2015

"Expanding Our Perspectives: From the Classroom to the Community": Selected Proceedings of the 2014 Michigan Teachers of English to Speakers of Other Languages Conference

Marian Woyciehowicz Gonsior
Madonna University

Kay Losey
Grand Valley State University

Follow this and additional works at: http://commons.emich.edu/mitesol

Recommended Citation
http://commons.emich.edu/mitesol/7
Expanding Our Perspectives: 
From the Classroom to the Community
Expanding Our Perspectives: From the Classroom to the Community

Selected Proceedings of the 2014 Michigan Teachers of English to Speakers of Other Languages Conference

October 17 – 18, 2014

Editors
Marian Woyciehowicz Gonsior
Kay Losey

MITESOL
2015
Expanding Our Perspectives: From the Classroom to the Community

Selected Proceedings of the
Michigan Teachers of Speakers of Other Languages Conference

Grand Valley State University

Eberhard Center, Pew Campus, Grand Rapids, MI October 17 - 18

Editors:

Marian Woyciehowicz Gonsior & Kay Losey

Design: Marian Woyciehowicz Gonsior

Cover photo: © Colleen Brice

Copyright © 2015 by MITESOL

Copyright for the individual papers remains vested in the contributors to whom applications for rights to reproduce should be made.

MITESOL – Michigan Teachers of English to Speakers of Other Languages
http://www.mitesol.org/

The Selected Proceedings of the 2014 MITESOL Conference

Contents

Preface

Marian Woyciehowicz Gonsior
Kay Losey

vii

Research Papers

Too Much Stress and Not Enough Food for Thought (or Learning)

Christen M. Pearson

1

Complexity Theory and SLA

Marian Woyciehowicz Gonsior
Andrew Domzalski
Bogusława Gątarek

29

Issues in TESOL

Assessing the Speaking of LESLLA, SLIFE, and Community College Students

Ildiko Porter-Szucs

42

Teaching Techniques and Materials Development

Synesthesia’s Magic: Tell Me about the Personality of Your Word

Patrick T. Randolph

60

Implementing Differentiated Instruction in the Classroom

Teresa F. Renkema

82
The Selected Proceedings of the 2014 MITESOL Conference

Preface

This volume of the MITESOL Proceedings includes just a few of the papers that were presented at the Michigan Teachers of English to Speakers of Other Languages’ (MITESOL) annual weekend conference on October 17-18, 2014, at Grand Valley State University’s Eberhard Center, Grand Rapids, MI. The 2014 conference theme, “Expanding Our Perspectives: From the Classroom to the Community,” invited a closer look at the increasing diversity of the MITESOL membership. We were reminded that our members not only include those who hold somewhat traditional jobs as classroom teachers but also those working in the community with immigrants and refugee populations. As the numbers of immigrants and refugees attending U.S. schools rise, so too will the need for English language professionals prepared to teach them the skills they need to be successful.

The two-day conference included some seventy presentations, panel discussions and workshops, spread over seven concurrent sessions, Friday evening and all day Saturday. Attendees also were able to attend two keynote presentations and two invited workshops. The keynote speakers introduced many members to the acronyms LESLLA (Low-Educated Second Language and Literacy Acquisition) and SLIFE (Students with Limited or Interrupted Formal Education), growing populations of English language learners in the state of Michigan and around the country. Friday afternoon featured a presentation by Kathleen Olson, best-known as an author of several texts for ESL students, who led a group in “Creative Rereading Activities to Provide Essential Repetition for All Learner Levels.” The invited workshop on Saturday was by Andrea DeCapua, a well-known author and educational consultant and one of the keynote speakers. DeCapua also led twenty fortunate ticket-holders in a
workshop, “Putting Theory into Practice: MALP Projects for Your Classroom,” in which she discussed and led attendees in activities designed to make teachers feel confident in the implementation of the Mutually Adaptive Learning Paradigm (MALP), an instructional model she co-authored, to develop classrooms that are culturally responsive. Clearly, Conference Chair Colleen Brice, along with her assistants Jane DeGroot, Membership Coordinator, and Ashley Garrigan and Sharon Pearce, Exhibits Co-Managers, worked tirelessly to present an entertaining mix of professional development opportunities, along with colorful publishers’ exhibits, tasty food, and an enjoyable reception, featuring live entertainment.

Friday night’s keynote by Andrea DeCapua was about “Bridging the Gap: Connecting SLIFE with U.S. Classrooms.” She spoke passionately about the need for teachers to work to accommodate the priorities of English language learners within the often-conflicting demands of Western-style education. The Saturday keynote was given by Patsy Vinogradov, Director of ATLAS (the Adult Basic Education Teaching and Learning Achievement System) at Hamline University, St. Paul, MN, and regular contributor to the annual LESLLA symposium. Her talk “Literacy, Language, and the Lifespan: Tapping our Teacher Know-How” continued our discussion of LESLLA issues.

Readers of this volume, Expanding Our Perspectives from the Classroom to the Community, will find five articles based on presentations enjoyed by attendees at MITESOL’s annual conference. As in the past, the articles have been divided into different categories to guide readers. The selections include research papers, issue papers, and papers exploring the topic of Teaching Techniques and Materials Development.

Christen M. Pearson’s “Too Much Stress and Not Enough Food for Thought (or Learning)” opens the volume. In this paper, Pearson, Professor of English linguistics and TESOL at Grand Valley State University, continues her investigation, begun in previous volumes of
the *Proceedings*, of how undernourishment affects learning ability. In the paper included in this volume, Pearson discusses the results of correlation studies run on data from a questionnaire shared with parents of more than 200 internationally adopted children—primarily from Russian-speaking backgrounds—at three years of age and older. The implications for teachers of such children as they attend U.S. schools are discussed, especially as they relate to language-learning issues.

“Complexity Theory and SLA” follows as the second paper in this volume and another in the research paper section. In this article, presenters Marian Woyciehowicz Gonsior, Andrew Domzalski, and Bogusława Gątarek, colleagues from Madonna University’s MATESOL program, explain how complexity theory, which originated in the natural sciences, can inform our teaching of English language learners. While some may object to such a cross-disciplinary borrowing, the theory has been shown to provide a useful alternative lens through which to view second language acquisition (SLA). For those readers unfamiliar with complexity theory, the authors cover the key points of the theory and show what it can add to traditional theories of SLA. Influenced by research on the same topic by Diane Larsen-Freeman, they suggest ways that English language teachers can reflect tenets of the theory in their own practice and the importance of teacher trainers introducing the theory to teachers they mentor.

