Introduction

Defining Incidental Vocabulary Learning

Despite much being written about incidental vocabulary learning, definitions of the construct still vary. Two definitions predominate in the literature. The first has been used widely in the field of psychology since early in the 20th century and operationalizes incidental vocabulary learning as occurring when learners are not forewarned that a vocabulary test will follow (Hulstijn, 2001). The second is more commonly used within applied linguistics and defines incidental word learning as occurring as the by-product of a meaning-focused task (e.g., Chen & Truscott, 2010; Ellis, 1999; Wesche & Paribakht, 1999). Variation in definitions may occur in part because incidental learning is often contrasted with intentional learning, and in this comparison it is easy to see some degree of intention within the incidental learning construct. For example, when we encounter an unknown word in meaning-focused input, we may often pause and think about what that word might mean. Indeed eye-tracking studies investigating incidental vocabulary learning clearly show that during reading, learners spend more time (have longer fixation durations) focused on novel vocabulary than known vocabulary, and that this increased attention to unknown words contributes to learning (Godfroid et al., 2018; Pellicer-Sánchez, 2016). Intention to learn vocabulary might also depend on what is encountered in input. For example, if we encounter an unknown word in spoken and written input, we might shift our focus between understanding the input and inferring the meaning of the unknown word. Moreover, different learners are likely to have different intentions when engaging with input which may include obtaining information, understanding the message, learning language features (grammar and vocabulary), or simply finishing (or appearing to finish) an assigned task. The degree of intention to learn unfamiliar words may also depend on interest, need, and importance.

Awareness that there may be degrees of intention within the incidental learning paradigm leads to questions of whether different variations of reading, listening to, and viewing
meaning-focused input meet the conditions necessary for incidental learning to occur. Consider the following scenarios:

1. Reading a text that can be easily understood (only 2% of the words are unknown) in the classroom.
2. Reading the same text at home with access to a dictionary to support comprehension.
3. Reading the same text at home, but in this case the unknown words are typographically enhanced.
4. Reading a text that can be easily understood (only 2% of the words are unknown) at home.

In the first scenario, despite it being a meaning-focused task, an argument might be made that because it occurs in the classroom, the students’ intention is to learn language rather than comprehending the L2 input. In the second scenario, a similar argument might be made that because learners can access a dictionary to look up unknown words, their intention is to learn those unknown words rather than to support comprehension. In the third scenario, it might be suggested that the typographical enhancement included in the text may lead learners to focus on learning the unknown words. In the final scenario, there appears to be less of an argument that there is intention to learn vocabulary. However, if this is true, it implies that only when learners engage with meaning-focused input outside of the classroom is there a focus on understanding the meaning of a text rather than learning any language features within the text. This seems unrealistic; learners may frequently focus on understanding input in the classroom for the purpose of enjoyment and interest, after all many activities are designed to be interesting and enjoyable. Similarly, learners may frequently choose to engage with meaning-focused input outside of the classroom for the purpose of learning language; their primary purpose of engaging with meaning-focused input may be to improve their language proficiency. Thus, when we consider students engaging with meaning-focused L2 input, it may not be possible to rule out that there is some intention to learn language.

If we consider incidental vocabulary learning from a pedagogical perspective (rather than degrees of intention) then the definition of learning words as a by-product of meaning-focused activities or tasks works well. From a teaching and learning perspective, it is the purpose of the activity that carries weight rather than where intention and attention is placed during the activity. Thus, any meaning-focused tasks such as those in the preceding four scenarios, as well as reading, listening, and viewing for the purpose of interest, information, and enjoyment, would contribute to incidental word learning. The inclusion of glosses, textual enhancement, the context of learning (classroom vs. at home), and the availability of dictionaries to support comprehension would not affect the definition. In contrast, word-focused activities in which the purpose is to learn vocabulary in exercises such as cloze, matching, sentence production, and flash cards would be classified as intentional learning. Another way to look at it, which would help to eliminate the research issues related to definitions of intentional and incidental learning is to simply agree that the terms are problematic. Using the labels “meaning-focused learning” and “language-focused learning” two terms included in Nation’s (2007) four strands of learning is more transparent and avoids the issues of attention and intention. I propose that we follow this course.

