International Journal of Linguistics, Literature and Translation

ISSN: 2617-0299 (Online); ISSN: 2708-0099 (Print)

DOI: 10.32996/ijllt

Journal Homepage: www.al-kindipublisher.com/index.php/ijllt



| RESEARCH ARTICLE

Non-Conventional Spelling in Informal, Colloquial Arabic Writing on Facebook

Reima Al-Jarf

Full Professor of English and Translation Studies, Riyadh, Saudi Arabia

Corresponding Author: Reima Al-Jarf, E-mail: reima.al.jarf@gmail.com

ABSTRACT

Arabic has a standard form used in formal situations and print materials and a non-standard, colloquial form used in daily conversation. Each Arab country has its own dialect. Before social media, educated Arabs used to use Standard Arabic when they communicated in writing. But with the advent of social media, people started to use non-standard Arabic, i.e., their own dialects, when they communicate in writing on social media. A corpus of spelling errors in Arabic was collected from Facebooks posts and analyzed to find out the types of errors made, the strategies Arab Facebook spellers use, why educated Arabs make those errors and their effect on decoding ability and communication. It was found that Facebook users completely ignore Standard Arabic spelling rules. They spell words the way they pronounce them in their local dialects. They delete vowels, substitute long vowels by short ones and vice versa and confuse consonants with the same sound. Some graphemes are no longer used. They connect several words together as one word, ignoring the pauses between them. The same word or phrase, in the same dialect, is spelled differently by different users. Sometimes it is difficult to understand what some users are trying to say. It seems that the non-standard Arabic spelling used on Facebook is undergoing a simplification process. Users do not seem to recognize word boundaries, cannot connect phonemes with the graphemes they represent and cannot distinguish vowel length in their spoken dialect. A detailed classification of spelling anomalies, the faulty spelling strategies used and reasons for those spelling weaknesses detected are reported.

KEYWORDS

Arabic spelling, spelling errors, spelling anomalies, spelling deviations, Colloquial Arabic spelling, educated Arabs, non-standard spelling, social media Arabic spelling, social media spelling variations, Arabic spelling strategies.

ARTICLE INFORMATION

ACCEPTED: 01 April 2023 **PUBLISHED:** 07 April 2023 **DOI:** 10.32996/ijllt.2023.6.4.6

1. Introduction

The Arabic language is diglossic, i.e., it has a Standard form (SA) and a Colloquial, non-Standard spoken form (CA). The Standard form is the language of instruction at National Public schools. It is commonly used by educated Arabs in formal settings such as conferences, lectures and interviews. It is the language of print media and news T.V. stations such as BBC Arabic, Almayadeen, Aljazeera and so on. On the contrary, the Colloquial, non-Standard form is used in informal settings such as informal conversations with friends and relatives about daily life issues, when shopping, at the restaurant and others. Each Arab country has its own local dialect and several sub-dialects existing in the different regions of the country. Phonological, syntactic, and lexical differences exist between the SA and CA forms. From infancy to school age, children in all Arab countries are exposed to CA at home, and to SA on T.V. cartoon films, children's stories and school textbooks (Al-Jarf, 2020; Al-Jarf, 2019).

Before social media, educated Arabs used SA to communicate with others in writing. But with the emergence of SMS on mobile phones, online discussion forums and social media sites such as Twitter, Facebook, Instagram, WhatsApp, and Snapchat, a new linguistic phenomenon has emerged among Arabs regardless of their age, gender and educational level. People started to use new forms and styles of communication such as slang, and Colloquial, Non-Standard Arabic, i.e., using their own dialects, when they communicate with their friends and followers in writing (Al-Jarf, 2011; Al-Jarf, 2019; Al-Jarf, 2020). In this respect, Buri (2017)

Copyright: © 2023 the Author(s). This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC-BY) 4.0 license (https://creativecommons.org/licenses/by/4.0/). Published by Al-Kindi Centre for Research and Development, London, United Kingdom.

indicated that due to social media, language is transforming. The standard forms and grammatical rules have been deteriorating in many languages because of the new communication forms that are being used such as neglecting punctuation marks, using emojis, emoticons, and pictures instead of words.

Since these new communication/linguistic forms used on social media are common in many languages, their use by native and non-native speakers has been the focus of numerous studies around the world. Some studies in the literature investigated the effects of social media on the use of English. A study by Roua, Yunusb and Sulimanc (2019) has shown the positive effects of social media on the writing skills of elementary school students learning ESL in Malaysia. In particular, social media were found to have a positive influence on students' spelling skills. Students who embraced digital communication utilised social media positively. Elementary school students who frequently use social media sites as a medium of communication are exposed to the overuse of slang and abbreviations. The researchers concluded that technology helps to improve students' writing and communication skills and in the informal acquisition of language. Social media also provide a practical platform for students to learn English.

To test the hypothesis that young people in Belgium have the multi-skills required to switch between formal and informal communication, samples of the written products of students across different media and communication situations were collected by Cougnon, Maskens, Roekhaut and Fairon (2017). Data analysis indicated that the students' level of spontaneous writing and dictation was relatively low. The majority of students' errors were grammatical. All the students used traditional spelling in at least one of them.

At the college level, a study by Oko-Epelle and Fajoye (2022) examined the effect of social media English on the spelling ability of students from eight faculties at Redeemer's University in Nigeria, the extent to which abridged spellings are used and students' attitude towards using social media English for communication. Results revealed that social media English was common among undergraduate students in Nigeria. The students preferred to use social media English for communication and were using social media English even in formal settings. Those who do not know how to spell correctly, even in formal settings, showed some improvement.

In another study in Nigeria, Wilson (2018) investigated the number of hours spent daily on social networking activities by students at the Federal College of Education Yola and the effect of social media on their spelling skill. The researcher found that use of social media had a negative effect on college students' spelling ability and the conventional way of writing especially in examinations and letters.

Some of the weaknesses found in Malay social media texts were spelling variations, and vowel-less words, Malay-English mix in sentences, loan words/phrases, and slang-based words (Maskat & Rahman, 2020).

Further spelling variation patterns that exist on Twitter and Reddit Word were embeddings that encode spelling variation patterns of various types and use of pairs of word forms covering seven types of spelling variation in English. A link was found between the intentionality of the variation and the distance between their non-conventional and conventional spellings (Nguyen, Grieve, Scott, Bel & Zong, 2020).

To find out whether the spelling of past participle verbs is affected by the frequency of whole words, bigram and paradigmatic support for correct spelling and the token frequency of past participle verbs' morphological family, Surkyn, Vandekerckhove and Sandra (2021) analyzed unintentional/informal spelling errors in past participle forms produced by Flemish 15-to-20-year-old teenagers in private online writing on Facebook Messenger or WhatsApp. The past participle forms were partially homophonous with other forms in the inflectional paradigm. The researchers concluded that the error rates reflected the effect of both bigram and paradigmatic support, and affected all social variables (Age, Educational track, and Gender). Nevertheless, the social variables did not interact with bigram and paradigmatic support.

Regarding the impact of social media on the Dutch verb spelling system, Schmitz, Chamalaun and Ernestus (2018) analyzed a Twitter corpus containing 17,432 tweets with homophonous verb forms and reported that many spelling errors are made by both children and adults, although the verb spelling system in Dutch seems to be very straightforward. These spelling errors mainly took place in verbs with two or more homophonous forms in their inflectional paradigms. The subjects clearly preferred the suffix -<d> compared to -<dt> and -<t>. Frequency resulted in fewer errors for more frequent word forms. Users with more followers made fewer errors and more errors were made in the evening and at night.