The next section, Issues in TESOL, contains the article “Assessing the Speaking of LESLLA, SLIFE, and Community College Students” by Ildiko Porter-Szucs, assistant professor of ESL/TESOL at Eastern Michigan University. In this paper, adapted from the presentation Porter-Szucs gave with Crystal Collins and Kristin Graw at MITESOL 2014, Porter-Szucs writes about the always difficult subject of assessment, in this instance, the assessment of speaking. The paper focuses on the hazards of finding an assessment instrument that truly assesses only speaking skill, without
allowing another skill area (for example, familiarity with using computers or reading ability) to skew the results. While MITESOL cannot endorse a particular assessment tool, Porter-Szucs shares her own insights into what teachers should look for in an assessment instrument, particularly when using one as a placement test.

We look at additional tips for teachers in the final section, which contains two articles. The first is “Synesthesia’s Magic: Tell Me about the Personality of Your Word” by Patrick T. Randolph, Senior Lecturer at the University of Nebraska-Lincoln. Not sure what synesthesia is or how it might be used to improve your students’ ability to learn new vocabulary? Don’t worry. Randolph defines the term and provides a brief history of its usage to begin his paper. He then explains his technique of having students develop character sketches of the new vocabulary words they meet in his courses. Readers will appreciate his in-depth description of the process, including a list of day-to-day activities and a grading rubric. Included comments from former students speak to the success Randolph has had with this unique spin on vocabulary learning.

Rounding out the collection of articles is an additional teaching tip presented by Teresa F. Renkema, Professor of Intercultural Communication at Kuyper College, who looks at the topic of differentiated instruction. In “Implementing Differentiated Instruction in the Classroom,” Renkema explains how to achieve the seemingly difficult goal of providing teaching tailored to each student in the classroom. After giving useful background information and clearing up some misconceptions about differentiated instruction, procedures for implementing differentiation are explored. Renkema completes her analysis by a look at the literature on differentiation that appears to corroborate its effectiveness in supporting learners in the classroom. Renkema’s personal recommendations, based on her own experience in the classroom, provide a firm basis for her suggestions.

A publication such as this one requires countless hours of interaction between and among editors and authors. We, the editors,
have had the wonderful experience of working with these authors--some since the end of last year--on revision and development of their submissions. In turn, they have been most gracious in their response to our comments. The experience of being able to work with MITESOL colleagues from across and even outside Michigan on this publication has been rewarding. Reaching the final publication stage feels like coming to the end of an arduous yet invigorating journey.

As happens every fall, plans are now being finalized for the next MITESOL conference. Soon, the Kellogg Center on the campus of Michigan State University will be bubbling over with activity as MITESOL members from all corners of the state, and beyond, come together for our 2015 gathering. See you in East Lansing!

Marian Woyciehowicz Gonsior  
*Lead editor*  
Kay Losey  
*Co-editor*  
*September 2015*
Too Much Stress and Not Enough Food for Thought (or Learning)

Christen M. Pearson
Grand Valley State University

Abstract

Brain-based research investigating stress and micronutrient deficiencies is showing a negative impact on memory and executive functioning, both of which involve critical thinking skills needed in the academic setting. The unique population of internationally adopted children is at especially great risk of language and learning problems due to high stress and micronutrient poor environments both before and after birth. This paper explores data from 207 children adopted at the age of three years or older from a range of countries, though primarily that of Russia. A parent questionnaire was used to assess an array of variables seen as markers for stress and micronutrient deficits. Correlations, as preliminary investigation for further analyses, were run comparing these factors to language variables, including first language proficiency, comprehension and production of functional English (the second language – L2), and comprehension and production of academic English (L2). Implications for teachers – and other ELLs -- are discussed.

Introduction

There is increasing evidence, through brain-based studies, of the crucial role that both stress and micronutrient deficits exert on neurochemicals and neurotransmitters which are critical for memory and learning (Kishiyama, Boyce, Jimenez, Perry, & Knight, 2008;
These findings are especially important for teachers of students of low socioeconomic status (SES), recent immigrant status, refugee status, and migrant status due to: 1) the stress of poor living conditions, lack of access – both financial and logistical – to good quality medical care, and the tenuousness of day-to-day living, especially for refugees; and 2) the lack of micronutrient dense diets, again due to lack of access, both financial and logistical (Pearson, 2014).

Students from immigrant, refugee, migrant, and low SES backgrounds often struggle in an academic setting, even with additional support services (Hamayan, Marler, Sanchez-Lopez, & Damico, 2007). Some in the educational setting go so far as to erroneously blame the student for having an assortment of problems (Hamayan et al., 2007). Yet research is showing that brain mechanisms are at play beyond the level of student control. For example, as glucocorticoid levels (neurochemicals that increase under stress conditions) increase, memory (the storing and retrieving of facts) decreases (Sapolsky, 2004). In a similar fashion, as stress in general persists, executive functioning decreases. Executive functioning occurs in the prefrontal cortex and involves what one does with those facts stored in memory – the strategizing, organizing, judging, decision-making, and impulse control so necessary in an academic setting (Sapolsky, 2004). In addition to stress, micronutrient deficiencies can also contribute to poor executive function and critical thinking skills (Bryan, Osendarp, Hughes, Calvaresi, Baghurst, & van Klinken, 2004). This is a significant concern as only 14% of the U.S. child and adolescent population consumes the recommended level of daily fruit and only 20% that of vegetables (Story & Neumark-Sztainer, 2005), the very foods that are micronutrient dense. (See Pearson, 2014, for a brief tutorial on brain function and language with an emphasis on micronutrient load.)

A unique population of second language learner that has a rather high incidence in western Michigan and other parts of the U.S.
is that of internationally adopted (IA) children. This group also experiences a range of significant stressors including poor maternal nutrition as fetuses in utero, orphanages that may have limited food and medical resources, limited educational opportunities, and lack of bonding with adults, all of which can negatively impact language acquisition and learning (Pearson, 2005, 2010). It is this unique English-as-a-second-language (ESL) population that is the focus of this research paper.

**Review of Literature**

**Internationally adopted children**

Internationally adopted (IA) children are a unique population of second language learners that arrive with a complex background of interacting variables that impact language and learning. No matter age of arrival, they frequently exhibit a broad range of delays, including language (Johnson, 1999). Though some researchers looking at infants (6-24 months at arrival) from China have not found signs of functional language delays in the early years (Roberts, Pollock, Krakow, Price, Fulmer, & Wang, 2005), there is some evidence for challenges in learning both functional and academic English for a subgroup of children who were adopted from a range of countries at greater than three years of age (Pearson, 2005, 2010).