Studies of Incidental Learning

In their seminal study of incidental vocabulary learning, Nagy, Herman, and Anderson (1985) proposed that “Incidental learning from context during free reading is the major mode of vocabulary acquisition during the school years, and the volume of experience with
written language, interacting with reading comprehension ability, is the major determinant of vocabulary growth (p. 234)". Their hypothesis that knowledge of words is gained in small increments through repeated encounters in text has stimulated a large number of studies with research findings and discussion providing strong support. There have since been a great deal of studies indicating that incidental vocabulary learning through reading has the potential to fuel lexical development. Research has shown that L1 (Jenkins, Stein, & Wysocki, 1984; Nagy, Anderson, & Herman, 1987; Nagy et al., 1985) and L2 words (Day, Omura, & Hiramatsu, 1991; Pitts, White, & Krashen, 1989; Waring & Takaki, 2003), and L2 collocations (Pellicer-Sánchez, 2017; Webb, Newton, & Chang, 2013) are learned incidentally through reading. There are relatively few studies of incidental learning through other modes of input. However, these studies also show that words are learned incidentally through listening (van Zeeland & Schmitt, 2013a; Vidal, 2003, 2011) and viewing (Montero Perez, Peters, Clarebout, & Desmet, 2014; Peters & Webb, 2018).

A primary focus of research on incidental vocabulary learning has been the role that frequency of occurrence plays in learning. Studies have demonstrated that the more that unknown words are encountered in context, the more likely they are to be learned (e.g., Chen & Truscott, 2010; Horst, Cobb, & Meara, 1998; Jenkins et al., 1984; Pigada & Schmitt, 2006; Rott, 1999; Saragi, Nation, & Meister, 1978; Waring & Takaki, 2003). Although more encounters with words in context increases the potential that they will be learned, there does not appear to be a threshold that ensures learning. This was perhaps best demonstrated by Saragi et al.'s (1978) study which showed that 70% of participants learned one target word that was encountered once in a story, while another word that was encountered 96 times was only learned by 40% of the participants.

The reason why there is not a threshold of encounters that ensures that incidental learning occurs is that there are many factors besides frequency that affect learning words in meaning-focused input (see chapters by Peters and Boers, this volume). For example, having background knowledge increases the potential for vocabulary learning to occur through reading (Pulido, 2004). Also having a larger vocabulary size (Webb & Chang, 2015a; Webb & Paribakht, 2015) and being more proficient in the L2 (Zahar, Cobb, & Spada, 2001) have a positive effect on learning words incidentally, perhaps because learners may know more of the words they encounter and thus have greater lexical coverage of the input (Schmitt, Jiang, & Grabe, 2011; van Zeeland & Schmitt, 2013b). Moreover, some words are simply easier to learn than others because they share similar forms and meanings to items in the learners’ L1 (Peters & Webb, 2018; Rogers, Webb, & Nakata, 2015). Another factor that influences incidental learning is the amount of information provided in the input (Webb, 2008). Sometimes there may be a great deal of information about the words that are encountered in context making it easier to learn those items. However, sometimes input includes little or misleading information about the meanings of words that are presented making it very challenging to infer the meaning of an unknown word. Thus, while frequency of occurrence increases the potential to learn words encountered in input, encountering a word a certain number of times may not guarantee learning.

Critical Issues and Topics

What Is Learned Through Encountering Words When Reading and Listening?

Perhaps what is most important about incidental vocabulary learning is the contribution that it makes to the development of lexical knowledge. Encountering words repeatedly in input contributes to all aspects of vocabulary knowledge. When learners see the same words again
and again in written text, they will learn the spellings of the words, as well as the spellings of their inflections and derivations. They may also gain at least partial knowledge of the spoken forms of the word. Similarly, when words are repeatedly encountered in aural input, learners are likely to learn their different spoken forms, and gain at least partial knowledge of their written forms. It is important to note, however, that the knowledge gained incidentally through encountering words in spoken and written input is most likely to be receptive rather than productive. Receptive knowledge refers to the knowledge necessary to understand words when they are encountered, whereas productive knowledge refers to the knowledge needed to use words. This means that while learners may be able to recognize the spoken and written forms of unknown words through encountering words in input, they may not necessarily be able to produce their different derivations (Schmitt & Zimmerman, 2002).