As it is the case in other languages, the Arabic language that is used on social media is changing especially in the spelling of Arabic slang words and colloquial speech. A review of the literature has shown few studies that investigated the effect of social media and online communication on the Arabic language used. In Morocco, Tachicart and Bouzoubaa (2021) investigated online written

texts generated by Moroccan users on social media with an emphasis on Moroccan Arabic. It was noted that social media users use code-switching, multi-script and a small number of words in the Moroccan user-generated texts.

Furthermore, analysis of a sample of posts and photo comments on Facebook showed that Arab Facebook users extensively use CA written in Arabic script or transliterated in Roman script. SA is less commonly used. Facebook discourse is also characterized by invented spelling with a stretch of punctuation marks and long vowels. The Arabic numerals 2, 3, 6, 7, 8, 9 are used to substitute the Arabic phonemes (\dot{l} \dot{l}

The prior studies reported above show lack of studies that explore specific Arabic spelling errors and weaknesses in spontaneous online communication on social media, vis Facebook. Therefore, the present study aims to show how spelling in written Arabic is changing due to social media. A corpus of spelling deviations (faulty phoneme-grapheme correspondences) in Arabic Facebook Colloquial discourse will be examined to find out the following: (i) the types of errors made (changes in word constituents); (ii) the phoneme and grapheme changes and alteration processes exhibited; (iii) whether the spelling errors are made in discourse written in Standard Arabic or in Colloquial Arabic; (iv) why educated Arabs make those spelling errors when communicating or responding in CA, and whether spelling errors affect decoding, comprehension and communication by educated Arabs who speak different dialects.

Findings of the present study will be based on a content analysis of a sample of Facebook posts, comments, and photo captions written in different Arabic local dialects (CA). A sample of adult Arab Facebook users will be surveyed to find out the reasons for this new Facebook spelling phenomenon and whether it affects the decoding, comprehension and communication by Facebook users speaking other Arabic local dialects.

Results about the negative effects of Facebook on CA spelling are especially important, as they will help Arab Facebook users of all ages, in all Arab countries, discern how the different linguistic behaviours in Facebook communication are leading to Arabic language deterioration, decoding, comprehension and communication problems. Findings of the current study will also draw the attention of educators, policymakers, and linguists to an alarming reality, i.e., grave spelling errors in CA and will provide evidence concerning the current status of SA and CA on social media that shows the need for setting educational policies for enhancing Arabic spelling, usage and proficiency.

The study is significant because it will unveil the negative effects of social media on the spelling abilities of Arab Facebook users and find out the nature of these negative effects that social media have on Arab Facebook users' spelling ability.

2. The Arabic Writing System

Orthographically, Arabic has 25 consonants, 3 long vowel letters and 14 diacritical marks that include three short vowels and the glottal stop (hamza) diacritic (a) (See Table 1 and Image 1). Each Arabic consonants has a detached form and one or more attached forms in word initial, medial, and final positions. Arabic diacritics are placed over of or underneath a consonant letter whether it is in the initial, medial or final position in the word. In general, words in Arabic books, magazines, newspapers, T.V., social media and street signs are normally shown without any diacritics. Arabic speakers can read, write, and spell words without using any diacritics. Arabic speakers have no difficulty in decoding, pronouncing, and spelling words consisting of the same set of consonants but differ in the diacritics on top of each consonant. From context, they can figure out how a word without diacritics is pronounced with different short vowel sounds. Phonetically, Arabic has three short vowels /a/, /u/, and /i/ which contrast phonemically with their long counterparts /aa/, /uw/ and /iy/. /i/ as in 'tibb'; /u/ as in /kutub/; /a/ as in /katab'; /ii/ as in /fiil/; /uu/ as in /?uud/; and /aa/ as in /maal/. It has 2 diphthong sounds: /ay/ as in \(\text{Layla}\) and /aw/ as in \(\text{Layla}\) and /aw/ as in \(\text{Layla}\) f (Al-Jarf, 2023a; Al-Jarf, 2022; Al-Jarf, 2015; Al-Jarf, 1955; Al-Jarf, 1992).

Table 1: The Arabic Alphabet in Arabic Script and Phonetic Alphabet

ב	ي	و	Ą	ن	م	J	ك	ق	ۏ	غ	ع	ظ	Р	Ö	ص	ش	w	j	J	ذ	7	خ	ح	ج	Ĉ	C:	·Ć	1
,	у	w	h	n	m		k	q	f	gh	•	Ż	ţ	ģ	Ş	sh	S	Z	r	dh	d	kh	ķ	j	th	t	b	,

The Arabic glottal stop or Hamza¹ [ʔ] همزة (a) is not one of the 28 "full" letters in the Arabic alphabet. It appears in word initial, medial and final positions. The vowels before and after hamza determine the seat of hamza. The strongest vowels in Arabic are the [i] vowels (kasta ضحة), then [u] vowels (dhamma ضحة) then the [a] vowel (fat-ha فتحة). Initial hamza is always placed over or

¹ <u>Hamza</u>

underneath the long vowel [a:] (Alif أمامة ; أمامة ; أمامة ; أمامة ; or أ [u] as in *Umayya* أمامة ; أمامة ; or أ [u] as in *Umayya* أيمن أنس أمل or under [a:] and is pronounced إ [i-] as in *Enas* إليناس, or under [a:] and is pronounced إ [i-] as in *Enas* إليناس; *Ikram* إكرام *Eyad* . Medial hamza can be written on the long vowel [u:] في , can have a seat or be written on the line alone depending on the preceding and/or following vowels and whether they are long or short as in رؤيد مؤيد رؤي وفي فائزة رئيسة رئيفة وئام وائل نائلة سائد رائد مؤنس فؤاد مؤيد رؤى (Al-Jarf, 2018b; Al-Jarf, 2015; Al-Jarf, 2007; Al-Jarf, 1995; Al-Jarf, 1992).

Image 1: Arabic Diacritics with Examples²

y											
التَّشْكِيْل Diacritical Marks											
Tanween with Shaddah	Tanween تَنْوِیْن	Short vowels with Shaddah شُدُّة	Short vowels								
, s	-	3 -	-	fatHah فَتُحَة							
-	Ţ	* -	7	kasrah كَسْرَة							
2 -	- se	8 -	<i>9</i> -	ضَمَّة DHammah							
		<u>-</u>	• -	sukuum سُكُون							

There is a difference between how words are pronounced in isolation and how they are pronounced in connected speech. In the flow of speech, Arabic phonemes go through assimilation and elision processes. Pause and juncture affect how strings of Arabic words in a sentence are pronounced. Vowel length is affected by stress (Al-Jarf, 1990; Al-Jurf, 1994).

Regarding the syllable structure, Modern Standard Arabic has the syllable types shown in Table 2 below.

Table 2: The Syllable Structure in Standard Arabic

Syllable Types	Examples	Phonetic Transcription			
CV (light)	J (for)	/li/			
CVV (heavy)	(in) في	/fi:/			
CVC (heavy)	(how much) کم	/kam/			
CVVC (super-heavy)	(died) مات	/ma:t/			
CVCC (super-heavy)	(suppression; sadd (dam)	/Kabt/; /sadd/			
CVVCC	(poisonous) سامّ	/sa:mm/			

3. Methodology

3.1 Samples

3.1.1 Facebook Spelling Error Sample

A sample of 1180 spelling errors was collected from Facebook timeline posts, comments, and photo captions, written in Colloquial Arabic. All the spelling errors were written in Arabic script, not Romanised Arabic. To make sure that the spelling errors extracted from Facebook are valid (incorrect), the sample selected was verified by a panel of four Arabic language professors.

The majority of Arab spellers on the Facebook who made the errors have a college degree in different specialties: Education, computer science, languages and translation, business, science, law, agriculture, engineering, medicine and others. Some Arab spellers are even university professors and students majoring in Arabic language and literature and some graduated from Shariah colleges such as Al-Azhar. Duplicate spelling errors in the sample were included once only.

