0	3	0	2	0
Brain and Development	1.544	n/a	n/a	0	0	0	2	0
Journal of Language Identity and Education	0.511	120	219	12	19	0	0	8
Teaching and Teacher Education	2.473	n/a	31	21	12	1	1	7
Language Culture and Curriculum	1.658	31	84	15	8	1	0	6
Journal of Multilingual and Multicultural Development	0.942	79	n/a	19	10	1	0	6

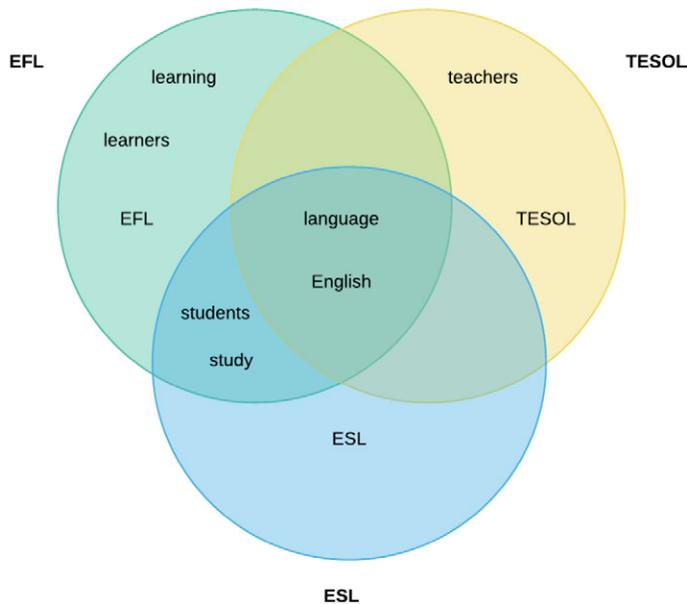


Figure 2: Venn diagram of the most frequently used words in the publication abstracts in EFL, ESL, and TESOL.

.52%), study (224, .52%), teacher (221, .52%), students (216, .50%), and article (169, .39%), suggesting that the first four appeared in almost all the abstracts. Combined, language and English were the common words in almost all the EFL, ESL, and TESOL abstracts. Meanwhile, EFL and ESL shared study and students, while learning and learners appeared in almost all the EFL abstracts; teachers was in almost all the TESOL abstracts (Figure 2).

We then conducted several log-likelihood analyses to compare the abstracts of the EFL, ESL, and TESOL articles. We reported partial results in Table 6. We found that, as expected, the abbreviations for the fields were significantly more frequently found in the abstracts from the respective fields than other fields. For example, EFL in the EFL abstracts ($n = 2,323$) was found about four times more often than EFL in the ESL abstracts (Keyness = 1484.06, $p < .0001$) or four times more often than EFL in the TESOL abstracts (Keyness = 380.89, $p < .0001$). In addition to the differences in the use of the abbreviations for their respective fields, the analysis of the abstracts indicated that all these three fields focused on the English language but that TESOL abstracts focused on teachers, EFL on learners, and ELF and ESL on students.

We also found that research topics such as motivation, self-efficacy, and anxiety, borrowed from psychology via the field of second language acquisition, were significantly more frequently examined in EFL than in ESL but not in TESOL. Research groups related to non-English-speaking countries such as Taiwan, Iran, China, Turkey, and Japan were significantly more frequently considered in EFL than in ESL but not in TESOL, except for Japan. However, research conducted on diverse populations within the same country, such

as immigrants, kindergarten, children, adults, family, and girls, were significantly more frequently conducted in ESL than in EFL.