The different meanings a word conveys are also likely to be gradually learned incidentally as it is encountered repeatedly over time. The most frequent meaning is likely to be acquired first, but as secondary and peripheral meanings of a word are encountered multiple times, they are also likely to be learned. For example, learners may initially learn that a common meaning of run is for someone to move quickly on their feet from one place to another. However, they may later learn that this meaning can be extended. For example, run for your life and go for a run are related but different in meaning. Moreover, encountering run in run a business and run for office extend knowledge of the concept of the word further. Through repeated encounters in input knowledge of the different meanings of polysemous words is likely to be gained. The same argument applies to both the semantic and syntagmatic associations of words. The more that a word is encountered in context, the more likely we are to learn what is associated with that word. For example, as we encounter the word (ice) hockey more and more, we may learn words with related meanings such as its superordinate association (sport) and its coordinate associations (skiing, football, basketball). We may also learn its syntagmatic associates or collocations such as player, game, score, and Toronto Maple Leafs if we live in Canada. Of course, some of this knowledge may also be gained by applying/transferring our L1 knowledge to a new L2 word (Webb, 2007a). For example, a dog in Japan or France is still going to have semantic associates such as pet, cat, and beagle, and syntagmatic associates such as walk, collar, and leash. However, these L2 forms still need to be learned initially, and there will often be differences. For example, in English we turn a light on or off, whereas in Chinese we open and close a light. Through encountering words in input, learners are able to develop and refine their L2 knowledge of novel words.

What is particularly important to remember when considering what is gained through incidental vocabulary learning, is how these gains might be different through intentional learning approaches. Although everything that is gained through incidental learning can certainly be learned intentionally, this is likely to be the exception rather than the norm. Most intentional learning activities such as learning with flash cards, matching activities, and multiple-choice activities focus on linking L2 form to meaning. While there are certain intentional learning activities such as sentence production and cloze activities that may include focus on learning other aspects of knowledge such as semantic association, collocation, and word parts, the extent to which knowledge is gained is limited. Typically, it should be assumed that at best a small fraction of word knowledge can be gained through completing an intentional learning activity (as well as encountering a word a small number of times in meaning-focused input). Of course, the amount of vocabulary knowledge gained through intentional learning can be increased through rich instruction involving the completion of multiple activities designed to develop word knowledge. However, the knowledge gained through these activities will still likely be relatively small; at best only a few of
Incidental Vocabulary Learning

the different derivations, meanings, associations, and collocations are likely to be learned. This does not mean that intentional vocabulary learning does not have value. Intentional learning leads to effective and efficient gains in vocabulary knowledge that may provide the foundation necessary for incidental learning to occur; L2 learners are unlikely to learn words incidentally from input if they do not know many of the words in that input (Liu & Nation, 1985). Moreover, intentional learning of words can be used to focus on developing the knowledge that is most needed. For example, it may be useful for advanced learners to intentionally learn some formulaic language to reduce the number of odd word combinations that they produce.

Because there is value in both incidental and intentional learning, they should not be viewed as being in competition with each other. Instead, it is important to understand that both forms of learning are useful and likely necessary. Therefore, incidental and intentional learning should be seen as complementary approaches to learning.