² https://blogs.transparent.com/arabic/basic-arabic-diacritical-marks/

3.1.2 Samples of Facebook Users

A random sample of 100 male and female Facebook users who are native speakers of Arabic was randomly selected for the surveys. The sample included Facebook users coming from different Arab countries: Egypt, Tunisia, Algeria, Jordan, Palestine, Syria, Yemen, Saudi Arabia, and UAE. They speak a variety of Arabic dialects. They represent different age groups: 18 to 60+ years old. These Facebook users answered an open-ended questionnaire-survey.

In addition, another sample of 55 Arab Facebook users for the decoding test to find out whether they can decode, pronounce, and comprehend a sample of Facebook posts written in different Arabic dialects, i.e., CA.

3.2 Questionnaire-Surveys

The questionnaire surveys consisted of open-ended questions about the reasons for using CA when communicating in Arabic script on social media, especially Facebook, and for using invented spelling and making spelling mistakes in their Arabic Facebook posts.

3.3 The Decoding and Comprehension Test

A sample of Facebook posts and comments written in Jordanian, Tunisian, Egyptian, Algerian and Sudanese Colloquial Arabic was selected. In each vernacular, certain words and phrases were underlined (See Table 3). Each subject was asked to read the excerpts and underlined words out loud and give their meanings.

Table 3: The Decoding and Comprehension Test

- البعد <u>الي</u> بيجي من غير زعل زى <u>الم ونذال</u> في لحظه⊚
- الله **يخربيت** التكنولوجيا فين الناس فين الحب <u>والسوئل</u>
- الله يرحمك يا أبي الأرض <u>**خصرت** ر</u>جل لكن السماء كسبت <u>ن**حماء**.</u>
- حزبالة، حتشاي، شورائيه، الهايكلو ، شدعوة، الطولة، يولاد، فمان، فسرك، الشخسامي
 - خويا راه مريض <u>ا**دعيولو**</u> بالشفاء لعلها ساعة استجابة ©©
- اقل حاجة احتراما للذات البشرية موش **كرذونة** لا و يزيد يقولولهم خلصوا **معاليم الصبيطار**
- المرة دي نلاقي نسيبنا <u>ا**لما شفناهو</u> ⊜**سلامنا لاحمد و عمر **اكون هسانۍ زاتو** ⊜و **عض** سلمۍ لمن تبكي عشان تتزكرني</u>
- صغيرات ماتو من **حرة** اهمال طبي، دواء مقطوع، معدات طبية مفقودة،.. لواحد يحب يقدم **بيركوه و بندموه و يعيفوه ويتيقروه** و يكرهوه <u>فروحو</u>. خليه ياقف وحدو لتونس
- · حكاية عادية انا حماتي و **حمويا هوما** يحبونا نجيبولهم <u>الحلبانة و الخضرة الاوراق</u> باش يفصوها و ينضفوها كي نقولو <u>لا يتغشو يحبو</u> يوسعو ياها يالهم نهار طويل <u>معندو علاش نراوها بالخايب</u> عالاقل يوسعو بالهم

3.4 Data Analysis

Phrases in the spelling error sample were broken down into words and words/phrases were broken down into words + initial particles; initial prepositions, attached prepositions, clitic pronouns, relative pronouns, and definite articles.

The spelling error locations were classified into single words, one-word, two-word and three-word phrases. They were also classified into vowels, consonants, clitic pronouns, definite article, particles, prepositions, and typographical errors. Percentages of words in each category were computed.

Moreover, spelling errors were analyzed according to the following strategies: Deletion, addition/insertion (of vowels and consonants), confusion/substitution, reversal, conversion, combining (words and/or morphemes), detachment of prep and other word parts, reduction (lengthening of vowels), faulty hamza, of vowels, consonants, and graphemes. Percentages of errors in each category were computed.

The spelling error data analysis was double-checked by two professors of Arabic and was compared with the author's analysis. Disagreements were resolved by discussion. There was a 96% agreement among all the raters.

Finally, responses to the decoding and comprehension test of misspellings were recorded. Likewise, responses to the questionnaire-surveys were compiled, analyzed and reported qualitatively.

4. Results

4.1 The Spelling Error Distribution and Gravity

Analysis of the spelling error data has shown that 64% of the errors were in single words, 34% were in two-word phrases and 2% were in three-word phrases. As for the spelling error gravity, i.e., the number of errors in deviant units, 76% had 1 error, 20% contained 2 errors, 2% had 3 errors and another 2% contained 4 errors.

In addition, the spelling error data analysis in the current study has revealed the following types of errors: Vowel errors (38%), consonant errors (7.6%), pronoun errors (19%), particle errors (17.6%), attached preposition errors (12%), pause and juncture errors (8%), definite article errors (8%), double /l/ + relative pronouns + Allah (8), hamza errors, i.e., glottal stop errors (7.6), and silent grapheme errors (6%).

An important observation in the current study is that Facebook has a negative impact on Adult Arab users' spelling when they write in their local dialect (CA) but they spell words and phrases correctly when they write in Standard Arabic (SA). However, since local dialects are a mixture of SA and slang words, Arab Facebook users spell SA words and phrases used in their local dialects incorrectly as in شاء اللهم . They do not seem to connect SA with CA, and thus spell the words when they use CA the way they pronounce them in their local dialect (vernacular), but spell the same words and phrases when they write their social media posts in SA correctly as they have learnt them in school. They do not learn how to spell CA in school.

The same negative effect of social media on spelling in some languages was found in some prior studies in the literature such as Schmitz, Chamalaun and Ernestus (2018) who found that both children and adults made spelling errors in homophonous verb forms on Twitter. In Cougnon, Maskens, Roekhaut and Fairon's (2017) study, the students' level of spontaneous writing and dictation was relatively low. The majority of students' errors were grammatical. All the students used traditional spelling in at least one of them. In Nigeria, use of social media had a negative effect on college students' spelling ability and the conventional way of writing in examinations and letters (Wilson, 2018). In Malaysia, some of the weaknesses found in Malay social media texts were spelling variations, and vowel-less words (Maskat & Rahman, 2020). Use of pairs of word forms covering seven types of spelling variation in English was found on Twitter and Reddit (Nguyen, Grieve, Scott, Bel & Zong, 2020). In Surkyn, Vandekerckhove and Sandra's (2021) study, the error rates reflected the effect of both paradigmatic and bigram support, and they affected gender, major and age.

Moreover, adult Arab Facebook users' spelling weaknesses in CA are consistent with findings of prior studies conducted with Arabic native speaking students. The most frequent errors among students in grades 1–9 were phonological (Abu-Rabia & Taha, 2006). Arab students between the age of 6 and 11 made errors in reading and spelling that persisted throughout the elementary grades, pointing to the difficulties involved in mastering the Arabic written language. Decoding errors mainly involved diacritics whereas misspellings were related to context sensitive rules, additions and omissions of letters, and to handwriting problems (Azzam, 1993). In a third study with dyslexic and normal students, the dominant type of error was mostly phonetic due to the limited orthographic lexicon. The Arabic orthographic system also contributed to these types of errors as many spelling errors resulted from poor knowledge of Arabic spelling rules (Abu-Rabia, & Taha, 2004). Similarly, Arabic-native-speaking children in grades 1 to 3 in Saudi Arabia made errors in letter recognition, sight word recognition, word recognition in context, sound-symbol association, and structural analysis sub-skills to identify the difficulties that students have in word identification (Al-Jarf, 2018b).

