# INTEGRATION OF DIGITAL TOOLS INTO THE LEARNING OF POLYSEMY AS AN ASPECT OF LEXICAL RELATION IN IGBO

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## Abstract

*The study x-rays the usefulness of digital tools to Igbo language learning of lexical relations. A mixed-methods was employed, combining both survey and sample data collection analysis methods. The results revealed that digitalization has attracted great interest and zeal of Igbo language learning, birthing modern educational resources and facilitating interactive learning outcome. However, lack of availability and mastering posed as challenges to the effective implementation of digitalization of Igbo language learning. This research considered meaning and meaning relations in linguistic field. The meaning of a word is considered not based on the context of use but on the lexical category of the word level. It is discovered that words that have multiple relation but distinct meanings are polysemous. The act of identifying and dealing with polysemy created serious argument in lexical semantics. The paper considered semantic meaning greatly at the level of lexical relation of polysemy in Igbo language. The analysis made of this work is based on contextual theory propounded by L, Wittgensin of 1953. The work reviewed related literatures of scholarly research which determines the relationships and differences between their views as it concern polysemy as an aspect of lexical relation and the digital technology usage. The research considered the relationship between polysemy and homonymy and how to determine the differences which properly enhanced the understanding of polysemy as meaning relatedness is the key. The research was made explicit by selected examples from Igbo words which were properly analyzed and the discovery shows very well that polysemy exists in Igbo language in different forms with different meaning as either an adjective or noun. Polysemy in Igbo language is discovered equally to exists in words or phrases. The research is concluded by stating that meaning of words of the same category in the same context makes less ambiguity as they are considered in group and displaying word meaning is based on the context of use or situation reflected in Igbo. We encouraged that more research on the same subject despite all the challenges recorded in sourcing the right Igbo polysemous word, should be carried out in other Nigerian languages. This will greatly help in the growth and development of African languages.*

**Key words:** Integration, Digital tools, Polysemy, Lexical relations

## Introduction

The digitalization of Igbo language learning has created a new interest and view about the Igbo language learning. The Igbo language is considered as one of the major languages spoken in Nigeria and taught as a subject of study in schools. The increasing demand for digital skills in the workforce has made it imperative for educational institutions to incorporate digital technologies into their learning which Igbo is among. Semantics is said to be the study of meaning communicated to the people through the instrument of language and could be done using digital technologies. It is the study of meaning of word and sentences accessed through the digital means. In other words, semantic investigation of language operates at two grammatical levels which include the word and sentence. According to Finch (2000), at word

level, semanticists explore the relationship which the words have with each other within the language as a whole. This constitutes their sense, that is the meaning which the word has by the virtue of its place in the linguistic domain. Such meaning relation that exists at the level of words is known as lexical semantics and it is made very simple using digital tools.

Lexical semantics is a sub-field of linguistic semantics. It is the study of how and what the words of a language denotes. Pustejovsky (1995), asserts that words may either be taken to denote things in the word concept depending on the particular approach to the lexical semantics. The units of meaning to lexical semantics are lexical unit which speakers can continually add to throughout their lives learning new words and meanings. It covers theories of the classification and decomposition of word meaning, the differences and similarities in lexical semantic structure between different languages and the relationship of the word meanings to sentence meanings. It is very important to state that sameness of meaning is not very easy to deal with semantic analysis but there is nothing inherently difficult about the difference of word meaning. It is clear that same words may have a set of distinct meanings and such a word is polysemic in nature. The word polysemy according to Crystal (2008), is a term used in semantic analysis to refer to a lexical item which has a range of different meanings. However, it is said that lexical conception of polysemy was developed by B.T.S Akins in the form of lexical implication rules. These are rules that describe how words in one context can be used in a different form in a related context. A crude example of such a rule is the pasturing idea of 'verb zing one's noun' which means that certain nouns used in certain contexts can be converted into verb conveying meaning as states by Ostler and Akins 1991. It is very clear that lexical semantic is currently enjoying an unprecedented degree of attention. This study aims to explore the opportunities and resourcefulness of digitalization in Igbo language learning of polysemous words. This research tries to answer the following questions: 1**.** What are the importance of digitalization in the interpretation of lexical words in Igbo? 2. How do learners perceive the effectiveness of digital technologies in enhancing the understanding of meaning variations of polysemy in Igbo? 3.Whatare the factors that influence the adoption of digital technologies in learning Igbo polysemous words? 4.What are the benefits of digitalization in mastering and learning related meanings in Igbo polysemous words? From the above research questions, it is very clear that the major focus of interest is centered on the problem of accounting for the astonishing range of variation in the interpretation of a single word in different contexts which is the main aim of this research centered on polysemy in the Igbo language.