The Dichotomy of Known and Unknown in Applied Linguistics Is Problematic

The previous section highlighted the fact that there is much to learn about each word (see also Nation, this volume). Although this is widely accepted in the literature on vocabulary knowledge, it is not always reflected in research, and it is rarely reflected in pedagogy. This is problematic, because when research on incidental and intentional vocabulary learning is discussed, the process of learning words gradually over time through repeated encounters is often forgotten. Instead, there may be a conclusion that words have been learned and are now known or that they remain unknown. This dichotomy of known and unknown is misleading, because in all likelihood, in research and pedagogy, only a small fraction of knowledge about words has been learned, and the words are at best partially known. Perhaps the reason for this is that people often think in terms of dichotomies: good vs. evil, right vs. wrong, comprehensible vs. incomprehensible, and known vs. unknown. Working with dichotomies is imprecise. For example, people are unlikely to be 100% good nor 100% evil, and language input presented to learners is likely to be understood to different degrees rather than being perfectly understood or incomprehensible. Similarly, words studied intentionally in an activity or encountered in a book or television program are unlikely to be known and unknown. Instead, they are most likely to be partially known. In contrast, most test formats do work in dichotomies and tests are an important feature of teaching, learning, and researching language. Test results may thus mislead teachers, researchers, and learners about what has been learned. Positive test results may suggest that words have been learned, when in fact they have only been partially learned. Negative test results suggest that no knowledge has been gained about a word, which may or may not be true. In some cases, knowledge may have been gained but it simply was not sufficient to answer a question. In other cases, knowledge may be gained (e.g., collocation), but the test (e.g., meaning recall) did not measure the type of knowledge gained. In addition, knowledge may be gained but the question was not designed very well, and the test taker was unable to demonstrate their knowledge. In all cases, it is important to note that a test is unlikely to measure comprehensive knowledge of a word; it will not reveal whether learners know all of the different forms (spoken and written) of a word. Nor will it indicate if all meanings, associations, and collocations are known. Instead, most tests are simply assessing a particular feature of word knowledge, and often are measuring a fraction of the knowledge of that feature.

It is also important to be aware that tests measure knowledge of a word at a particular instance. This creates the false assumption that if a word is known, that it will continue to
be known, and that there is no need for vocabulary knowledge to further develop. Because we know that knowledge of words tends to be gained in small increments over time, a test may provide a useful indication of some of the knowledge that may have been gained at that time. Thus, teachers, learners, and researchers need to be aware that there is likely much more to be learned about that word, and that this knowledge is likely to be gained over time through further encounters with it in input, and through using it in output. Moreover, it is also necessary to be aware that vocabulary knowledge may also decay. For example, although tests may have indicated that words are learned (incidentally or intentionally), if they are not encountered or used, that knowledge is likely to be forgotten. This is one of the challenges for teachers when using a topic-based syllabus. Words that are encountered and learned in a unit on climate, are unlikely to be recycled with knowledge retained or developed further when completing units on food, health, and the solar system.

There may also be an assumption that if words are found to be known on a test, and then unknown on a subsequent delayed test, that knowledge of the word has completely gone. Whether this is true remains to be determined. However, it may well be that the decay in knowledge is simply insufficient to score correctly on the test. How knowledge will subsequently be affected by further opportunities for learning in the event of encountering the word in input or in intentional learning also remains to be explored. However, if we consider our own learning experience, we may forget words, and then subsequently remember them when they are encountered at a later date. How knowledge of words moves backwards and forwards deserves investigation.

Is Incidental Vocabulary Learning Affected by the Mode of Input?

Research indicates that learners are more likely to encounter L2 spoken input than written input outside of the classroom (Kuppers, 2010; Lindgren & Muñoz, 2013; Peters, 2018). Lindgren and Muñoz (2013) investigated the different types of input that foreign language learners were exposed to outside of the classroom. They found that young learners listened to English language songs and watched films in English with L1 subtitles more often than reading L2 books. Similarly, Peters (2018) found that more than 40% of EFL learners surveyed watched English language television programs and movies in their free time several times a week, while only 1% of the learners responded that they read L2 books as often as that. Together these studies suggest that L2 television, movies, and songs may be the most common sources of L2 input outside of the classroom, and that learners are becoming less engaged with reading L2 books on their own.

The wealth of research showing that incidental vocabulary learning occurs through reading reveals the potential value of written text to lexical development (e.g., Godfroid et al., 2018; Pellicer-Sánchez, 2016). However, studies that have been conducted on other modes of input have consistently revealed that vocabulary is also learned incidentally through reading while listening (Webb & Chang, 2012, 2015a, 2015b), listening (van Zeeland & Schmitt, 2013a; Vidal, 2003, 2011), and viewing (Montero Perez et al., 2014; Peters & Webb, 2018). Moreover, these studies tend to suggest that many of the factors, such as frequency (Peters & Webb, 2018; van Zeeland & Schmitt, 2013a; Vidal, 2003, 2011), cognacy (Peters & Webb, 2018), and prior vocabulary knowledge (Montero Perez et al., 2014; Webb & Chang, 2015a), that affect incidental vocabulary learning through reading also affect learning words in other modes.