Many children arriving from Russia and Eastern Europe, as great as 56-59%, have been found to be delayed in their first language (L1) (Albers, Johnson, Hostetter, Iverson, & Miller, 1997; McGuinness & McGuinness, 1999). In those arriving from Romania, 59% were also found to be delayed in their L1, with 33% still showing delays in language at follow-up two and a half years later (Johnson et al., 1992; Marcovitch, Cesaroni, Roberts, & Swanson, 1995). In fact, 94% of IA children from Romania exhibit some type of developmental language and/or speech disorder at arrival (Rosenberg, Pajer, & Rancurello, 1992).

Since language delays can be early warning signs of other processing problems, the large percentages of children with
continuing delays, noted in the paragraph above, are of concern. For example, while five percent of U.S. children are diagnosed with learning disabilities (LDs), adopted children are four times as likely to have LDs (Brodzinsky, Schechter, & Henig, 1993; Brodzinsky & Steiger, 1991). Further, in a study comparing non-adopted with adopted children across a range of variables, it was found that 4.4% of non-adopted children needed to attend a special school in contrast to 13.2% of adopted children; 20.4% of non-adopted children repeated a grade in contrast to 24.4% of adopted children; and 22.5% of non-adopted children experienced further school problems in contrast to 38.2% of adopted children (Verhulst, Althaus, & Versluis-den Bieman, 1990). Children adopted internationally can experience even higher LD rates because of pre- and/or postnatal stress, malnutrition, and micronutrient deficiencies (Miller, 2005).

**Stress**

According to Miller (2005), “most international adoptees are exposed to stress pre- and postnatally” (p. 131). Stress in utero causes memory and learning problems, as well as behavior problems (areas controlled by the frontal cortex) along with metabolic syndrome and other problems later in life (Sapolsky, 2010). This very early stress, with its adverse effects on learning and memory, can have lifelong consequences, including problems with concentration, distractibility, executive function, emotional regulation, and impulse control (Miller, 2005).

Stress causes excess corticotropin-releasing factor (CRF) or corticotrophin (ACTH) that results in overproduction of cortisol, a stress hormone (Miller, 2005). Stress also alters glucocorticoid receptors which results in excessive binding of cortisol (Miller, 2005); if prolonged, these elevated glucocorticoid levels adversely affect the brain (Gunnar, 1998) and its development, specifically areas which will be needed for learning and memory (Sapolsky, 2010). For example, a pregnant woman who is under stress and experiencing anxiety—a typical situation for those who are refugees, recent
immigrants, migrants, of low SES, or considering adoption for their unborn child—releases glucocorticoids in utero which then reach the fetus. Continual exposure to these stress hormones not only leads to a decreased capacity for future learning, but also to anxious babies and children, and these effects are large (Sapolsky, 2004).

Low birth weight (LBW) has been used as a substitute marker for both stress (Sapolsky, 2004) and malnourishment (Miller, 2005) in utero. The degree of stress on the infant is even greater when prematurity accompanies the LBW (Sapolsky, 2004). In the population of IA children, LBW is common, with more than 25% exhibiting this sign of early stress (Albers, Johnson, Hostetter, Iverson, & Miller, 1997; Proos, Hofvander, Wennqvist & Tuvemo, 1992a, 1992b). The potential result is negative outcomes regarding cognitive ability, along with problems with attention, persisting into the adolescent years (Miller, 2005; O’Keefe, O’Callaghan, Williams, Najman, & Bor, 2003; Pomerance, 2003).

Postnatal stress, even into the school years, can also exert an effect. As noted in the introduction, increased glucocorticoid levels cause decreased memory (storing and retrieving facts), while increased stress in general decreases executive function (what can be done with those facts in memory). In the educational setting, what is needed are moderately elevated levels as these tend to strengthen activations in the neural networks which are necessary for memory and learning (Sapolsky, 2004). If there is no or low stimulation/stress experienced, little to no learning takes place. If too much stimulation/stress is experienced, again, little to no learning takes place. The result is an inverse U-shaped learning curve. For many students in the schools, the level of stimulation and/or stress is too high, due to factors tied in to refugee status, migrant status, low SES, and/or the pressure of learning another language concurrently with content material. For those from orphanages, the level of stress can often be exacerbated as there is no L1 to fall back on in the home, nor
are there familiar people, food, or customs even in their home environment.

**Malnutrition and micronutrient deficiency**

In additional to a high level of pre- and postnatal stress, many newly arrived IA children have mild to moderate malnutrition with concurrent micronutrient deficiencies (Miller, 2005); these deficiencies have long-term effects on growth, cognition, and behavior (Miller, 2005) which, as Sapolsky (2004) has also noted regarding stress, are broad. Additionally, these reductions in cognitive ability can be permanent (Miller, 2005), a fact known for many years from solid, long-term longitudinal studies (Galler & Ramsey, 1989; Galler, Ramsey, Solimano, & Lowell, 1983; Galler, Ramsey, Solimano, Lowell, & Mason 1983; Grantham-McGregor, 1993; Stoch & Smythe, 1976; Stoch, Smythe, Moodie, & Bradshaw, 1982). Areas especially susceptible to early malnutrition include memory and attention (Miller, 2005).

Both malnutrition and micronutrient deficiencies occurring from the first trimester prenatally through the first three years of life are of special concern as this is the time span most critical for brain growth. According to Miller (2005), “Prenatal malnutrition is common [with] more than 25% of international adoptees [having been] low birth weight” (155), a point supported by several research groups (Albers, Johnson, Hostetter, Iverson, & Miller, 1997; Proos, Hofvander, Wennqvist, & Tuvemo, 1992a, 1992b). Postnatally, malnutrition is also common due to poverty (a situation also seen in refugees and migrant workers) as well as institutional settings, including both orphanages and foster care (Miller, 2005). Even one (unrecorded) episode of malnutrition occurring between the first trimester through the third year of life can have deleterious effects.

While malnutrition is common in IA children, chronic undernutrition is even more prevalent and also has long-lasting effects (Miller, 2005). Children who present as adequately nourished (normal weight with adequate protein and polyunsaturated fatty acids intakes)
can experience problems in the areas of speech and language, gross motor function, and perceptual and visual motor abilities if they are deficient in any specific micronutrient. These micronutrient deficiencies, even if resolved, may exert persistent long-term negative effects (e.g., LDs and impaired school performance) even when other areas of growth have reached age appropriate levels (Miller, 2005).