Unlike the current study which showed the negative effects of Facebook on adult Arab users' spelling in CA, some prior studies such as Roua, Yunusb and Sulimanc's (2019) detected positive effects of social media on the writing skills of primary school students learning ESL in Malaysia. In Nigeria, students who do not know how to spell correctly even in formal settings showed some improvement (Oko-Epelle & Fajoye, 2022). Likewise, Verheijen (2017) reported that use of WhatsApp had a direct and positive impact on Dutch teenagers' spelling in their written schoolwork. Dutch teenagers made fewer spelling mistakes in their written schoolwork. There was a positive connection among people with a lower educational level than among people with a higher educational level.

4.2 Strategies Used in Misspellings

Analysis of the spelling error data indicated that Arab Facebook spellers completely ignore spelling rules in SA. They spell words phonetically, i.e., the way they pronounce them in their own dialects, especially in cases of juncture within phrases. The same word or phrase, in the same dialect, is spelled differently by different users and two different words are sometimes spelled the same. Analysis of the Arab adult misspellings (deviations) on Facebook revealed the following faulty spelling strategies. Some examples may appear under more than one strategy as they might contain 2 or more spelling errors:

- 1) Deletion of graphemes (35%) such as the definite article {-al}, vowels, vowels from particles and prepositions, the hamza, قألف واو الجماعة in:
 - كانو (كانوا)، وبليل (وبالليل)، بشام (بالشام) ، وشوف (وأشوف)، يسطي (يا اسطى)، ع صف (عم بينادوا ع الصف)، عبينادو (ايش دعوة)، لشايفينو (اللي شايفينه)، شدعوة) وميتحركش (وما بيتحركش)، ياخونا (يا إخواننا)، يولاد (يا أولاد)، فمان (في أمان)، فسرك (في سرك)، ف المكتب (في المكتب)، يخلصو (يخلصوا)، والديكتتور (والدكتور)، الذكر (الذكرى).

- 2) Combining two or three words, a word and a detached particle, a word and a clitic pronoun, a word + clitic pronoun + prepositional phrase, initial particle and or a preposition (28%) and blending them together as one word without blanks as in:
 - Two and three words: (ولا تضايقي ;ولادايقي ;ولادايقي)
 - Word + Clitic: (يكتب له) بكتبلو- بقالو (بقى له) قاللي (قال لي);
 - فبيوتهم (في بيوتهم) ،(بضمنلك (بأضمن لك) ، تسلميلي (تسلمي لي)، بدعيلك (بأدعي لك) :Word + PP ●
 - Word + clitic + PP: (قالهاله (قالها له); قالهاله
 - Initial particle + word + PP (يضمن لك);
 - Initial particle + word (ما بیحصلش (ما بیحصلش)، مجاش (ما جاش یاهلاتری (یا هل تری)، ندعیولهم): Initial particle + word (ما تقلقش)، مبیعرفش (بندعی لهم)، یدکتور (یا دکتور)، یسطی (یا اسطی)، موارکش (ما وراکش) مبنعرفش
 - ;(من عنده)، مالخداع (من الخداع) منعندو; عنجد (عن جد)، منجد (من جد)، فمان (في أمان):Initial prep + word ●
 - شورائيه (شو رآيه)، (النهار ده) النهاردة السنادي (السنة دي)، الشخسامي (الشيخ سامي)، حدشايف (حد شايف) Word + word
 عبينادو (عم بينادوا)، (مسا الفل)، مسالفل هودا (هو دا)، الولادعاملين (الأولاد عاملين)،
 - Relative propronoun + llلي في)، البلقطوا (اللي لقطوه)، البشحدوا (اللي بيشحدوا)، بيطلعلك (بيطلع لك)،) word: (اللي الفتكر (اللي افتكر)، للهايكلو (اللي هايكلوا) اليفتكر (اللي افتكر)،
- 3) Confusing vowel and consonant graphemes and substituting them with others (46%), especially in the case of graphemes which phonemically contrast with their long counterparts as in /t/ and /T/, /k/ and /q/, /D/ and / z/, اللتوين والنون، الفتحة ،الهاء والتاء المربوطة، الألف المقصورة والهاء الألف المقصورة والهاء اللوف المقصورة والهاء اللياء والهاء، المدة والهمزة، ألف المد والألف المقصورة، والهاء اللياء والهاء، البياء والهاء، الألف المقصورة والهاء الواو والهاء، المدة والهمزة، ألف المد والألف المقصورة، والهاء الياء والهاء، العام والهاء، اللياء والهاء، اللياء والهاء، اللياء والهاء، اللياء والهاء، اللياء والهاء، المدة والهاء، المدة والهاء، اللياء والهاء، اللياء والهاء، اللياء والهاء، اللياء والهاء، وقصورة والهاء، الهري (ظهري)، ذبادي (زبادي)، ضروف (ظروف) ، العضيم (العظيم)، فطيعة (فظيعة)، مظبوطة (مضبوطة)، نضيف(نظيف)، وضهرج (وظهرك)، هيروض عليا (هيرد علي)، استعملتو (اللي هيأكلوا)، دايمن (دائماً)، كشافن ، وأوراه)، لاحقتو (لحقته)، لروحو (لوحه)، لشايفينو (اللي شايفينه)، منعندو (من عنده)، الهايكلو (اللي هيأكلوا)، دايمن (دائماً)، كشافن ، البلادن اللي بلادهن)، شكران (شكراً)، شوكرن (شكراً)، حقيقتا (حقيقة)، فتات (فتاة)، مصرياة (مصريات)، وخلصة (وخلصت)، ردة (ردت)، للللادن اللي بلادهن)، وقدمة (وقدمت)، بقة (بقي)، بقا (بقي)، مسمة (مسمي)، اشاعه (إشاعة)، حرجه (حرجة)، احلا (أحلي)، بتمنا (باتمني)، ومرضي (ومرضي)، ويتأمي (ويتأمي)، سبته (سابته)، وبطنوا (وبطنه)، وعمله (وعملوا)، يتكلموا)، بكرا (بكرة)، فكرا (فكرة)، للدرجادي وللدرجة دي)، معانه (معانا)، وربنه (وربنا)، ويحكلنه (ويحكي لنا)، كلنه (كلنا)، عليه (علي)، عمرو (عمره)، يبعتلو (يبعت له)، لوفات (لوفاة)، الثانوية (السنوية).
- 4) Addition of vowels where a short vowel should be used, (16%) as in:
 ، (باتني (وبتني)، رباتني (خلتني)، داتني (خلتني)، داتني (باتني (ربتني)، رباتني (ربتني)، داتني (خلتني)، داتني (التني (داتني)، داتني (التن)، لكي (لك)، الكي (لك)، المنخفيض (المنخفض)، قومت (قمت)، ح اقراهو (ح اقراه)، ابوكوا (ابوكم)، عليكوا (عليكو/عليكم)، انتي (انت)، لكي (لك)، الكي (لك)، التنت (انت)، تكبرو (تكبروا)،