Webb and Nation (2017) suggest that the value of spoken input to lexical development has been understated. This may have occurred because earlier research suggested that written
Incidental Vocabulary Learning
discourse provided greater opportunities to learn lower frequency words (Hayes, 1988). However, more recent studies suggest that the proportion of low-frequency words found in spoken input is not that different from that of written input. For example, although Webb and Macalister (2013) reported that 1.76% of the words in the Wellington Written Corpus were beyond the 10,000-word frequency level, Rodgers and Webb (2011) found that 1.22% of the words in 288 television programs were at this level, and Webb and Rodgers (2009) found that 1.12% of the words in a corpus of 312 movies were beyond the 10,000-word frequency level. Because research suggests that both L1 and L2 learners tend to encounter much more input through watching television than through reading (L1: Statistics Canada, 1998; United States Bureau of Labor, 2006; L2: Lindgren & Muñoz, 2013; Peters, 2018), the potential for learning vocabulary through spoken input may be at least as great as it is for learning through written input.

If so Few Words Are Learned Incidentally Through Reading, Listening, or Viewing, Wouldn’t It Be More Effective to Learn Words Intentionally?

Studies of incidental vocabulary learning reveal small gains after a relatively large amount of study time. For example, Horst et al. (1998) found that EFL students learned on average 4.6/23 unknown target words through reading while listening to a graded reader over six hours. In another study that involved reading a graded reader, Waring and Takaki (2003) reported that 10.6 and 4.6 of 25 words were found to be known on meaning recognition and meaning recall immediate posttests, and three months later only 6.1 and 0.9 of these words were scored as correct on those tests, respectively. Similarly, Rodgers (2013) found that after seven hours of viewing episodes of a television show, EFL students learned 6.4/28 unknown target words on average. Peters and Webb (2018) found that after viewing a one-hour television program EFL students learned 3.86/48 and 3.73/33 unknown target words on meaning recall and meaning recognition tests, respectively. Moreover, Pavia, Webb, and Faez (in press) found that the largest gains made by beginner EFL learners through listening to songs several times were 2.19/13 unknown target words on a test of form recognition and 1.34/5 unknown target collocations on a test of collocation recognition.

Together the preceding studies show that incidental vocabulary learning gains are typically small. The few words that are learned in such studies often lead to questions of whether the gains are meaningful; it could be argued that the time spent learning words incidentally could be better used to learn words intentionally and generate a greater number of words learned. It is true that in a short amount of time, intentional learning is likely to lead to a greater number of words learned than incidental learning. However, there are several reasons why incidental vocabulary learning gains are not only meaningful but central to L2 lexical development.

First and most importantly, there are too many words to learn through deliberate study. Goulden, Nation, and Read (1990) found that educated L1 users of English know approximately 15,000 to 20,000 word families. In informal surveys I have conducted on how many English words EFL students have been taught in the classroom over a six- to nine-year program of study, the most common responses of advanced EFL learners studying in MA TESOL and applied linguistics programs have been 2,000 or 3,000 words. Knowing the most frequent 3,000 word families may allow learners to understand most forms of spoken input (Webb & Nation, 2017). However, it would be far below an L1 adult vocabulary size. Moreover, it is also less than the 8,000 to 9,000 word families necessary to understand written text without support (Nation, 2006), and the 4,000 word families needed to understand
academic spoken text (Dang & Webb, 2014). Although independent study is an important part of language learning, it would seem unlikely that students would be able to intentionally learn enough words to understand written text without support, and certainly not develop an L1 adult vocabulary size.

The second reason why incidental vocabulary learning is central to lexical development is that a recent meta-analysis of studies of intentional vocabulary learning indicated that the efficacy of intentional vocabulary learning is likely overstated. Webb, Yanagisawa, and Uchihara (under review) found that although the percentage learning gains made through intentional vocabulary learning have tended to be high on immediate form and meaning recall posttests (58.5% to 60.1%), the gains are relatively small on delayed form and meaning recall posttests (25.1% to 39.4%). The results of the meta-analysis indicated that intentional vocabulary learning in most activities is far from guaranteed. If we use the larger estimate of 3,000 words that learners are taught in the classroom over many years, together with the higher delayed percentage learning gains from the meta-analysis (39.4%), this would only lead to 1,089 words learned intentionally over six to nine years. Thus, to reach the lexical goals necessary to understand most forms of spoken input (knowledge of the most frequent 3,000 word families) and written input (the most frequent 8,000 to 9,000 word families), intentional learning needs to be supplemented with incidental learning.