Keywords

We found that 1,180 EFL (69.82%), 860 ESL (49.31%), and 122 TESOL (40.53%) articles had keywords. The keywords of the 1,180 EFL articles consisted of 2,159 words and 12,590 tokens, indicating that, if available, an EFL article had 10.66 keywords on average. We examined the most frequently found words as the publication keywords by field (Figure 3). The most common EFL keywords were language (587, 4.66%), EFL (459, 3.65%), learning (391, 3.11%), English (311, 2.47%), writing (226, 1.80%), foreign (198, 1.57%), teacher (196, 1.56%), teaching (160, 1.27%), reading (156, 1.24%), and learners (110, .87%) suggesting that, with the exception of learners, all these words were used in almost all the keywords. The most frequently found phrases were English as a Foreign Language (103, 8.7%), second language (67, 5.68%), EFL learners (61, 5.17%), language teaching (55, 4.66%), teacher education (38, 3.22%), EFL writing (37, 3.14%), reading comprehension (31, 2.63%), learning strategies (27, 2.29%), EFL teachers (26, 2.20%), Computer Assisted Language Learning (22, 1.86%), corrective feedback (21, 1.78%), language acquisition (21, 1.78%), and vocabulary learning (21, 1.78%).

The keywords of the 860 ESL articles consisted of 1,904 words and 9,419 tokens, indicating that, if available, an ESL article had 10.95 keywords on average. The most frequently found words in the ESL keywords were language (489, 5.19%), ESL (284, 3.02%), English (252, 2.68%), writing (246, 2.61%), second (203, 2.16%), learning (180, 1.91%), teacher (128, 1.36%), education (101, 1.07%), learners (99, 1.05%), and feedback (90, .96%), which were used in almost all the keywords. The most frequently found phrases were English as a Second Language (61, 8.7%), second language writing (42, 5.68%), corrective feedback (41, 4.77%), language learners (41, 4.77%), academic writing (31, 3.60%), foreign language (31, 3.60%), teacher education (31, 3.60%), language acquisition (27, 3.14%), conversation analysis (25, 2.90%), second language acquisition (25, 2.90%), language teaching (22, 2.56%), second language learning (20, 2.33%), ESL learners (19, 2.21%), and ESL students (18, 2.09%).

The keywords of the 122 TESOL articles consisted of 528 words and 1,498 tokens, indicating that, if available, a TESOL article had 12.28 keywords on average. The most frequently found words in the TESOL keywords were language (69, 4.61%), teacher (63, 4.21%), education (39, 2.60%), English (35, 2.34%), TESOL (29, 1.94%), learning (23, 1.54%), teaching (20, 1.34%), ESL (17, 1.13%), identity (17, 1.13%), teachers (17, 1.13%), pedagogy (16, 1.07%), research (15,

Table 6: Log-likelihood analyses of the abstracts (the first 10 words, The Log-Ratio Effect size > 1, e.g., “a word is 8 times more common in A than in B – the binary log of the ratio is 3,” see ⁽¹⁹⁾).

EFL vs ESL				ESL vs EFL			
	Frequency	Keyness	Effect size		Frequency	Keyness	Effect size
EFL	2,323	1484.06	2.6178	ESL	2,136	1890.4	3.2469
foreign	988	513.3	2.2021	second	1,026	278.58	1.2995
motivation	331	178.92	2.2765	health	156	218.41	7.4023
anxiety	232	172.85	3.0406	immigrant	139	185.84	6.2358
Taiwan	129	80.47	2.5724	ELLs	102	149.86	7.7893
intercultural	126	74.96	2.4681	literacy	307	122.01	1.6786
Iranian	97	71.85	3.0236	children	309	119.5	1.6469
listening	290	71.22	1.2948	academic	493	115.71	1.1858
questionnaire	251	63.17	1.3155	immigrants	78	105.17	6.4023
online	299	58.27	1.1184	phonological	129	78.89	2.3208
EFL vs TESOL				TESOL vs EFL			
	Frequency	Keyness	Effect size		Frequency	Keyness	Effect size
EFL	2,323	380.89	2.8309	TESOL	299	1040.06	6.2872
vocabulary	539	143.2	6.3671	critical	108	126.58	2.214
reading	878	125.94	2.4861	identities	72	126	2.9701
learners	1,798	115.85	1.3238	teacher	221	115.42	1.3225
foreign	988	112.79	2.0319	article	165	106.39	1.5035
comprehension	395	84	3.9187	education	145	104.47	1.6108
group	904	69.36	1.4984	teaching	243	83.14	1.0319
listening	290	66.84	4.4729	professional	84	80.82	1.9395
test	596	63.71	1.9272	discourses	35	78.55	3.6664
proficiency	500	61.67	2.1713	languages	60	69.85	2.2045
ESL vs TESOL				TESOL vs ESL			
	Frequency	Keyness	Effect size		Frequency	Keyness	Effect size
ESL	2,136	338.33	2.5398	TESOL	299	921.73	5.3879
writing	1,282	99.16	1.4303	teaching	243	153.1	1.4953
reading	613	77.57	2.0847	teachers	362	141.23	1.1213
learners	1,400	71.22	1.0797	critical	108	120.37	2.1651
vocabulary	253	68.6	5.3929	teacher	221	118.51	1.3557
scores	221	67.94	6.1978	professional	84	101.86	2.2959
children	309	55.09	2.874	identities	72	79.15	2.1453
proficiency	416	50.75	2.0229	rp	16	62.37	7.5901
accuracy	164	50.41	5.7674	education	145	60.32	1.1664
feedback	353	44.17	2.066	cultural	91	60.22	1.5433