Examples of some micronutrient deficiencies and their effects include iron deficiency that can cause speech and language delay, including vocabulary development; depressed cognition; and depressed motivation and attention span (Miller, 2005). As is becoming a common theme, problems may persist, to the point of being irreversible, even after supplementation (Miller, 2005). Zinc is another micronutrient that, with even a marginal deficiency, may cause developmental delay, cognitive impairment, attention deficit hyperactivity disorder (ADHD), and LDs, due to its involvement in the metabolism of neurotransmitters (Miller, 2005). Iodine deficiency can cause cognitive impairment as well, often long-term or permanent, as well as negatively impact language development, memory, numerical reasoning, and motivation (Miller, 2005). These are just a few examples of micronutrient deficiencies and their negative effects. A key point is that each rarely occurs in isolation; rather, they are often part of a constellation of general malnutrition, undernourishment, and/or specific micronutrient deficiencies, with adverse effects possibly remaining long-term or permanently after treatment (Miller, 2005).

**Potential impact on language and learning in the academic setting**

As has been seen so far, stress and micronutrient deficiencies have negative impacts on cognition, learning, and language. According to Miller (2005), “Language ability is often cited as the best predictor of intelligence… [yet the significance of] delays in preverbal skills may not be appreciated, although identification and remediation of this deficiency is exceedingly important” (p. 203). Further, those “with significant language delays in the first 2 years of
life rarely develop normal language” (Miller, 2005, p. 204), a concern not only for parents but also for teachers who will have these students in their classrooms. Several misconceptions about IA children and language exist (Miller, 2005). The first is that IA children have delays in language simply because they need to learn the L2, a rampant misconception in the K-12 school setting where children are denied needed assessment and services until after they have learned English, itself problematic if the underlying cause is a language learning (processing) disorder. (For discussions of assessment issues, see Hamayan et al., 2007, and Samway & McKeon, 2007). The second myth is that “internationally adopted children will catch-up with time, love, and the care of parents alone” (Miller, 2005, p. 206). Even birth children – with a lifetime of love and care from their parents - do not catch up without needed services. A disorder is not the same as a delay.

It is important to note that “recovery from language delays usually lags behind other areas” and may never completely resolve; even if it does, “many children later have learning disabilities and school related problems” (Miller, 2005, p. 209), especially reading problems (Bishop & Adams, 1990; Scarborough, 1990; Scarborough & Dobrich, 1990). This may in part be due to decontextualized language being weaker and only becoming evident by the demands of the school setting. Of concern with the population of this current study, IA children age three years or older at time of arrival will usually acquire functional English, yet this does not guarantee that proficiency with academic English will develop (McGuinness & McGuinness, 1999). If even functional English does not develop within 6-8 months after arrival to the adoptive home, children will need assessment and intensive supportive services (Gindis, 1998, n.d.; Pearson, 1997). Miller (2005), in speaking of IA children, sums up the cascading system of problems that are encountered: LDs, behavior problems, language delays, and other problems that impact school performance are caused and/or exacerbated by pre- and/or
postnatal stress, malnutrition, micronutrient deficiencies, and other factors.

**Questions of this study**

The general question that this current study explores is: Do markers of stress and micronutrient deficiency impact the ease or difficulty in learning English in this particular population of learners? More specifically, and not previously addressed by others, what is the impact of stress and micronutrient deficiencies on the following English-as-a-Second-Language dimensions: 1) comprehension of functional English, 2) production of functional English, 3) comprehension of academic English, and 4) production of academic English?

**Method**

This study on micronutrient status and stress and their impact on ESL development in IA children is an extension of previous work (for further details, see Pearson 2005, 2010). The focus of this paper is on additional variables and clustering including low birth weight, prematurity, alcohol exposure during fetal life, and general medical condition, undernourishment, underweight, and anemic status after birth.

**Questionnaire**

Parent report was the method of data collection selected for several reasons: 1) standardized tests for this unique population do not yet exist, nor have other tests been normed on this group (see Johnson et al., 1992, for special issues); 2) studies have shown that this method of data collection is a valid measure of children’s language ability, including both lexical and grammatical milestones (Marchman & Martinez-Sussman, 2002; Rescorla & Alley, 2001); and 3) the children and their adoptive parents were from across the entire United States, making it challenging to test each child individually. The extensive questionnaire of 20+ pages sought to
gather data on medical, psychosocial, and language factors, along with support services received post-arrival to the adoptive home. Some of the material was adapted from work by Glennen and Masters (2000) and Pollock (2001). Parents completed the questionnaire after their children had been with them for one year; if it had been longer than one year since their children arrived, data was based on their children’s development at the one year post-arrival point.

**Participants**

Participants in this current study numbered 207 internationally adopted children between the ages of three to sixteen years of age.\(^1\) Two thirds of the children were female and one third were male. This is representative of the current and past gender demographics of IA children in general (Adoption Institute International, 2004). The majority of the children (75.8%) were from Russian-speaking backgrounds (Russia, including orphanages in Ukraine, Kazakhstan, and Latvia where Russian was the primary language used with the children) with smaller numbers of children from China (speaking Mandarin) and Romania (speaking Romani) at 6.3% each. The remaining children (11.6%) were from the following countries: Guatemala, Bulgaria, Poland, India, Republic of Georgia, Cambodia, Vietnam, Portugal, and Sierra Leone. Additional demographic information includes the following: average age of arrival to an orphanage setting was 2 years ten months (\(2;10^2\)), with a range of 0;1 to 11;4; average amount of time spent in an orphanage was 3;7, with a range of 0;1 to 15;10; and average age of arrival to the adoptive home was 6;5, with a range of 2;5 to 15;10.

---

\(^1\) Three children were adopted prior to age three years: one at two years five months and two at two weeks prior to their third birthday.  
\(^2\) Convention used for ages is number of years followed by number of months. For example, a child of three years and two months would be notated as 3;2.
Variables under study

Several general factors were explored in order to better understand the demographics of this particular group of IA children. These included sex, age of arrival to an orphanage setting, amount of time spent in an orphanage, and age of arrival to the adoptive home.

Markers for stress and/or micronutrient deficiency in utero included LBW, prematurity, and alcohol use by birth mother including to such an extent that the child was later diagnosed with fetal alcohol syndrome or fetal alcohol effects. As noted previously, LBW has been used as a marker for both stress and micronutrient deficits in the general population (Sapolsky, 2004) as well as the IA population (Albers, Johnson, Hostetter, Iverson, & Miller, 1997; Proos, Hofvander, Wennqvist & Tuvemo, 1992a, 1992b). Alcohol use/abuse by the birth mother was considered important to consider because over three fourths of the children in the study were from Russian or countries of the former Soviet Union, and Russia has the highest alcohol consumption in the world, a documented toxin, with a cascade of resulting problems (Miller, 2005).