Third, studies of incidental vocabulary learning are likely to underestimate learning. There are six reasons for this:

1. Tests used to measure learning may not be sensitive enough to reveal small incremental gains in vocabulary knowledge (Nagy et al., 1985).
2. Most studies operationalize learning as gains in knowledge of form-meaning connection, but other aspects of vocabulary knowledge are also likely to be gained through encountering unknown or partially known words in input (Webb, 2007b).
3. Knowledge of non-target words may also be gained through encountering unknown words in meaning-focused input (Horst et al., 1998). These may be mid- and low-frequency words. However, it is likely that knowledge of many higher frequency words also increases through exposure to meaning-focused input. Gains for higher frequency words are most likely to occur in the areas of faster processing speeds, and increased knowledge of derivations and collocations.
4. In most studies of incidental vocabulary learning students do not have access to the resources to support learning (peers, teachers, parents, dictionaries) that they may typically have in the classroom and at home. It may be that it is how learners respond to incidental gains in vocabulary knowledge (e.g., discussing words with peers, teachers, parents; writing words in notes or compositions) that is the key to whether or not knowledge is retained.
5. Most studies have investigated learning from a single text, which leads to relatively small gains. However, studies that have looked at learning from multiple texts tend to show a larger percentage of learning gains than those that have looked at learning from a single text (Webb & Chang, 2015b).
6. There may often be the assumption that the gains made through exposure to one text, will double through the exposure to two texts, and triple through exposure to three texts, and so on. However, this is incorrect, because as input doubles and triples the number of words with ten or more encounters increases at a much higher rate. This is particularly true for high- and mid-frequency words which are common to many spoken and written texts.
Incidental Vocabulary Learning

The final reason why incidental vocabulary learning gains have value is that as noted earlier, much can be learned about a word through repeatedly encountering it in input. Through repeated encounters in input, detailed knowledge of the form, meaning, and use of a word can gradually be gained. For example, consider the word take. A search for collocates within a span of two words to the right in Mark Davies’ Corpus of Contemporary American English (Davies, 2008–) lists the following as the 50 most frequent items: care, look, place, off, advantage, away, break, long, action, responsibility, account, seriously, steps, control, risks, short, pictures, step, chance, stand, deep, longer, picture, easy, quick, chances, risk, effect, turns, charge, lead, granted, note, credit, pride, closer, notes, notice, listen, shape, seat, shower, measures, anymore, breath, consideration, nap, root, classes, precautions. Although there may be an argument that some of these collocations are less important than others, it is easy to see the value in knowing all of them. Moreover, this argument continues to apply to items much further down the list (i.e., 99. take [a] cab; 100. take [a] hint), as well as the many items that occur to the left of take (e.g., should, must, willing, decided, ready). It is hard to imagine that the many collocations of high frequency words can be learned in any other way than through repeated encounters in meaning-focused input. However, it is important to note that while research does show that collocations can be learned incidentally (Pellicer-Sánchez, 2017; Webb et al., 2013), as well as other aspects of vocabulary knowledge (e.g., Webb, 2007b), gaining such comprehensive knowledge of words incidentally is dependent on encountering massive amounts of input. Thus, although much can be learned about words through repeated encounters in input, if learners do not encounter much input then relatively little will be learned about words and few words will be learned incidentally. This means that perhaps the key to L2 lexical development may be to develop an approach to learning that ensures that learners encounter huge amounts of input.

Are the Incidental Vocabulary Learning Gains Made Through Reading, Listening, or Viewing a Single Text Representative of the Amount of Learning That Occurs Through Encountering Multiple Texts?