**Theoretical framework**

The theory adopted for this study is the 'Use or Contextual Theory'. It was formulated by a German scholar, Wittgenstein (1953) in order to overcome the problem posed by the referential and mentalist theories. He claimed that meaning of any word is determine by the context in which it is used. The meaning of an expression, therefore, is the effects that it creates in a particular context in which the expression is used. This theory arises from the functionalism which poses that to determine the meaning of a word, consideration must be made to the functions of the word. The implication of this is that meaning is not objective. In other words, a word is not usually made of a definite meaning. Related semantic tools employed in this research is ambiguity and vagueness. (Kempson 1977, Cruise, 1986, Atlas 1989, Geeraerts

1993, Tuggy 1993; Williamson 1994) asserts that lexical ambiguity is seen as involving two or multiple lexemes with distinct senses. This includes homonymy and polysemy. The vagueness of a single lexeme exists within a non-specific meaning (Monosemy) which is contextually specified. Different kinds of vagueness are very common portraying 'indeterminacy' of meaning. This is a case in which the meaning of the lexical item appears to be quite intangible and lack specification. That is a case in which the meaning of the lexical item is in principle quite clear but is very generally vague (Kempson 1977). The adjective ''good'' has been mentioned as an example of indeterminacy of meaning due to the range of different senses it may express in describing different things. For instance; (good knife/ football/ player/ student/ weather as well as in describing the same thing like a ''good job'' could be one that is well paid/ offers interesting tasks/ has an inclusive social environment/ gives a certain social status). Also, to be mentioned as some examples of ''vagueness due to lack of specification'' are terms such as teacher/ cousin/ neighbour. All of which, are unspecified with regards to gender.

**Lexical decomposition approaches**

This is the popular view in linguistics which states that most words meanings decompose into smaller unites of meaning. It states that, there is, however, considerable variation as to how the internal structure of the word meanings is conceived which is made simple using digital tools. Using a digital tool as a prototype structure or semantic network, can specify a partial definition of lexical relation under discussion. The meaning of lexical items, therefore differs, as the words are decomposed. However, effort based on the discussion above is aimed at distinguishing polysemy and homonymy. In this particular case, semantic similarity does not seem to be an adequate diagnostic of polysemy, as there would be arguably a number of instances of homonymy which exhibit semantic similarity as well. The homonymous senses of the noun ''file'' ''folder'' or ''box'' would also share any semantic properties in all. This states clearly that, unlike the other cases of semantic relations like synonym, antonym, analyticity and entailment that can be read off' elegantly from the theory by means of sameness, overlap or incompatibility of semantic properties contained in the semantic representations of words, it appears that polysemy and ultimately the distinction between polysemy and homonymy is not so easily accounted for this way.

**Literature Review**

Digital tools in use in language learning, provides a great access to various aspect of language studies through the use of educational resources, facilitating interactive learning and enhancing learners' participation. Salisu, (2020). categorized digital technologies to include; online platforms, mobile applications, and social media which offers new opportunities for language learning. However, the adoption of digital technologies in language learning also poses significant challenges to include; Inadequate infrastructure, limited digital literacy, and cultural barriers. These challenges hinder the effective implementation of digitalization in language learning (Muhammad, 2019). In the context of Igbo language learning, digitalization offers numerous opportunities. Digital resources, such as online dictionaries, grammar guides, and language learning platforms, provide access to a vast array of educational materials. However, challenges such as limited internet access, inadequate digital infrastructure, and cultural barriers hinder the effective implementation of digitalization in Igbo language learning. Rufai (2020), states that lack of digital literacy among educators and learners, as well as the limited availability of digital resources in language, is a major factor for the increased challenges of digitalization. Salisu (2020), opines that digitalization has enhanced language learning by