 No silent "I" should be used after و i.e., أله واو الجماعة in word final position. Silent "I" is only used in masculine plural verbs.
- 5) Reduction of phrases and graphemes especially the definite article after moon letters as only the /l/ is pronounced in spoken Arabic (10%) as in: لبنات (البنات)، لجديد (الجديد)، لخارجيه (الخارجية)، لخرة الأخرى)، لكبير (الكبير)، لمناصب (المناصب)، لولاد (الأولاد، الولاد (الأولاد)، الولاد (الأولاد)، ملوا لساحات (الساحات)، مسالفل (مساء الفل/مسا الفل)، وقالي (وقال لي)، اليل (الليل)، يلا (يالله)، فاي (في أي)، فخراب (في خراب)، الهايكلو اللي هياكلوا)، الفي (اللي في)، لشايفينو (اللي شايفينه)، اليفتكر (اللي يفتكر).
- (11%) as in: (المجبهم (اللي بحبهم)، بتنجان (بيتنجان)، بذنجان (باذنجان)، برحتك (براحتك)، بضمنلك (بأضمن لك)، جعنين (جعانين)، حببتي (حبيبتي)، حبين البحبهم (اللي بحبهم)، بتنجان (بيتنجان)، بذنجان (باذنجان)، برحتك (براحتك)، بضمنلك (بأضمن لك)، جعنين (جعانين)، حببتي (حبيبتي)، السؤله (حابين)، داكترة (دكاترة)، ديمة (دائماً)، سعات (ساعات)، الشخسامي (الشيخ سامي)، الشخسعد (الشيخ سعد)، شورمه (شاورما)، الطوله (الطاولة)، عوز (عاوز)، عيزه (عايزة)، فلحين (فالحين)، موضيع (مواضيع)، يتولنا (يتولانا) يسمحك (يسامحك)، ي مدام (يا مدام)، ياخونا (يا إخواننا)، يولاد (يا أولاد)، مبلحقش (ما يلحقش)، ماعترفت (ما اعترفت)، محدش (ما حدش)، وميتحركش (وما بتحركش)، ام اشوف (أما اشوف)، يحافظ (يا حافظ)، جلبية (جلابية)، شدعوة (ايش دعوة).
- 7) Lengthening of short vowels in medial and final position with a long vow, especially with feminine clitic pronouns, when words are preceded by an attached particle, (9%) as in: (قلت)، قلتي (قلت)، قلتي (قلت)، انتكى (أنت)، قلتي (قلت)، قلتي (قلت)، يوظفوكي (يوظفوك)، سوفا (سوف)، عينيا (عيني)، فيا كنتي (كنت)، لكي (لك)، يجزيكي (يجزيك)، منذو (منذ)، هيروض عليا (هيرد علي)، بي سلام (لسلام)، توفاو (توفوا)، رائس (رئيس)، رائيك (رأيك)، شوكرن (شكراً)، فا احنا (فاحنا)، فخوفت (فخفت)، لا يسماح (لا يسمح)، مودرس (مدرس)، فا أكيد (فأكيد).

- اتفاجئت (تفاجأت)، اسئل (اسال)، اقرئووا (اقرأوا)، بداءت (بدأت)، البذائة (البذاءة)، بئلك (بقلك)، sa in: (هاجئت (اسال)، اقرئووا (اقرأوا)، بداءت (بدأت)، البذائة (البذاءة)، بئلك (بقلك)، فداءا (فداءً)، القباءل (القبائل)، التئمل (التأمل)، ئلبي (ألبي، قلبي)، رائيك (رأيك)، سائت (ساءت)، شورائيه (شو رايه)، عئبال (عؤبال، عقبال)، فداءا (فداءً)، القباءل (القبائل)، الموءمنين (المؤمنين، نتفاجئ (نتفاجأ)، وتسؤ (وتسوء)، وشئنه (وشأنه).
- 9) Detachment of words and attached particles and/or prepositions (3.5%) as in the following misspelled phrases: عل أكيد (ع الأكيد) ، ف أنا (فأنا)، م علقت (ما علقت)، من ذو (منذ)، ف اعمل (فاعمل).
- 10) Spelling errors in phrases that contain Allah as in: الهم (اللهم)، اللهوما (اللهم)، الله اما (اللهم)، نشالله (ان شاء الله)، وانشالله (وان شاء الله)، يالله (يا الله)، مشالله/مشاء الله (ما شاء الله)، مش الله (ما شاء الله)، فمان الله (في أمان الله)، كثرالله (كثر الله)، (حزب الله)، حزبالة، ياله (بالله).

The faulty spelling strategies used by Arab spellers on Facebook are similar to those used by Arab freshman students in spelling English. The strategies that freshman students used were omission/deletion, substitution, insertion and reversal in that order. The students substituted some vowels by another faulty vowel, reduced a double consonant into a single one substituted the target vowel by a digraph, and deleted vowels altogether. On average, poor spellers substituted vowels by others, deleted middle vowels, reduced double letters to one, added middle vowels, and reduced vowel digraphs to single vowels (Al-Jarf, 2008; Al-Jarf, 2007b; Al-Jarf, 2007c).

Spelling strategies used in the current study are similar to those used in the Arabic transliteration of shop names in Saudi Arabia which included splitting words into syllables or two parts اكس و ريز (Accessories); كلاي ماكس (Climax); and combining two words and spelling them as one lexeme (شرمبشاك) (8%). 52% of the deviant Arabic transliterations are in vowels and diphthongs; 36% are inaccurate and inconsistent Arabic transliterations of consonants. In 11.6% of the shop names, ch was reduced to sh; and /g/was transliterated in 3 ways, in addition to variant spellings of the same name shop names especially those from French, Italian and Turkish (Spring سبرينق سبرينق سبرينق سبرينق مالالله (Al-Jarf, 2023b; Al-Jarf, 2022a). They are also similar to errors produced by student interpreters in pronouncing foreign proper nouns such as deleting part of the Proper Noun, whether it is a vowel or consonant. Phonemes were changed and substituted by another consonant, a shorter or longer vowel, or another syllable (Al-Jarf, 2022b).

An underlying cause of the wide variety of spelling errors and faulty strategies used by Arab Facebook users in this study is the subjects' unsatisfactory awareness of the different aspects of Arabic phonology, morphology, and orthography (Brosh, 2015). Spelling anomalies also reflect Arab Facebook spellers' inability to normalize the spelling of words and phrases that are used in both SA and CA.

The drastic spelling weaknesses such as deleting final and middle vowels, confusing graphemes with similar sounds, and spelling the same word or phrase differently, whether in the same dialect or different dialects. It seems that the non-standard and deviant Arabic spelling of CA used on Facebook is undergoing a simplification process. In addition, Arab Facebook spellers, nowadays, seem to follow Zipf's principle of the least effort, i.e., the expenditure of the least amount of effort to performing the writing task on Facebook. In the current study, Arabs spellers on Facebook do not seem to recognize word boundaries in the flow of colloquial speech. They connect several words together as one word, ignoring the pauses between them. They cannot connect phonemes in words and phrases they use in their colloquial speech with the graphemes they represent in writing and cannot distinguish vowel length (the long and 3 short vowels) in their spoken dialect. They delete final and middle vowels, delete the vowels in particles and prepositions, reduce the definite article "/al-/ to /l/, reduce double letters /ll/ and the relative pronoun /illi/ to /l/ and /li/, substitute long vowels by short ones and vice versa. Some graphemes are no longer used in CA spelling such as a long which is pronounced /a:/ and used only at the end of certain words. They tend to use a long letters /li/ instead of the short /a/ represented by a diacritic, which is not usually shown in the written form of the word and others.

4.3 Effect of Using Unconventional Spelling on Decoding and Comprehension

Analysis of the subjects' responses to the spelling/decoding test showed that many subjects had difficulty decoding and pronouncing words and phrases and understanding what other Facebook users were trying to say. It was noticed that spelling errors slows down reading. When the same word or phrase is spelled differently, this might cause ambiguity and confusion.

The difficulties that adult Arabs have in decoding the deviant spelling in CA on Facebook are similar to the difficulties that Arab students and faculty had in decoding the Arabic transliterations of shop names in Saudi Arabia. Students and faculty had difficulty decoding, سيلان إيجل أوتفترز, أكسسوريز, بايليس, باربكيوتونايت, لولو سلبريت, ذا تشيلدرنز بليس أميريكان إيجل أوتفترز, أكسسوريز, بايليس, باربكيوتونايت, لولو سلبريت, ذا تشيلدرنز بليس مصله and others because they are not familiar with those shop name in the foreign language, and because of the absence of short vowels (diacritics) in the Arabic spelling (transliteration) and misrepresentations of the vowels and some consonants (Al-Jarf, 2022a). Likewise, adult Arabs in the current study could not decode words and understand posts from Arabic dialects other than their own because they are not familiar with them and because of the spelling anomalies of words and phrases.