Most studies of incidental vocabulary learning have looked at the question of how many words are learned through reading, listening, or viewing a single text (e.g., Day, Omura, & Hiramatsu, 1991; Horst et al., 1998; Peters & Webb, 2018; Saragi et al., 1978; Waring & Takaki, 2003; Zahar, Cobb, & Spada, 2001). There is good reason to examine learning from a single text; more variables can be controlled to ensure that any learning gains can be attributed to encountering the words in that text. Although these studies clearly show that incidental vocabulary learning occurs, there is reason to question whether these studies are representative of the number of words that might be learned incidentally through encountering input. The reason for this is that incidental learning theory suggests that words are learned gradually with knowledge gained in small increments through repeated encounters in input (Nagy et al., 1985). Although there are repeated encounters with words in a single text, it is unlikely that what is gained through exposure to one text is the same as what is gained through exposure to multiple texts. The reason for this is that the factors that affect learning may change.

There are many factors that may change with exposure to different numbers of texts. For example, the learning environment, motivation at the time of exposure, the learning support that is present, and a learner’s interest in the text are all likely to affect whether words are learned incidentally from exposure to input. Spacing is one factor that will change to a large degree with exposure to different numbers of texts. Research tends to show that
greater spacing between encounters with words has a positive effect on learning gains (e.g., Nakata, 2015). There is little research on how spacing affects incidental vocabulary learning. However, spacing of target words in single and multiple texts is likely to be very different as the interval between encounters may change from seconds and minutes to days and weeks. Because the factors that affect learning are likely to be different, researchers should be cautious about generalizing learning gains that occur through exposure to a single text to learning from a greater number of texts.

In fact, research does suggest that the percentage learning gains are different when learning through single and multiple texts. For example, in studies investigating incidental vocabulary learning through reading a single text, gains have ranged from 6.5% to 8.6% (Pitts, White, & Krashen, 1989), 7.2% (Zahar, Cobb, & Spada, 2001), and 18% to 42% (Waring & Takaki, 2003). In contrast, the few studies that have investigated incidental vocabulary learning through reading multiple texts have found consistently large gains ranging from 28% to 63% (Webb & Chang, 2015a), 43% to 80% (Cho & Krashen, 1994), 44% (Webb & Chang, 2015b), 51% (Horst, 2005), and 65% (Pigada & Schmitt, 2006). Taken together, the difference in findings between studies investigating learning from single and multiple texts suggests that researchers should be careful not to generalize gains made through a single text to gains made through exposure to multiple texts. Moreover, the difference in findings suggests that perhaps research on incidental learning should begin to focus more on longitudinal studies of incidental vocabulary learning through exposure to multiple texts.

**Future Directions**

There are five areas where research on incidental vocabulary learning is needed. The first of these is research focused on determining the extent to which learning occurs through encountering different types of input. In the last 30 years, the development of new technologies has strongly impacted the ways in which learners may encounter language. More traditional forms of input such as books and magazines may not account for as much input with learners as other forms of input such as television, movies, websites, YouTube, video games, email, electronic texts, twitter, and VOIP applications such as FaceTime and Skype. This does not mean that a focus on learning with traditional types of input should be abandoned; there will be many learners who are engaged with learning from these sources. However, there is a need to investigate the degree to which other sources of input can contribute to lexical development. Research on the contributions of other types of input to incidental vocabulary learning would raise awareness of their value for learning. Education on the benefits of different sources of input is likely the key to their inclusion in learning programs, and providing more choices to students and training with these sources of input may help more learners to engage with meaning-focused input outside of the classroom.

Ecologically valid studies of incidental vocabulary learning is a second area of research that is needed. The vast majority of studies on learning words incidentally have looked at learning from a single text. There has been good reason to conduct such studies; they allow the careful control of variables and thus ensure that learning can be attributed to encountering the target input. However, a limitation of these studies is that they may not reflect vocabulary learning from meaning-focused input inside and outside of the classroom, where variables beyond the source of input may affect learning. It may well be that studies of incidental vocabulary learning lack ecological validity to a certain degree, because learners’ behavior when encountering unknown words in meaning-focused input varies. For example, sometimes learners may simply ignore unknown words. Perhaps at other times they may consult
Incidental Vocabulary Learning

with students, teachers, or parents about the meaning of a word, collocation, sentence, or passage. While on other occasions they may write vocabulary in a notebook, consult a dictionary, say it out loud, or try to use it in their speech or writing. There is likely great variation in how learners approach unknown vocabulary that is encountered in meaning-focused input, and research has yet to examine much of this variation.