providing access to a vast array of educational resources and facilitating interactive learning experiences. Muhammad (2019), asserts that the adoption of digital technologies in language learning is influenced by factors such as perceived usefulness, perceived ease of use, and attitudes. The study also found that the lack of digital literacy among educators and learners is a significant barrier to the adoption of digital technologies in language learning. The meaning and uses of words can be accessed from the use of digital tools. We are to examine all that relate and analyze polysemy using digital technologies in this research. Polysemy is a word or phrase with multiple related meanings. A word is judged to be polysemous if it has two sense of the word whose meanings are related. Ndimele (1999), assert that polysemy is a meaning relation whereby a single lexical item has several related meanings. This is to say that the several meanings of a polysemous word must belong to a common sematic field. For illustration, let us examine the word 'mouth' which is a polysemous word in English which means ''a part of the body'', ''where a river flows into the sea'' and an ''entrance of a cave''. They are words with related meanings. Agbedo (2000) states that polysemy refers to a set of different meanings associated with a word. This has different approach with the definition of polysemy given by other scholars. He explained that the word 'bank' has at least two meanings which are side of a river and a financial institution. Polysemy is used to illustrate the above differences in meaning of 'bank'. But unfortunately, it does not qualify as a polysemous word because the two meaning are unrelated which made the word to refer to another kind of lexical semantic category. The prototype approach to categorization has formed the basis for many accounts of word meaning and of polysemy in particular within the cognitive linguistics paradigm (Fillmore 1982, Lakoff 1987, Brugman 1998 and Taylor 1989, 2003, Geeraerts 1997). In an early account, Fillmore (1982) suggested treating word meanings as being represented as 'semantic prototypes', which could be realized in several different ways. For instance, he took the meaning of the 'verb climb' to be composed of the disjunction of two mutually compatible conditions, 'clambering' and 'ascending'.

In its prototypical uses, both conditions are satisfied. (example a person climbing up a rock wall), while in less central uses only one of the conditions may be present. Example a gecko climbing up a wall (no clambering), or a cat climbing down a tree (no ascending). In other cases, there is a disjunction of two conditions, but one of them has a more privileged status, and is satisfied in prototypical uses. It has been noted that typicality effects do not in themselves provide evidence for concepts being structured in terms of prototype structure. Thus, polysemy is captured in the semantic representation of this word. In other words, the meaning of a word consists in a fixed set of conditions; and the most prototypical examples are those that satisfy the most conditions; the ones that come close to an identification of the category, (Robins (cf. Rosch 1975a). A widely discussed objection to prototype semantics as it is manifested in Fillmore's early approach, as well as against prototype theory as a theory of concepts more generally, as its inability to account for the composition of complex concepts (Fodor 1998, Fodor and Lepore 2002). The issue is not whether typicality effects are psychologically real or not in a semantic theory. The compositionality problem for prototype theory is that the meaning of a complex concept is generally not a complex prototype built up from the prototypes of its constituents. Several good suggestions have been made for ways to account for conceptual combination within prototype theory (Osherson and Smith 1981; Smith and Osherson 1984; Smith et al… 1999 (1998); Huttenlocher and Hedges 1994; Kamp and Partee 1995) most of which, however, seem to be able to be handle only a very limited range of data.

Moreover, a range of further problems have been pointed out with prototype theory as a theory of conceptual representation including the lack of prototype for many concepts. The possibility of having a concept without knowing its prototype; without knowing any of the properties associated with it, and the difficulty of providing an adequate account of reference determination in that concepts with prototype structure may fail to cover a typical instance in semantic analysis.

In view of these problems, it seems clear that an adequate theory of lexical semantics cannot be based on prototype structure alone. Indeed, some scholars have proposeda dual theory of concepts, where concept composed of a classical core (that is a definition) plus an optional identification function with prototype structure (Armstrong, Gleitman and Glietman 1999) (1998).

Lakoff (1999 (1983), on the other hand, has claimed that the very idea that categories are structured in terms of prototypes is a wide-spread misunderstanding of prototype theory. He argues, that typicality effects are surface phenomena, and result from the organization of knowledge in terms of so-called 'idealized cognitive models. It therefore; creates more confusion in understanding of polysemy as a lexical semantics.