Markers for continued stress and/or micronutrient deficiency post birth included general medical condition, underweight status, evidence of undernourishment, and anemia. These were all documented at time of arrival to the adoptive home, offering evidence of continued stress and deficient diet for many years.

Language variables chosen included first language proficiency at arrival to the adoptive home as it has been shown to provide a foundation for the learning of other languages (Cummins, 1992) and several second language variables. Comprehension and production of functional English (also referred to as basic interpersonal communication skills – BICS) at one year post arrival were explored as these are the skills of most concern early on by adoptive parents who rarely speak their child’s L1; additionally, functional language skills provide the foundation for expansion into academic language. Comprehension and production of academic English (also referred to
as cognitive academic language proficiency – CALP) at one year post arrival were also investigated as they are the skills needed in order to be successful in the academic setting. Since these children for the most part were already of school age upon arrival, a cushion of time for language learning prior to entry into school was not available, necessitating quickly learning an advanced level of English as well as content material.

**Analyses**

Bivariate correlations were used in this preliminary investigation of this unique population of children of which little is known. Though correlations simply indicate a relationship and cannot claim causation, such information is useful as a basis upon which future more robust analyses can be run. The following variables were used as measures of degrees of stress and micronutrient density: general medical condition, low birth weight, prematurity, use/abuse of alcohol by mother, undernourishment status, underweight status, and anemia.

Bivariate correlations were run on the above variables in relation to measures of language learning, both first language proficiency at time of arrival to the adoptive home and degree of ease/difficulty in learning a second language by one-year post arrival to the adoptive home. ESL measures were subdivided into the following four areas: 1) comprehension of functional English, 2) production of functional English, 3) comprehension of academic English, and 4) production of academic English.

**Results**

Significant correlations were found both between groups of variables – stress/micronutrient deficiency variables and language variables – as well as within each of these sets of variables. There were no significant correlations between sexes in any of the variables. Results are presented in the following order: 1) general issues of age of arrival to orphanage and length of time in orphanage in relation to
a) stress/micronutrient deficits and b) language; 2) stress/micronutrient density in relation to a) other within group variables and b) language; and 3) language variables in relation to a) other within group variables and b) stress/micronutrient density variables.

**General variables**

Looking first to the more general variables of age of arrival to an orphanage and amount of time spent in an orphanage, the following were found: the age of arrival to an orphanage setting was significantly negatively correlated with low birth weight (−.281* ), prematurity (−.236*), and general medical condition (−.152*), undernourishment (−.148*), and underweight (−.163*) at arrival to the adoptive home. Age of arrival to an orphanage was also significantly negatively correlated to first language proficiency (−.424**). The amount of time spent in an orphanage setting was significantly correlated with prematurity (.196*), alcohol use by birth mother (.309*), and undernourishment (.159*) and underweight (.146*) at arrival home. Additionally, amount of time spent in an orphanage setting was also significantly correlated with comprehension of functional English (.166*) and both reception (.177*) and production (.173*) of academic English.

**Stress and micronutrient deficiency variables**

Turning to variables indicative of high risk for stress and micronutrient deficiency, low birth weight was significantly correlated with prematurity (.589**) and general medical condition (.538**) and undernourishment (.229*) at arrival home, along with first language proficiency (.245*) and development of comprehension (.211*) and production (.198*) of functional English. Prematurity was significantly correlated with low birth weight (.589**) and

---

3 The following conventions are used: * to indicate p value ≤ .05 and ** to indicate p ≤ .01 levels.
general medical condition (.443**) and underweight (.255*) at arrival home; no significant correlations were found with language variables. Maternal use/abuse of alcohol during pregnancy to the point of fetal alcohol syndrome/effects was significantly correlated with general medical condition at time of arrival home (.302**), as well as first language proficiency (.263**). General medical condition, undernourishment, underweight, and anemia, all at time of arrival to the adoptive home, were similarly related with the exception of language. General medical condition at arrival home was significantly correlated with low birth weight (.538**), prematurity (.443**), alcohol use/abuse resulting in fetal alcohol syndrome/effects (.302**), and undernourishment (.348**) and underweight (.278**) at arrival home. It was further significantly correlated with first language proficiency (.209**) and all four dimensions of second language development – comprehension (.231**) and production (.167*) of functional English and comprehension (.169*) and production (.172*) of academic English. Undernourishment at arrival home was significantly correlated with low birth weight (.229*) and general medical condition (.348**), underweight (.617**), and anemia (.235**) at arrival home, along with first language proficiency (.149*) and all four dimensions of English language development (.196**, .156*, .177*, .202**). Underweight at arrival home was significantly correlated with prematurity (.255*) and general medical condition (.278**), undernourishment (.617**), and anemia (.176*) at arrival home, as well as with first language development (.223**) and all four dimensions of English language development (.250**, .199**, .157*, .166*). Finally, anemia at arrival home was significantly correlated with undernourishment (.235**) and underweight (.176*) at arrival home, as well as with first language proficiency (.189*). It was not, however, correlated with any of the ESL dimensions.
**Language variables**

Finally, looking at language variables, first language proficiency was correlated with low birth weight (.245*), alcohol use/abuse by birth mother sufficient to produce fetal alcohol syndrome/effects (.263**), and general medical condition (.209**), undernourishment (.149*), underweight (.223**), and anemia (.189*) at arrival home. Further, it was correlated with all four dimension of ESL development (.440**, .522**, .413**, .423**). Comprehension and production of functional English were both correlated with low birth weight (.211* and .198*, respectively) along with general medical condition (.231**, .167*), undernourishment (.196**, .156*), and underweight (.250**, .199**) at arrival home; while comprehension and production of academic English were correlated with general medical condition (.169* and .172*, respectively), undernourishment (.177*, .202**) and underweight (.157*, .166*) at arrival home. All four ESL dimensions were significantly correlated with first language proficiency (.440**, .522**, .413**, .423**) and each other (ranging from .678** to .902**).

The above correlations provide a preliminary investigation into the factors indicative of stress and micronutrient deficiency and their relationship to language development, both first and second. Clusters of variables can be seen, both expected and not, which provide a guide to future more robust analyses.