1.00%), writing (15, 1.00%), critical (14, .93%), and learner (13, .87%). The most frequently found phrases were teacher education (24, 19.67%), second language (12, 9.83%), language teaching (10, 8.19%), TESOL teacher (7, 5.74%), foreign language (6, 4.92%), language learners (6, 4.92%), language learning (6, 4.92%), language teacher (5, 4.10%), language writing (5, 4.10%), professional development (5, 4.10%), and teacher training (5, 4.10%).

A closer examination of the phrases revealed that phrases such as reading comprehension, learning strategies, Computer

Assisted Language Learning, corrective feedback, language acquisition, and vocabulary learning had higher percentages in EFL; academic writing and conversation analysis in ESL; and professional development and teacher training in TESOL than in the other two fields.

As we did for the abstracts above, we conducted several log-likelihood analyses to compare the keywords of the EFL, ESL, and TESOL articles. We reported the results in Table 7. As found in the abstracts, the abbreviations for the fields were significantly more frequently found in the abstracts

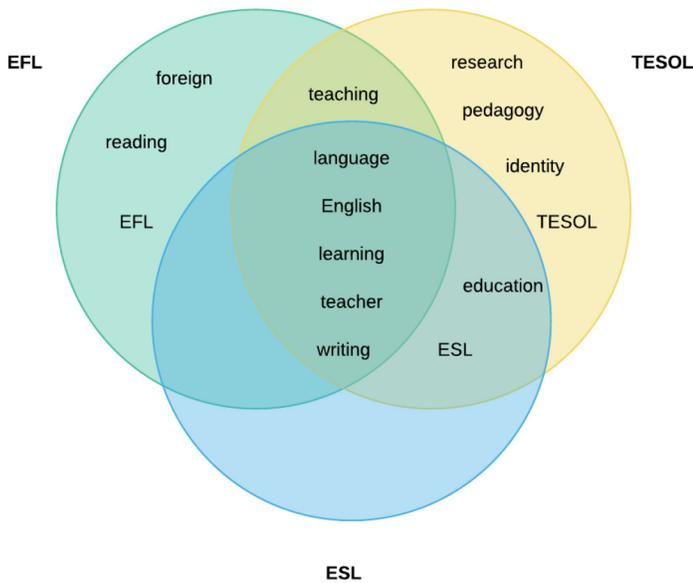


Figure 3: Venn diagram of the most frequently used words in the publication keywords in EFL, ESL, and TESOL.

from the respective fields than other fields. For example, ESL in the ESL abstracts ($n = 284$) was found about eight times more often than ESL in the EFL abstracts (Keyness = 285.48, $p < .0001$) and two times more than ESL in the TESOL abstracts (Keyness = 24.1, $p < .0001$).

Moreover, the analysis of the keywords indicated that TESOL keywords included pedagogy and identity more than others, while EFL keywords included reading more than others. Interestingly, writing was equally distributed across these three fields. We also found that research topics such as learning, anxiety, and motivation were significantly more frequently examined in EFL than in ESL but not in TESOL. Conversely, issues related to immigrants and their literacy were significantly more frequently found in ESL than in EFL but not in TESOL.