In another study by Al-Jarf (2005), EFL freshman students misspelled 41.5% of the words on the dictation, and 48% faulty responses on the decoding test. The students' spelling errors and decoding responses revealed strong correlations between spelling ability, and decoding skills. This means that good spelling ability in EFL is related to good decoding skills. The better the decoding abilities, the fewer the spelling errors. When decoding skills are poor, spelling ability is also poor.

4.4 Why Facebook Arab Users Use Unconventional Spelling

Users feel they are speaking (conversing with others), not writing. Therefore, they write the way they speak. Some stated that It is more suitable to use CA, their vernacular or local dialect than SA. They like to write the way they speak and prefer to express their opinions in the spoken language. They do not think about spelling and grammar while writing their posts or commenting on their Facebook friends' posts. They think it is easier for them to express themselves in slang and CA than SA, which is more formal and inappropriate for casual communication. They feel they are talking with each other, not writing. Some believe that using the colloquial form is effortless, whereas use of SA requires attention to structure, spelling and formal use of the language. Others expressed their inability to use SA as they have difficulty figuring out the correct spelling and grammar, despite the fact that they had used SA in schools for 12 years and studied math, science, geography, history, social studies, religion, and poetry, grammar, reading, and composition in SA.

The participants added that when they write something on Facebook, they are in a hurry, they write posts on their mobile phone casually, and they do not think about spelling and grammar. Many Arab Facebook spellers do not revise or edit what they write on Facebook neither before nor after they post it, as they feel that nobody checks what they write, nor picks on their spelling or grammatical errors.

Some Facebook Arab users are specialists, such as medical doctors or preachers, and think that they would reach a wider audience when they deliver their message and information in CA and write the way most Arabs in the Facebook community write. They think CA is easier to comprehend by people from different backgrounds and educational levels.

Few participants added that they write their posts and comments in CA because when they use SA, their friends mock them and think they use SA to show off.

Some young Arabs in some prior studies reported that the unconventional Arabic spelling forms are trendy in Internet communication which is informal and casual. Some have difficulty expressing themselves in Standard Arabic. New educational and linguistic policies for reinforcing the use of Standard Arabic among the young generation need to be established (Al-Jarf, 2021; Al-Jarf, 2018; Al-Jarf, 2011).

The subjects' views in the current study are confirmed by Buri (2017) who indicated that when texting, most people do not pay attention to correctness. The amount of errors she found in her data is evidence that language deterioration can be pointed out in the online communication of the residents of Miskolc. She concluded that some errors originated from the person's poor grammatical knowledge. Respondents in Buri's study stated that electronic writing usually includes mistakes, and people hardly ever proofread their messages before sending or posting them on social media.

5. Recommendations

Arabic dialects that are commonly spoken across the Arab world are not the standard variety of the Arabic language that is usually taught at schools and used in textbooks, print media and used in formal settings. The different Arabic dialects are increasingly used in written communication on social media. Such spoken dialects do not have standard orthographies, i.e., phonemegrapheme correspondences, because they are not taught at school and the colloquial forms of the words are not linked to the Standard Arabic word forms. To minimize the spelling errors that Arabic Facebook users make when they write posts and comments in their local dialect, this study recommends the following:

1) Since Arab Facebook users spell words and phrases correctly and accurately when they write their posts in SA, they need to maintain the habit of clarity in their written communication especially correct spelling on social media. Whether they

write in SA or CA, they should practice metalinguistic skills, think about words and phrases and at least spell words and phrases shared by SA and CA correctly.

- 2) Schools and universities should develop students' multi-skills to be able to switch between formal (SA) and informal communication (CA) across different media and communication situations. School teachers and college instructors should draw students' attention to the spelling errors they make on social media when they communicate in CA and what the correct forms are. Social media users who are competent in SA grammar and spelling should post corrections to the common spelling errors.
- 3) More time should be channelled and spent on productive academic engagement and institutions should come up with ways of combatting such virtual platforms academically to enhance students' spelling ability since they are so addicted to social media (Wilson, 2018).
- 4) Adding a spelling error detection and correction application to social media. This application is typically based on a dictionary (or reference word list), an error model and a language model (Attia, Pecina, Samih, Shaalan & Van Genabith, (2016); Attia, Pecina, Samih, Shaalan & Van Genabith (2012).
- 5) Creating a spelling correction corpus for multiple Arabic dialects such as the MADAR CODA Corpus, which is comprised of a collection of 10,000 sentences from five Arabic city dialects (Cairo, Beirut, Doha, Tunis and Rabat) represented in the Conventional Orthography for Dialectal Arabic (CODA) in parallel with their raw original form. Such a corpus should be a publicly available resource to support spelling correction and text normalization for Arabic dialects (Eryani, Habash, Bouamor & Khalifa, 2020).
- 6) Utilizing the new corpus provided by QALB (Qatar Arabic Language Bank) project which is an annotated corpus of sentences with errors and their corrections. The corpus contains some tools that include edit, add before, add after, merge, split, move and others (Hassan, Aly & Atiya, 2014).
- 7) A data-driven spelling normalization system can be embedded in social media for user-generated text. This system is comprised of an orthographic variants lexicon of Moroccan words that utilize an unsupervised approach and character neural embedding. This lexicon can be useful for several natural language processing tasks such as spelling normalization (Tachicart & Bouzoubaa, 2021)

Finally, the impact of different types of social media on Arabic-speaking students' reading, and writing skill development, and their impact on the students' spelling and language use in written schoolwork is still open for further investigation in the future.

Conflict of Interest: The author declares no conflict of interest.

ORCID ID: https://orcid.org/0000-0002-6255-1305

Publisher's Note: All claims expressed in this article are solely those of the authors' and do not necessarily represent those of their affiliated organizations, or those of the publisher, editors and reviewers.

References

- [1] Abu-Rabia, S. & Taha, H. (2004). Reading and spelling error analysis of native Arabic dyslexic readers. *Reading and Writing: An Interdisciplinary Journal*, *17*(7-8), 651–689.
- [2] Abu-Rabia, S., Taha, H. (2006). Phonological Errors Predominate in Arabic Spelling Across Grades 1–9. *J Psycholinguist Res* 35, 167–188. https://doi.org/10.1007/s10936-005-9010-7.
- [3] Al-Jarf, R. (2023a). English spelling of the glottal stop and voiced pharyngeal fricative in Arabic personal names by educated Arabs on Facebook. *International Journal of English Language Studies*, *5*(1), 11-22. DOI: 10.32996/ijels.2023.5.1.2. Google Scholar
- [4] Al-Jarf, R. (2023b). Semantic and syntactic anomalies of Arabic-transliterated compound shop names in Saudi Arabia. *International Journal of Arts and Humanities Studies (IJAHS)*, 3(1), 1-8. DOI: 10.32996/ljahs.2023.3.1.1 Google Scholar
- [5] Al-Jarf, R. (2022a). Deviant Arabic transliterations of foreign shop names in Saudi Arabia and decoding problems among shoppers. International Journal of Arts and Humanities Studies. International Journal of Asian and African Studies (IJAAS), 1(1), 17-30. DOI: 10.32996/ijaas.2022.1.1.3. Google Scholar
- [6] Al-Jarf, R. (2022b). Student-interpreters' foreign proper noun pronunciation errors in English-Arabic and Arabic-English media discourse interpreting. *International Journal of Translation and Interpretation Studies (IJTIS)*, 2(1), 80-90. Doi: 10.32996%2Fijtis.2022.2.1.11. ERIC ED619940. Google Scholar
- [7] Al-Jarf, R. (2021). Impact of social media on Arabic deterioration. *Eurasian Arabic Studies. Eurasian Arabic Studies, 15,* 18-34. <u>Google</u> Scholar