**Discussion**

As can be seen in the results section, numerous significant correlations were found, leading to many areas for discussion. Regarding general demographics, there were no differences found between the sexes regarding language. Literature on monolingual non-adopted children typically shows boys to lag behind in language development. The lack of findings in this study, with either the L1 or ESL dimensions might have been due to so many children having difficulty learning language or so many other factors that the sex variable was diluted.
**General variables**

Regarding age at arrival to an orphanage, it can be seen that the younger a child was at arrival, the more likely they were to be significantly language delayed in their L1 at arrival to their adoptive home. This may be a result of “good” children at an orphanage being those that are quiet, hence a discouragement of language development. Children arriving to an orphanage at the youngest ages also tended to be those who were LBW and/or premature at birth. This may be due to a more fragile infant being more difficult to care for and thus more likely to have been brought to an orphanage when other seemingly insurmountable problems arose. Finally the younger a child was at arrival to an orphanage, the worse their general medical condition was at arrival to the adoptive home and the more undernourished and underweight they were, even when years had been spent in an orphanage. This may be due to an interaction with their earlier LBW and/or premature status; however, it could also be that those children who stayed in a regular home, however lacking, fared better than those in an institutional setting.

Looking at amount of time spent in an orphanage, the longer children had spent in such a setting, the more likely that they had been premature or that their mother had used alcohol during pregnancy. This may be due to an interaction with age of arrival – increased problems as an infant resulted in earlier arrivals to an orphanage setting, and decreased likelihood of being adopted. The greater the time in an orphanage, the greater chance children were to be undernourished and underweight at arrival home, even though one would assume an institutional setting to have better and more regular access to food along with greater access to medical care. Finally, the longer children spent in an orphanage, the more problems they had later in learning English. This may be due to children being older at arrival to an adoptive home, and thus there being higher expectations and more decontextualized language needed in a shorter frame of time than for a child of a younger age. Miller (2005) states that the
duration of institutionalization is correlated with the prevalence of delay in infants, but after the age of three years, the situation is more complicated and may not hold. These findings, however, indicate that even for children three years and older at arrival home, there are significant correlations between prevalence of delay in language skills and amount of time in an orphanage setting. This finding is interesting in that Sapolsky (2004) has noted that for children in Romanian orphanages for at least a year, the longer the time spent in such a setting, the higher the resting glucocorticoid level. As seen in the review of literature, high glucocorticoid levels have negative impacts on memory and learning, thus being a possible contributing factor for what was found with this group of IA children.

**Stress and micronutrient deficiency variables**

Turning to in utero stressors and markers for micronutrient deficits, those born with LBW (again, a marker for stress and nutrient deficits) continued to have poorer general medical conditions and undernourishment years later. Additionally, their L1 was not age appropriate and their functional ESL skills, both comprehension and production, were more delayed. Children who were premature also continued to have poorer general medical health along with underweight status years later, but their language problems were not as great as those who had been LBW. This may be an artifact of the degree of low birth weight, that is, those of extreme small size for gestational age may be more negatively impacted (Wright, Thislethwaite, Elton, Wilkinson, & Forfar, 1983); alternatively, the degree of prematurity in this particular sample of children may have been relatively small. Finally, considerable alcohol use resulting in fetal alcohol syndrome resulted in continued poorer medical condition along with first language delays.

Moving to post birth markers for stress and nutrient deficits, general medical condition, undernourishment, underweight status, and anemia were all significantly correlated with each, a finding that, though expected, does present a picture of complex deleterious
processes that are on-going and lacking in resolution. All of the post birth stress/deficit markers were significantly correlated with a first language proficiency that was increasingly below age appropriate levels, a concern. All of the markers, except for anemia, were also significantly correlated with degree of problems in the ability to learn English across all four dimensions: both comprehension and production, in both functional and academic domains. Again, this supports the existing literature regarding the broad and long-lasting effects of stress and micronutrient deficits.

**Language variables**

In order to obtain a clearer image of the factors related to language, it would be better to look at these separately, rather than within the other variables. The first two dimensions of ESL comprising functional skills are correlated with the same stress/deficit variables: LBW and general medical condition, undernourishment, and underweight status years later. As expected, functional ESL is correlated with academic ESL. Looking at these academic language areas, it can be seen that once again, general medical condition, undernourishment, and underweight are significantly correlated, but not LBW. In reverse, learning academic English is correlated with learning functional English. The question arises, though, of why LBW is not a significant factor in academic English whereas it was in the learning of functional English. Since LBW impacts the acquisition of functional skills, and functional skills impact the acquisition of academic skills, there may be a masking effect occurring. Finally, all dimensions of ESL acquisition were significantly correlated with L1 proficiency, thus supporting the view that a first language provides support for the learning of a second (Cummins, 1992; Thonis, 1992). What, though, impacts the first language? This was the question posed – and left up in the air – by Pearson and Spoelhof (2006) with a smaller cohort of this same population pool. The above results now offer some explanations for factors that might explain poor L1 proficiency: early stressors such as LBW and later stressors such as
general medical condition, undernourishment, and underweight. With changes in the functioning of neurotransmitters in the brain that impact memory and learning, effects can be seen for language learning as well. In fact, with problems in language learning, all other learning will be compromised. Thus, language learning may be one of the key and first contributors that then causes a cascade of other learning problems to become evident.

Questions

Two questions were raised in this study. First, do markers of stress and micronutrient deficiency impact the ease or difficulty in learning English in this particular population of learners? Results indicate that yes, both early (in utero) and later stressors continue to exert a significant negative effect on the ability to learn ESL. The second question, more specific and not previously addressed by others, asks: what is the impact of stress and micronutrient deficiencies on the following ESL dimensions: 1) comprehension of functional English, 2) production of functional English, 3) comprehension of academic English, and 4) production of academic English? The answer is that these stressors negatively impact all four dimensions of second language learning, both functional and academic. No dimension of language appears to be immune to these stressors and deficits.

What, then, are the implications of these findings? Teachers cannot erase the stress that their students experienced in utero, nor many of the stressors their students and the students’ families continue to experience. However, teachers can be proactive in securing appropriate assessment and intervention services in a timely manner. Because of the impact of first language proficiency on second language learning, all English language learners (ELLs) should ideally have their L1 proficiency assessed at time of school entrance. This is especially important for IA students who 1) are at high risk of language and learning problems, and 2) tend to “lose” their L1 quickly while at the same time the L2 may emerge slowly.
This problem of first language attrition in IA children has been discussed previously regarding whether the L1 is actually gone or whether the problem lies in accessing it (Pearson, 2012a, 2012b); it has also been discussed in a case study format (Pearson, 1997). This loss, though discussed in relation to IA children, holds for all second language learners: it is very difficult to determine delay vs. disorder, especially if the L1 has undergone stagnation or attrition with the introduction of the L2. Without an L1 baseline prior to the introduction of the L2, it may not be possible to determine whether the cause of the difficulty is a language processing problem or something else.