DISCUSSION AND CONCLUSION

Several academic fields focus on the learning processes and teaching activities of the present Lingua Franca, English. This study examined scientific studies published between 1900 and 2016 as indexed by Web of Science from the five main English studies: EFL, ESL, TEFL, TESL, and TESOL. The results showed that these fields are not equally represented in WoS, as there were 2,143 ESL, 1,839 EFL, 414 TESOL, 46 TESL, and 44 TEFL publications, which were written predominantly in English; these fields emerged at relatively the same time, i.e., the 1960s. We discuss the trends, popular topics, and gaps in the literature and to turn the lens to the research outputs to reflect the history and current status of studies on English language and teaching. This discuss will be invaluable for the scholars working on the rise of many cross-

and multi-disciplinary studies and subfields in the academic fields to highlight minor but clear-cut differences in their research topics.

As found in the previous works on linguistics, second language writing, and World Englishes,^[4,9,12] the expansion of WoS in 2005 had a positive effect on the number of EFL, ESL, and TESOL publications covered in SSCI and A&HCI. Among these three fields, EFL has benefited from this expansion; the number of publications per year quadrupled in EFL and doubled in ESL and TESOL after 2005.

In terms of the number of publications, the leading country in the publications related to language sciences such as Linguistics,^[4] Applied Linguistics,^[6] SLW,^[9] and WE^[12] is the USA. This is also what we partially observed in the present study: The USA was the most frequently found address of the authors in the fields of ESL, TESL, and TESOL. Nevertheless, when it comes to EFL and TEFL, the picture is rather different: Taiwan was the most frequently found address of the authors in EFL, where the USA was number two. Iran was the most frequently found address of the authors in TEFL.

As observed in the previous related works, studies focus on some topics more than others and there can be topic shifts over time. For example, language policy, language ideology, and multilingualism have recently gained momentum in Applied Linguistics research,^[6] second language classroom, working memory capacity, and reading comprehension in SLA,^[7] and writing instruction and feedback for essay drafts in the Journal of Second Language Writing.^[10] In a similar vein, our analysis of the abstracts and keywords from the ESL, TESL, and TESOL articles revealed common and diverse topics. In addition to differences in the use of the abbreviations for their respective fields, the analysis of the abstracts indicated that all these three fields focus on the English language but TESOL abstracts focused on teachers, EFL on learners, and ELF and ESL on students. Moreover, analysis of the keywords indicated that TESOL keywords included pedagogy and identity, while EFL keywords included reading more than others. Interestingly, writing was equally distributed across these three fields.

Although WoS is the most respected database and most of the bibliometrics research takes its outputs into account, other databases specialize in language research. One of them is ProQuest's Linguistics and Language Behavior Abstracts (LLBA). LLBA has more extensive coverage but does not provide detailed information about the publications in its coverage, which makes it difficult to compare its outputs with those from WoS. Nonetheless, we conducted a simple analysis to focus on the number of publications and the publication languages of the scientific works in the field of English as an additional language.

Table 7: Log-likelihood analyses of the keywords.