- [8] Al-Jarf, R. (2020). How interested Are Arab universities in supporting the Arabic language? *Eurasian Arabic Studies, 13,* 32-59. <u>Google Scholar</u>
- [9] Al-Jarf, R. (2019). Effect of social media on Arabic language attrition. Globalization, Language, Literature, and the Humanities Conference in Honour of Mnguember Vicky Sylvester, Abuja, Nigeria. **ERIC** ED614077. Google Scholar
- [10] Al-Jarf, R. (2018a). Marginalization of the Arabic language by educational institutions in the Arab World. *Eurasian Arabic Studies, 1*(2), 22-93. Google Scholar
- [11] Al-Jarf, R. (2018b). First, second and third grade students' word identification difficulties. Eurasian Arabic Studies, 8, 22-93. Google Scholar
- [12] Al-Jarf, R. (2015). English and Arabic writing systems for translation students. Retrieved from www.academia.edu. Google Scholar
- [13] Al-Jarf, R. (2011). The language of adult social networks. Topics in Linguistics, 8 (December), 48-51. Google Scholar
- [14] Al-Jarf, R. (2008). Listening-spelling strategies in EFL Arab college students. College of Languages of Translation, King Saud University Seminars. Google Scholar
- [15] Al-Jarf, R. (2007a). Developing reading and literacy skills in Saudi Arabia. DOI: 10.2139/ssrn.3849626. ERIC ED497944. Google Scholar
- [16] Al-Jarf, R. (2007b). Faulty strategies of EFL freshman spellers. TESOL Arabia Conference "Unity and Diversity", Dubai, UAE. Google Scholar
- [17] Al-Jarf, R. (2007c). Faulty strategies of EFL freshman spellers in Saudi Arabia. College of language and translation. King Saud University, Riyadh, Saudi Arabia. Google Scholar
- [18] Al-Jarf, R. (2005). The effects of listening comprehension and decoding skills on spelling achievement of EFL freshman students. English language and literature Education. *Journal of the English Language Teachers in Korea (ETAK), 11*(2), 35-50. ERIC ED625524. Google Scholar
- [19] Al-Jarf, R. (1995). *An Arabic word identification diagnostic test for the first three grades*. Center for Educational Research. College of Education. King Saud University. <u>Google Scholar</u>
- [20] Al-Jurf, R. (1994). Contrastive phonetics for translation students. King Saud University. Google Scholar https://www.researchgate.net/publication/281003427
- [21] Al-Jarf, R. (1992). Classification of word identification exercises in elementary school reading textbooks in Saudi Arabia. Third Yearbook of the Saudi Educational and Psychological Association. Google Scholar
- [22] Al-Jarf, R. (1990). English and Arabic phonology for translation students. Google Scholar https://www.researchgate.net/publication/281003181
- [23] Attia, M., Pecina, P., Samih, Y., Shaalan, K. & Van Genabith, J. (2016). Arabic spelling error detection and correction. *Natural Language Engineering*, 22(5), 751-773.
- [24] Attia, M., Pecina, P., Samih, Y., Shaalan, K. & Van Genabith, J. (2012). Improved spelling error detection and correction for Arabic. *Proceedings of COLING 20*, pp. 103-112.
- [25] Azzam, R. (1993). The nature of Arabic reading and spelling errors of young children. Reading and Writing, 5(4), 355-385.
- [26] Brosh, H. (2015). Arabic spelling: Errors, perceptions, and strategies. Foreign Language Annals, 48(4), 584-603. https://doi.org/10.1111/flan.12158
- [27] Buri, A. (2017). The effects of social media on the language: Do social networks have damaging or constructing effects on language? University of Miskolc, Hungary.
- [28] Cougnon, L., Maskens, L., Roekhaut, S. & Fairon, C. (2017). Social media, spontaneous writing and dictation. Spelling variation. *Journal of French Language Studies*, 27(3), 309-327. https://doi.org/10.1017/S095926951600020X
- [29] Eryani, F., Habash, N., Bouamor, H. & Khalifa, S. (2020). A spelling correction corpus for multiple Arabic dialects. In *Proceedings of the 12th Language Resources and Evaluation Conference* (pp. 4130-4138).
- [30] Hassan, Y., Aly, M. & Atiya, A. (2014). Arabic spelling correction using supervised learning. arXiv preprint arXiv:1409.8309.
- [31] Maskat, R. & Rahman, N. A. (2020). Categorization of malay social media text and normalization of spelling variations and vowel-less words. *Int. J. Adv. Sci. Eng. Inf. Technol, 10*(4), 1380-1386.
- [32] Nguyen, D., Grieve, J., Scott, D., Bel, N. & Zong, C. (2020). Do word embeddings capture spelling variation? In *Proceedings of the 28th International Conference on Computational Linguistics* (pp. 870-881). International Committee on Computational Linguistics. https://doi.org/10.18653/v1/2020.coling-main
- [33] Oko-Epelle, L. & Fajoye, A. (2022). The effect of social media English on students' spelling ability: a study of redeemer's university undergraduates. SAPIEntia Foundation Journal of Education, Sciences And Gender Studies, 4(3).
- [34] Roua, L., Yunusb, M. & Sulimanc, A. (2019). The influence of social media on spelling skills among primary school students. *International Journal of Innovation, Creativity and Change, 7*(6), 284-297.
- [35] Schmitz, T., Chamalaun, R. & Ernestus, M. (2018). The Dutch verb-spelling paradox in social media: A corpus study. *Linguistics in the Netherlands*, 35(1), 111-124. https://doi.org/10.1075/avt.00008.sch.
- [36] Surkyn, H., Vandekerckhove, R. & Sandra, D. (2021). The impact of analogical effects and social factors on the spelling of partially homophonous verb forms in informal social media writing. *Written Language & Literacy, 24*(1), 1-37. https://doi.org/10.1075/wll.00046.sur
- [37] Tachicart, R. & Bouzoubaa, K. (2021). Moroccan data-driven spelling normalization using character neural embedding. *Vietnam Journal of Computer Science*, 8(01), 113-131. https://doi.org/10.1142/S2196888821500044
- [38] Verheijen, L. (2019). The impact of computer-mediated communication on literacy. Ph.D. Thesis. Radboud University, Nederlands.
- [39] Wilson, F. (2018). The effect of social media on the spelling ability of students: A case study of federal college of education (FCE) Yola. *Edelweiss Applied Science and Technology*, *2*(1), 2. https://doi.org/10.33805/2576-8484.153
- [40] Zipf, G. K. (1949). Human behavior and the principle of least effort. Addison-Wesley Press. <a href="https://doi.org/10.1002/1097-4679(195007)6:3<306::AID-JCLP2270060331>3.0.CO;2-7">https://doi.org/10.1002/1097-4679(195007)6:3<306::AID-JCLP2270060331>3.0.CO;2-7