In addition to advocating for early assessment, teachers can also push for early intervention and support services due to the complexity of the situation with IA students (Pearson, 2005, 2010). Miller (2005) has noted that “‘disorders of relating and communicating’ is [often] the most frustrating for parents, and the most difficult to treat” (207). For this reason, emphasis should initially be placed on the pragmatics of language, rather than a heavy focus on its structure (Pearson, 2011/2012). Again, this holds for all ELLs - parents need to be able to communicate with their children, and this includes in the L1 or language in which the parent is most proficient. But teachers and speech-language-pathologists must not be so focused on ESL vocabulary, morphology, and syntax that another element of communicating – pragmatics, the use of language – is overlooked. For the psychological health of all ELLs, the ability to communicate thoughts and feelings is paramount.

**Conclusion**

Recent brain imaging techniques showing the effects of stress and micronutrient deficits on memory and learning are bringing a new dimension to how teachers assess and work with learners. This study, using a unique population of ESL learner, that of IA children, offers support for studies done with the general human population. In fact, due to the degree of stress and deficits that IA children experience,
both pre- and post-natal, the impact is seen more clearly. Data from
the IA children in this study show the complexity of variables that
impact both functional and academic ESL, as well as their long-
standing nature. Further, problems with learning ESL are at least in
part impacted by problems in learning the L1. Teachers should be
aware of the plethora of stressors that can impact all their students,
especially their ELLs, and what this means for their long-term
learning. It is further hoped that teachers of IA students, knowing the
background of this unique population, will seek appropriate support
services – earlier than later – for any students that are struggling.

Acknowledgements

A Faculty Research & Development Grant from Grand Valley
State University is gratefully acknowledged, along with the time
given by adoptive families and their children participating in this
study.

Author Note

Christen M. Pearson is Professor of English Linguistics and
TESOL at Grand Valley State University. Correspondence concerning
this article should be addressed to Christen Pearson at this email
address: pearsonc@gvsu.edu
References


Complexity Theory and SLA

Marian Woyciehowicz Gonsior  
Madonna University  
Andrew Domzalski  
Madonna University  
Bogusława Gątarek  
Madonna University and University of Windsor

Abstract

The second language acquisition (SLA) field has always been closely linked to cognitivism (Atkinson, 2011). From the cognitivist perspective, the process of acquiring an additional language is similar to data being fed into a computer. While this traditional approach to SLA has been widely accepted, recent comprehensive collections of essays by theorists promoting newer conceptualizations of SLA have been published (Atkinson, 2011; Kramsch, 2002). Both collections include a chapter written by Larsen-Freeman, a respected author on language issues, in which she proposes complexity theory (CT) as a better way to analyze SLA. Reviewing and expanding on Larsen-Freeman’s ideas, the authors explore the relationship between CT and SLA and encourage further research in this area. They suggest that viewing SLA through the lens of complexity theory may prove helpful to researchers and teacher trainers in TESOL because of the new insights it provides into how students learn additional languages.

Introduction

Since the beginnings of the field of second language acquisition (SLA), the discipline has been closely linked to cognitivism (Atkinson, 2011). From this perspective, language acquisition is viewed as similar to data being fed into a computer processor. Although more recently English as a Second Language (ESL)
researchers and teacher trainers have certainly included a sociolinguistic slant to their endeavors, more than thirty years into the field’s development Kramsch (2002) still found SLA to be “dominated by the LEARNER-AS-COMPUTER metaphor” (p. 2). Over the years, some linguists have raised objections to this traditional understanding of SLA (e. g., Larsen-Freeman, 1997). Recently, theorists suggesting new conceptualizations of SLA, including complexity theory (CT), have published two comprehensive collections of essays (Atkinson, 2011; Kramsch, 2002), breathing new life into this essential aspect of ESL practice. In addition to the chapters on CT that Larsen-Freeman contributed to these collections, in 2014, she also spoke on this issue to attendees at the TESOL International convention in Portland, Oregon, in a keynote entitled, “Complexity Theory: Renewing Our Understanding of Language, Learning and Teaching” (Larsen-Freeman, 2014). Following Larsen-Freeman’s lead, the authors of this paper call for more research in the ESL/TESOL field to examine complexity theory and its relationship with SLA. The authors begin by taking a brief look at the reasons for reevaluating the traditional theories of SLA. They then explore complexity theory as a possible reformulation of SLA (Larsen-Freeman, 1997; 2002; 2011). Such a reformulation focuses on the multitude of internal and external factors that affect the process of acquisition of a second or additional language, bringing to the fore the characteristics of language seen as a complex system, with accompanying benefits for teachers and learners.

Second Language Acquisition

A concise definition of SLA is difficult to determine. Krashen (1982) and others have described language acquisition by contrasting it with language learning. In their view, language learning is the conscious learning of language that takes place in the classroom while language acquisition is what takes place subconsciously as language develops in the learner due to being in a context where the language is spoken. Gass, Behney, and Plonsky (2013) similarly make a contrast
between foreign language learning and SLA. Foreign language learning takes place where an additional language is taught in the environment where the native language is the main means of communication. On the other hand, “SLA refers to the process of learning another language after the native language has been learned” (Gass, Behney, & Plonsky, 2013, p. 4). They see SLA as learning a second (or third, or fourth) language in or outside the classroom. However, the difference between acquisition and learning in any context is just one piece of the picture. A definitive definition of SLA needs to be just as complex as the process it is attempting to describe. In Long’s 2007 overview, he notes “as many as 60 theories, models, hypotheses and theoretical frameworks” related to SLA (p. 4). No matter what variety of approaches are suggested, some believe the dominant cognitive model is too structured to be truly able to describe the complexity and unpredictability of language and everything learning one (whether second, third, or fourth) includes. Complexity theory seems to answer the concerns connected with dominant views of SLA.