EFL vs ESL				ESL vs EFL			
	Frequency	Keyness	Effect size		Frequency	Keyness	Effect size
EFL	459	267.22	2.6958	ESL	284	285.48	3.2108
foreign	198	82.14	2.0408	second	203	92.62	1.6917
learning	391	31.39	0.7005	bilingualism	21	35.67	5.8109
anxiety	36	27.98	3.7513	literacy	58	27.59	1.7531
motivation	80	26.55	1.7334	immigrants	15	25.48	5.3255
vocabulary	83	18.37	1.3126	academic	86	24.92	1.2599
				conversation	29	23.89	2.6917
				health	15	19.11	4.3255
				students	75	18.07	1.1239
EFL vs TESOL				TESOL vs EFL			
	Frequency	Keyness	Effect size		Frequency	Keyness	Effect size
EFL	459	59.46	2.7712	TESOL	29	96.57	5.1218
reading	156	18.9	2.6293	teacher	63	40.04	1.4337
vocabulary	83	18.72	4.3039	education	39	30.63	1.6423
				other	6	26.92	6.6561
				hearing	5	22.43	6.3931
				pedagogy	16	21.84	2.3707
				international	8	19.69	3.7492
				identity	17	19.62	2.1142
				communities	4	17.94	6.0712
				deaf	4	17.94	6.0712
				diverse	4	17.94	6.0712
				esol	4	17.94	6.0712
				speakers	6	16.13	4.0712
				research	15	15.64	1.9781
				ESL	17	15.34	1.8011
				reflective	9	15.32	2.7817
ESL vs TESOL				TESOL vs ESL			
	Frequency	Keyness	Effect size		Frequency	Keyness	Effect size
ESL	284	21.1	1.4097	TESOL	29	79.37	4.5105
writing	246	17.73	1.3831	teacher	63	46.9	1.6298
				critical	14	23.35	2.8749
				hearing	5	19.88	5.9745
				education	39	19.4	1.2797
				reflective	9	15.92	3.0151
				deaf	4	15.9	5.6525

We found that LLBA coverage is more extensive than WoS coverage: 11,627 vs. 1,839 for EFL, 9,260 vs. 2,143 for ESL, 411 vs. 44 for TEFL, 2,253 vs. 46 for TESL, and 7,290 vs. 414 TESOL. Nevertheless, EFL, ESL, and TESOL were the most-represented fields—a finding very similar to that of WoS except for the order of these fields. The EFL publications numbered more than the ESL publications in LLBA but the reverse was true in WoS. Based on the fact that non-English-speaking countries published more in EFL than in ESL in

WoS, we can speculate that LLBA covers more international publications than WoS. That is what we found when we analyzed the languages of publications: LLBA covers publications written in a greater variety of languages than those covered in WoS: 21 vs. 10 at most (compare Table 4 and Table 8). As in WoS, English was the predominant language of the publications covered by LLBA: 93.99% of EFL, 95.82% of ESL, 83.23% of TEFL, 97.02% of TESL, and 94.78% of TESOL publications. Yet, these percentages were a bit lower

Table 8: The number of publications in EFL, ESL, TEFL, TESL, and TESOL by the language of publication according to LLBA.

LLBA Language	Number of Publications				
	EFL	ESL	TEFL	TESL	TESOL
English	11,311	9,166	402	2,246	7,212
Spanish	314	141	69	36	135
French	158	119	5	21	119
Portuguese	101	21		1	13
German	89	103	4	10	120
Chinese	19	4			3
Turkish	11	2			
Korean	9	2	2		1
Greek	5				1
Japanese	5	1			
Slavic language	3	1			
Finnish	2				1
Hungarian	2				
Afrikaans	1				
Croatian	1		1		
Italian	1			1	3
Lithuanian	1				
Bulgarian		1			
Estonian		2			
Malay		2			
Slovak					1

than those in WoS, which supports our speculation that LLBA covers more international non-English publications than WoS does.

This research has implications for the bibliometric study of emerging (sub) fields or cross-/multi-disciplinary studies. The findings suggest that very closely related (perhaps sister) fields such as EFL, ESL, TEFL, TESL, and TESOL could emerge at the same time but differ from one another in their main research topics and their leading experts and affiliations/countries. They could also differ from one another in terms of the number of research outputs. We hypothesize that similar observations can be made in the newly emerging multi-disciplinary studies and subfields of the established fields such as English. As new research questions emerge, first, perhaps, new subfields are established within the same academic discipline. However, when the subfields fail to answer those research questions, new interdisciplinary fields of study emerges. Yet, this observation is based on the field of English and waits for testing in the other social science disciplines. Future research

will test these observations in other closely related fields such as anthropological linguistics and linguistic anthropology; neurology, neuropsychology, and neuroscience; cognitive psychology, cognitive linguistics, and cognitive science; and clinical psychology, counseling psychology, and health psychology.

Author Contributions

All authors equally contributed to this article.

Funding

This research received no external funding.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

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