Appendix: Screenshots of Informal Facebook Posts and Comments with Spelling Errors لا قهوة لا عصير لا حتشاي، انزيد 50 دينار و **Ahmed Algarf** Monia Monia نمشی فی ای خطوط جویة اخری... Dec 28, 2015 at 10:01 · @ لا.حول..ولا.قواة..الا..باله. Tunisair راك وليت ما تنطاقش... الذكر الثانويه لوفات والدى القدير...الله.يرحمهم التبرير بتاعهم: مشكلة في التموين على خاطر 114/41 .ويجعل.مثواهم..الجنات..النعرم. الهم اغفرله وارحمه ربى.يرزقق..الصبر. البطاطس البوريه الجيش والشعب أيد واحده... **Omla Asad** مفيش اسهل منها هتسلوقى البطاطس الله يبعتلو ضربة تقرف عمرو لهلأبن طب مینفعش نبقی میزانیه واحده. وتهرسیها وتحطی ۱\۲ کوب لبن وهی الحرام مستشفيات واحده!!! Mon at 3:02 PM · Like · • 2 · بتتهرس وتحطى كل التوابل اللى نوادي واحده بتحبيها وتفريدها فى صينيه مدهونه مرتبات واحده 🍩 محمد السولق سمنه وتحطى على الوش جبنه رومى مساكن واحده 걸 وفاء شكلك اخده محل اديس بدنا مبشوره وبيضه بجد طعمها يهبل طب أنتو واحده واحنا واحده نعرف اديس شورائيه الله يحميكن انتو كل يوم بصحى فيه بكير عشغل بيجيني ٣ افكار : اترك الشغل و اقعد بلبيت ، اترك البيت و اقعد بشغل ، اترك الشغل و البيث و اقعد بشارع 🙈 محمود ألضامر ثابت نعمان جاد اضحكو ياعرب هودا النتو فلحين في مش الله صاير شب الله يخلي و تفرحو في حصل منذ لحظات: يارب لو فيه ذنب مانع دُعايا **Monia Monia** هيدا لشايفينو وزير التربية بلبنان ايه ايه ما هان لا.حول..ولا.قواة..الا..باله. يوصلك ومأخر فرحتى عليه يشوف طفلتين سورييتين عم يدرسو ع القدير...الله.يرحمهم وملغبط حياتي،اغفرهُ جانب الطريق نزل ليشوف وجعن و يقدملن .ويجعل.مثواهم..الجنات..النعرم. المساعدة اللازمة كرمال يتعلمو .. و صورتو واهدینی لیك. ربى.يرزقق..الصبر. بلمخفي 🕰 .. بهل سهولة تغيب عنيبحبك ياخيي يانور عيني مفاجاءة حلوة اووووى الاقى شوشو جيبالى كمال رحل عني شهيد بلجنة ترك لدني وسافرع سواح بين الطرقاط وفي الطريق الي احلى بوكيه ورررد ع الصبح ...كل سنه وانتى جنتو وهاجر مابنسا ضحكاتك ياخيي رجاااع ليبيايارب استرةعليناويتوب علينا ربنا طیبه یا حبیبتی ربنا یسعدك رجاااااااااع او خدنی لعندك 🈔 🥹 🥹 رحمة الله عليكى يا امى في ناس مهما تستجدع معاهم الداردشة موعطلا نظرن 28 سنة على فراقق الله ما بيطمرش فيهم تحس إنهم راضعين لضعف لنترنت اعتذر. اما ارحمها وارحم ندالة أو مفطومين على قلة أصل شكرن اموات المسلمين جميعا الله أنا ما ابتعد عن رؤية ما توقدموه لّنا انا واحد من الناس الى متابع حضرتك البشائر تهل .. ونفسى تسطضيفى الكاتب اسلام محمود ولاكن ليا عزرى نظراً لما أعانيه من اليوم تطمنتةمن تحليلي السي تي الاخير وبحمد هو من طنطا بیکتب رویات جمیله جدا فلو بعد ازن حضرتك طلعيه مع حضرتك الإنتر نيت وا بضء شديد في تحميل الرم فقط في الرئهووبازن الله علاجه سهل في البرنامج وهو نفسو اوي يطلع مع وايضا وصول اساتزتي واختي الغالية الستازة ام على الفيس بوك وشكراً لكم جميعاً على فا هيبقا سعيد اوي لو حضرتك إلا اهتمام البالغ فدائما الاخبار .. تاتى مع الاناس الغاليين . اصطضفتيه من قبلكم إلينا والله مبسوط إني اشتغلت حفلة زي دي معاكم ابراهيم اندونيه النهارده الذكرى السنوية شوكرن انا ما بحب اطراقبني اش بعمل 🙂 .. تسلم العده والايادي والأضنين والنعناع لبويه الله يرحمه ويغفر قيمنى من صفحتك شوكرن الى جهودك والكوكا الكانت للركب 🎸 🏮 📖 🔐 . ربنا يحقق لى الفي بالى بس ويمنع العوارض ما اترقبنی واله بقدم شکوه هل يوعقل يا سيدى الفاضل يا مدير المدرس ان والله مبسوط إني اشتغلت حفلة زي دي معاكم بل نسبه النه انتي دخلتي قلوبنا♡ 🧐 🎡 الطّلاب لها عشان للاسزا الحين لم يستلمو الكتب 🤚 #العراق #سوريه ربّي تفرّجهه علّه امت محمد (ص) عله جميع الناس وترجع الى 🙂 .. تسلم العده والايادي والأضنين والنعناع لهزا الحين عشان ابو الولد على المعاش ولم يوجد والكوكا الكانت للركب 🎻 🌓 📖 .. ربنا يحقق معة فلوس والله لشكيكو للوزير لى الفي بالى بس ويمنع العوارض دورهم 🥶 سالمین 🞢 🎢 اجدعان محدش عنده مركب سلف أروح عليه كى تصادفك ليام لأتمنها خفيفات كل يوم بصحى فيه بكير عشغل بيجيني ٣ افكار : اترك الشغل و اقعد بلبيت ، اترك البيت و اقعد الكليه الكهربه قطعه الهم امطر علينا كشافن اصل في الدورات رد بالك منها. بشّغل ، اتركُ الشغل و البيت و اقعد بشارع 🥪 انامعتشي شايف حاجه #algarf #

انك تتجنى معلقتين دقيق بالمياه لحد ما تبقى زي الطحينة وتحط عليهم بيضتين وتقليبها في بعض وبعد بن تقطعت طماطميه وللفتن خضر ولو عندك جزر حتى ولو عندك جبنه حطي ولو معندكيش عادي متحطيش ولو ف زيتون حظى اى خضار عندك	هذا الحساب سبني سب كبير لااعلم لمذا لاكن انا اعارف كيف اخذ حقي بنضام والقانون طبعن الاخ هذا حوثي وفي المملكة عايش لاهداف تمس امن الدوله وانا اليوم ذهبت بتقديم شكوا للمباحث العامه وحولوني على مكافحة الجرائم المعلوماتيه ورحت وطلعت محضر بثلاث قضيا الاوله حوثي والثانيه انتحال شخصيه وهميه والثالثة قذف والشتم ومس اعراض الاخرين طبعن بعد مابحثو عليه طلع يقيم في المملكة	الذكري السنويه الثالثه الله يرحمك ياابي ان الارض خصرت رجلا الله يرحمك ياابي ان الارض خصرت رجلا ولكن السماء كسبت نجماء .اللهم اني اسالك كتابك اواستاثرت به علي العلم احدا من خلقك ان تغفرله وترحمه وان تجعل القران الكريم شفيعا له وان تخدله الفردوس الاعلي برحمتك وان تسقه من حوض نبيك وان تمتعه بلنظرلوجهك الكريم وان تجعل قبره
والله وحشتني يامحمد اخويا وابني وكل حاجة حلوة انك اخوياوسندي يارب يظلم الاي ظلمك وحسبي الله ونعمةالوكيل	إخواتي بدي إعتذر منكن ماعم يصرلي وقت رد ع التعلقيات بتمنا محد يزعل	ثابت نعمان جاد مش الله صاير شب الله يخلي و تفرحو في
شبلي أمير يقول يا الله سنة خير علجميع	 فطيعة حته الوردة الصفرا يويو وردتي الجميلة ربنا يحفظها ماشالله	الله يرحمك يا ستي ويجعل مثواكي الجنه لا حولا ولا قوة الا بالله