Similarly, it is not clear to what extent many of the factors noted above such as consultation with peers, teachers, and dictionaries, and using words in speech and writing contribute to incidental vocabulary learning gains. Frequency of occurrence is the one factor that has received the bulk of attention with cross-sectional studies suggesting it has a moderate impact on learning (e.g., Horst et al., 1998; Vidal, 2003) and longitudinal studies indicating it has a smaller impact on learning (Rodgers, 2013; Webb & Chang, 2015b). This might suggest that perhaps within a single text frequency of occurrence is an important factor for short-term retention. However, perhaps it is other factors such as the use of words in speech or writing that are key to long-term retention. Further research examining how different factors expand on incidental learning gains may shed more light on how words are learned and retained.

A fourth area of research that is needed is investigation of the individual differences in vocabulary learning gains that occur through exposure to meaning-focused input. Because studies of incidental vocabulary learning summarize the vocabulary learning gains in descriptive statistics tables, it is not clear to what extent individuals vary in their learning. Research suggests that more proficient learners and those with greater vocabulary knowledge tend to learn the most words incidentally (Webb & Chang, 2015a; Zahar, Cobb, & Spada, 2001). Webb and Chang (2015a) suggest that differences in incidental vocabulary learning gains are likely to lead to Matthew effects where the weakest students continue to learn less and become further and further behind the strongest students. Further research investigating individual differences in vocabulary learning gains would help to determine the extent to which this happens. This in turn may lead to studies focused on helping improve the vocabulary learning outcomes of the students who need the most help with their learning.

Finally, perhaps the most important area for research on incidental vocabulary learning is on the development of approaches designed to vastly increase the amount of input that L2 learners receive. As mentioned earlier, incidental vocabulary learning is dependent on encountering words repeatedly. This is essential because lexical development involves learning the different spoken and written inflectional and derivational forms, meanings, collocations, associations, and constraints on use of words. If input is limited, few words will be learned and relatively little will be learned about them. Therefore, perhaps key to the lexical development of L2 learners is finding ways to ensure that a great deal of input is encountered.

Extensive reading has the potential to provide large amounts of input to learners (Day & Bamford, 1998). However, not everyone loves to read, and most programs involve reading one book a week, which is not enough input for much vocabulary learning. Webb (2015) proposed extensive viewing (of L2 television) together with extensive reading as a way to increase the amount of L2 input that learners engage with inside and outside of the classroom. However, the more types of input that language learning programs provide support for their learners to engage with, the greater the potential that students will find a source of input that they are motivated to learn with on their own. Thus, perhaps it should be extensive learning with different types of meaning-focused input that is the goal.

As noted by Webb (2015), there are challenges to learning with different types of meaning-focused input in the classroom. Perhaps the biggest of which is getting everyone (teachers, students, parents, program directors) to buy into the value of students quietly reading, viewing television and movies, watching YouTube videos, or reading and sending emails for a large
amounts of classroom time. The goal of extensive learning in the classroom is to get learners to engage with the L2 outside of the classroom. If that occurs, the potential gains are huge and may provide the solution to students reaching advanced and native-like vocabulary sizes. However, more research is first needed to reveal the value of engaging with different types of L2 input. Research should raise awareness of the benefits of learning with meaning-focused input, and teachers, learners, parents, and program directors are then more likely to be encouraged to spend time on incidental vocabulary (and language) learning inside and outside of the classroom.

Further Reading


This article provides insight into the challenges of measuring incidental word learning gains, and explains the importance of incidental vocabulary learning for L1 lexical development. It is the study that motivated much of the research on the topic of incidental vocabulary learning.


Nation’s *Learning Vocabulary in Another Language* has been the essential reference related to teaching and learning vocabulary for almost 20 years. The discussion of incidental vocabulary learning is comprehensive and insightful.


This book expands on many of the topics in this chapter. It includes discussion of incidental and intentional vocabulary learning, as well as approaches to helping learners to engage with meaning-focused input outside of the classroom.

Related Topics

The different aspects of vocabulary knowledge, factors affecting the learning of single-word items, factors affecting the learning of multiword items, intentional L2 vocabulary learning, sensitive measures of vocabulary knowledge and processing: expanding Nation’s framework

References