**Polysemy and Homonymy: A Discussion**

Traditionally, polysemy is distinguished from homonymy. In polysemy, the different senses of a single lexical item are seen as being related in some non-trivial way, where as in homonymy, the multiple encoding is a matter of historical accident. Example of homonymy is the lexical form coach, which encodes the entirely unrelated meanings 'bus' and 'sports instructor'. It is standard to see these as being represented as two different related lexemes (COACH 1) and (COACH 2) in the mental lexicon. However, drawing the distinction between related and unrelated senses of a lexical form is often far from a straightforward matter. The question is: what does it mean for two senses to be related? The criteria that have been suggested include etymology and speaker intuitions about un-relatedness verses relatedness of meaning (Lyons 1977b). According to the etymological criterion, two senses are homonymous if the distinction between polysemy and homonymy corresponds to distinction between complementary and contrastive ambiguity (Weinreich's 1964). However, the way of distinguishing between polysemy and homonymy is problematic, if we are concerned with characterizing the linguistic knowledge of speakers and hearers. Many speakers of English may not be aware of this historical connection, and to them the two senses may seem entirely unrelated (i. e Homonymy). So, distinguishing between polysemy and homonymy on the basis of etymology does not in many cases capture differences in speakers' Intuitions of semantic relatedness, and, although such etymological considerations are no doubt useful to lexicographers in the making of dictionaries. It is doubtful whether they are related to a synchronic analysis of polysemy.

Another, criterion that has been suggested as a way to distinguish between polysemy and homonymy is speaker's intuitions about related and unrelated senses. According to this criterion, two senses are polysemous if they are judged by native speakers to be related; and homonymous if they are judged to be unrelated or their meanings are considered to be further apart than polysemous senses. Distinguishing polysemy from homonymy would thus depend on a sort of folk etymology. A problem that arises in connection with this criterion is that sense relatedness appears to be a matter of degree, and, moreover, judgements about the relatedness of the sense of a given word are likely to be subjective (Lyons 1977b). A second issue is how

polysemous lexical items are represented in the mental lexicon. The question is whether all the different senses of a polysemous lexical item are stored (as claimed by sense enumeration lexicons), or only a single representation is stored and all the other senses contextually derived. This is considered a problem of representation. A problem for fully encoding sense enumeration lexicon is that the mental lexicon would have to store indefinitely many semantic distinctions for each lexical item. A challenge for core meaning approach is to decide on the appropriate level of abstraction for defining the core meaning of a lexical item, in order to capture what is common to all its possible, sometimes different uses. A problem for more moderate approaches which postulate only a limited number of senses of a word, is to distinguish between those meaning that are stored in the lexicon and those that are constructed in line with language use. Traditionally, polysemy is described as the association of two or more meaning.

Linguistic analysis has it that sometimes, it may be difficult to distinguish if two meanings are the same or different in lexical semantic relations. However, words in context of use may have more than a meaning. This, therefore, states that meaning cannot easily be eliminated or distinguished from other meanings. Anagbogu, Mbah and Eme (2010) assert that homonymy can be considered from two levels of meaning. It is firstly looked as a word with many meanings or as word that assumes different meanings realized in a similar form. It is stated that such words are spelt and pronounced alike even though they do not have the same meaning. Saeed (2003) asserts that there is a traditional distinction made in lexicology between homonymy and polysemy. The distinction is that both deals with multiple senses of the same phonological word. Polysemy is said to be much invoked when the sense is said to be related. It has been argued that the distinction between polysemy and homonyms is subtle. It explained that the distinction between polysemy and homonymy is not always an easy one. The problem according to Palmer (1981) lies in the fact, if one form has several meanings, it is not always clear whether, we shall say that this an example of polysemy which clearly states that there is one word with several meanings or homonymy which states that there are several words in the same form with different meanings. There are a number of ways of answering the question of whether a word is polysemy or homonymy. This is done by considering words etymologically which its findings are very helpful in determining the meaning as contained in polysemy. Based on this, it is a known fact that identical forms of words which have different origin are treated as homonymous and are given separate entries. Also, it is a known fact that when words have one origin but they have different meanings, they are treated as polysemic and given a single entry in the dictionary. Ndimele (1999) asserts that one of the ways to settle the problem of distinction between polysemy and homonymous is to examine the several possible senses of a word where, as the several meanings of a polysemous words must be related (common core sense in their different meanings) the meanings of homonyms are never related in any way. One group of meanings in polysemous words, are those which explained that word means as activity perhaps derived from a verb, or the time or place in which the activity occurs or has occurred. As Jamet (2008) puts it, that sometimes only one of those meanings is intended depending on the context and sometimes multiple meanings that lead to a verb or activity. Illustration is as follows:

1. Bank----------a financial institution

   ---------- a building where financial transaction occurs

----------a synonym for rely upon

----------a river where we keep blood

----------a river side or part

The meaning of the word is different but related as it drives it meaning from the root word bank.

2. Wood---------- a piece of a tree

   ----------a geographical area with many trees

3. Milk ---------- liquid from woman breast

   ----------a by-product of animal (cow)

Another clarification of polysemy is the idea of predicate transfer. This is the re-assignment of property to an object which may not otherwise inherently have the property. Thus, the expression, I a m ‘’parked out back’’ conveys the meaning of ‘park’ from ‘car’ to the property of ‘I possess a car’’ this avoids incorrect polysemous interpretations of parked, that people can be parked’’ or that I a m pretending to be a car, or that I a m something which can be parked. This is supported by the morphology. We are parked out back’’ does not mean they are multiple cars, rather that they are multiple passengers having the property of being in possession of a car.

**Polysemy in Igbo** This is a sense relation in which a word or lexeme has acquired more than one meaning. A polysemy is a word or phrase with multiple related meanings. Many Igbo nouns acquire new meanings by adding a ritual and metaphoric meaning. For instance, agwọ, nkịta, egbe, and mbe meaning snake, dog, kite, and tortoise respectively could have metaphoric meanings like a dangerous person, a promiscuous person, a thief and a cunning person. A mixed-methods was employed, combining both survey and sample data collection analysis methods. The surveyed and data collected results revealed that polysemy exist in the Igbo language. These are illustrated in sentences below:

4. Amarachi bụ agw
   Amarachi bụ snake
   Amarachi is a dangerous person

5. Okeke bụ nkịta
   Okeke is dog
   Okeke is promiscuous

6. Ebere bụ egbe
   Ebere is a kite
   Ebere is a thief

In Igbo, polysemy may not necessarily have metaphoric meaning but their different meanings must be related as can be seen in the examples below:

7. Ike ---------- i. Strength (N) (Adj.) (N) |difficult (N), Hardness (N), Energy (N), Authority (N), Force (N).

The above examples when in context all possess literal meaning as follows:

8. Chineke bụ ikem
   God is strength me
   God is my strength

9. Ihe a sịrị ike — Thing
   this cook past strong — This thing
   is strong

10. Ike ha dị n'ọgwụ ha
    Power they be in charm them
    Their power is in their charm

11. Kọọsụ a sịrị ike
    Course this is past difficult — This
    course is difficult

12. Ọ dị mma na achịcha sịrị ike
    He/She /it be good that bread this cook past hard — It
    is good that this bread is hard

13. Iri osikapa na-enye ike
    To eat rice be giving energy
    Eating rice gives energy

14. O nwere ike niile
    He/She/It has authority all — He/She/It
    has all the authority

15. Mmiri anaghị agbasị ike
    Water be not run force — The
    water is not flowing with force

The different senses of 'ike' as we can see above are related even though they are not metaphoric. This, therefore, explains clearly why polysemy is very common in Igbo and the various senses of a given lexeme make for a distinction between adjectives and nouns as in the following illustrations:

16. Nwoke a sịrị ike
    Man this be strong
    This man is strong

17. Ike ya ka ikem — Strength
    his/hers surpasses strength me — He /She is
    stronger than I

18. Azụ ahụ sịrị ike
    Fish that cook past tough
    That fish is tough

19. Ajụjụ ahụ sịrị ike
    Question that be difficult
    That question is difficult

Other illustrations of polysemous words in different usage from Igbo are analyzed in various context as follows:

20. Akwụkwọ ----------Book or ----------School

    Nna m zụtara akwụkwọ — Father
    me buy past me book — My father
    bought a book for me

21. Okoye na-aga akwụkwọ
    Okoye be going school
    Okoye is going to school

22. Mmiri----------Rainfall-----Water----Stream/River------Liquidfrom any source
    Mmiri na –ezo
    Rain be falling
    It is raining

23. A chọrọ m iṅụ mmiri — Want
    preset me to drink water — I want to
    drink water

24. Anyi gara mmiri — We
    go past stream/river — We went to
    the stream/river

25. Mmanụ bụ mmiri
    Oil be liquid
    Oil is a liquid

26. Oke ----------Boundary ----------discrimination
    Ebe a bụ oke ala m — Place
    here is boundary land me — Place is my
    land boundary

27. Ikpa oke adịghị mma
    Gather discrimination be not good
    Discrimination is not good

28. Obi----------Heart ---------- chest ----------Courage
    O nyere m Obi ya — He
    /She gave past me her him/ her
    He/She gave me his /her heart

29. Anya m na-egbu m mgbu — Eye
    me paining me pain — My eye is
    paining me

30. Gbasie Obi gi ike — Do
    heart you strong — Be
    courageous

31. Isi----------Head ----------Leader ----Theme ------Source
    Isi ya buru ibu
    Head him/her /it be-ing big
    He/She/it head is big

32. Ọ bụ onye isi ha
    He /She is person head them He/She
    is their leader

33. Gịnị bụ isi okwu ya? What
    is head talk he/She/ It? What
    is the talk theme/ topic? What
    is the theme/topic? Where is the
    source?

34. Ọkụ ---------- Fire ----------Hotness ----------Light (Electricity)
    Ọ dị n'ọkụ
    He/She/It is on fire It
    is on the fire

35. Ọ dị ọkụ
    He/She/ It hot It
    is hot

36. Ọkụ abịala
    Light come past
    The light has come

**Conclusion**

The use of digital tools makes it easy to discover that polysemy is very common in Igbo language. The research shows very clearly that the use of digital tools shapes the teaching and le arning of polysemy. The available digital tools used in this research are online platforms, mobil e applications, online dictionaries, grammar guides. They offer new opportunities for learning p olysemy and the feedback as various meaning associated with the words are easily accounted. T his is demonstrated as followings: a. **Mobile applic ations:** The use of apps with Igbo vocabulary flashcards, audio pronunciations help improve v ocabulary retention and pronunciation skills among the learners of polysemous words. It makes it very easy to identify common related words and their meanings.

b. **Multimedia tools:** The application of videos, podcasts, and recorded storytelling of related words of common meaning or different related meanings offer language exposure and support different learning styles. It makes very common to master all the meaning relatedness in polysemous expressions not only in Igbo language but in other languages of the world. c. **Online classrooms and platforms:** The use of virtual classrooms like google classroom, zoom, wasp) facilitate the learning of polysemy as students observe, and compare empirically what they are studying. The digital tools make a reality exercise as the words and their meanings are compared by virtual experimentations. From the above usage of digital tools, it is very clear that polysemy is learnt or access in different ways in languages which Igbo is not an exceptional. The digital tools help to understand and master how the different meanings as contained in the Igbo examples in this research are related, and understand the

different levels and uses of word meaning in the Igbo language. It also discovered based on conclusion drawn that polysemy posses' literal meanings in their expressions in Igbo language. It is discovered that polysemy in Igbo language illustrations in this research observes predicate transfer in their expressions. This is the re-assignment of property to an object which also posse an inherent property. Polysemy is said to have multiple meaning which belong to a common semantic field, but can be well understood and used through the use of digital tools. Finally, the knowledge of polysemy and homonymy are discovered to be highly important in proper understanding of related meaning in lexical semantic analysis in languages including Igbo and it is well understood through the use of digital technology.

**Recommendation**

We recommend that more research on polysemy in our indigenous languages be carried out. We equally, recommend that effort should be made to determine the connotative meaning relations between polysemous words in different Nigerian languages. The analogy between English and Igbo polysemous words or expressions should be studied. Finally, we recommend that polysemy should be studied in relation to other lexical words or items that will enhance the growth of indigenous Nigerian languages.

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