Complexity Theory: Its Roots and Pivotal Concepts

The purpose of this section is to introduce the pivotal concepts of complexity theory that are used as the basis for discussions in the remainder of the paper. The selection of sources reviewed throughout this article reflects the fact that few researchers apply complexity theory to language, thus the necessity to rely heavily on the work of Larsen-Freeman. Complexity theory is a theoretical attempt to explain the phenomenon of organized complexity, that is a complexity of a self-organizing system that results from the interrelatedness of several factors, e.g. an embryonic development, which is affected by genetic and environmental factors producing a self-organized whole. Organized complexity can be juxtaposed with simplicity as well as disorganized complexity. The concept of simplicity refers to phenomena affected by few variables and possessing predictable outcomes, e.g. a trajectory of a bullet. Organized complexity consists
of erratic behavior of an individual system affected by many factors, e.g. weather conditions. Disorganized complexity can be tackled by statistical tools (Weaver, 1948, as cited in Larsen-Freeman, 2011). As the above examples illustrate, the concept of complexity emerges from and is most often utilized in natural sciences. However, complex physical phenomena possess characteristics that are also intrinsic to complex social phenomena, thus we argue after Larsen-Freeman throughout this paper that it can be beneficial to extend the use of complexity theory beyond natural sciences.

Larsen-Freeman points to general systems theory by von Bertalanffy (1950, as cited in Larsen-Freeman, 2011), as a paradigm that facilitated subsequent formulating of complexity theory, as it explained the emergence of complex systems as a result of inter-relatedness of variables. New systems appear as a system’s parts interact with one another. Another operating principle, postulated by Maturana and Varela (1972, as cited in Larsen-Freeman, 2011), called dynamism, refers to the observation that systems become stable while their parts constantly change. Finally, the principle of self-organization, i.e. spontaneous creation of complexity without outside influence or internal plan (Mitchell, 2003, as cited in Larsen-Freeman, 2011), completes the picture of the processes responsible for creation of complex systems.

It is no surprise that the features of systems that emerge as a result of a dynamic interplay among their parts that reaches the level of complex self-organization clearly reflect that process.

Thus, complex systems are described as dynamic, open, self-organizing, adaptive, autopoietic, and non-linear (Larsen-Freeman, 2011). It is important to explain them here, as they will be applied to language in the next section of the paper. We use a tree as our example to illustrate the discussed features. Complex systems are dynamic, i.e. they constantly change (e.g. a tree constantly grows; even dormant periods are characterized by chemical changes). They are open, meaning external factors prompt change (e.g. light and
temperature trigger blooming or dormancy). Complex systems are self-organizing, i.e. a whole emerges from parts and their sum is not the whole (e.g., a tree is more than just its roots, trunk, and branches). They are adaptive, i.e. they constantly adapt to environmental changes (e.g., tree dormancy in winter, root shape based on water availability). Complex systems are autopoietic, which means that in spite of the constant change of their parts, the systems maintain their identity (sapling or mature, with or without leaves, it is still the same tree). Finally, complex systems are non-linear, that is small changes in initial conditions result in huge changes in outcomes (“the butterfly effect”, Lorenz, 1972, as cited in Larsen-Freeman, 2011) (e.g., a small break in the bark may make a tree vulnerable to diseases and ultimately cause its gradual death).

The next section provides examples in support of conceptualizing language as a complex system, thus advancing an argument for applying complexity theory to language learning and teaching.

Languages as Complex Systems

All the characteristics symptomatic of complex systems can also be found in languages.

Through the examples below, we show how it can be easily seen that languages are dynamic, as change permeates all language building blocks: phonetics, phonology, morphology, syntax, semantics, and pragmatics. Phonetic changes, that is changes in sound features, occur constantly in every language. Probably one of the most dramatic examples in the history of the English language is the Great Vowel Shift, which occurred during the 1500s, which caused numerous changes in the way vowels were pronounced. Also, a velar fricative /x/, reflected in spelling by gh, as in the word night, disappeared before Modern English. Change is intrinsic not only to phonetic features of particular sounds, but also to phonological rules that govern how clusters of sounds are pronounced. The initial /k/ in the word know, silent in Modern English was pronounced in Old and Middle English, before the rule that two stops cannot occur in the
initial position in a word became part of the English phonological inventory. Change also affected the morphological structure of English words, which is most visible in the loss of case endings in English nouns. While Modern English possesses three grammatical cases reflected in the form of personal pronouns, e.g.: subject: *I*, object: *me*, and possessive: *mine*, Old English boasted four cases, for which nouns would change endings, e.g. *stan* (*stone* as subject), *stanes* (*of a stone*, possessive/genitive), *stane* (*to/for the stone*, dative), *stan* (*stone* as a direct object, accusative) (Baugh & Cable, 2002). The loss of endings made the English sentence more rigid as the role of nouns in a sentence became marked by their placement in the sentence (e.g. subject first) rather than their endings. Another dramatic change in syntax was the loss of double negatives, which used to be a standard, required structure before Modern English. Just as the form of a language changes, so do its meaning and use. There is a plethora of examples illustrating the changes in word meanings. One example would be the word *mouse* which gained an additional computer-related meaning a few decades ago. A more recent example would be the use of the word *friend* as a verb in the context of online networking, meaning to add someone to one’s list of contacts. Along with semantic changes mentioned above, pragmatic changes, i.e. referring to use, are ubiquitous as well. One example would be the spread of first name terms in social contexts, in which a few decades ago such uses would be deemed inappropriate.

All the examples of the dynamic nature of English, keeping in mind that similar examples can be given for any other language, also illustrate language *openness*, as their emergence was caused by external factors. All the listed phonetic, phonological, and morphological changes were likely the result of inter-dialectical and inter-lingual contacts. The discontinuation of double negatives in standard writing may have resulted from a desire to model grammar on formal logic, which would explain why double negatives are easily understood by native English speakers and used across non-standard
dialects. The remaining examples stem from the arrival of new technologies (*mouse, to friend*) and cultural changes (use of first names).

Languages are also *self-organizing* as stages of language development, including second language acquisition, clearly illustrate. Research on *interlanguage*, a concept introduced by Selinker (1972), which refers to any stage in the process of second language acquisition, suggests that at any given time during that process the learner’s grammar is a system with its own rules, albeit transitional and different from the grammars of native speakers of the target language. At the societal level, language *self-organizing* is evident in the emergence of pidgins, which form as a result of interactions between two groups of people who do not speak the same language. While pidgins are characterized by simplified grammars, they are complete linguistic systems and once they gain their own native speakers by virtue of children being born to pidgin-speaking parents, they become more complex and re-organize as creoles.

Semantic and pragmatic examples illustrating the dynamic nature of language listed earlier can also be used to demonstrate its *adaptivity*, as language changes to meet the needs for new vocabulary (*mouse*) or to reflect social developments (first-name terms). In spite of often radical changes in structure and vocabulary that languages undergo over time, *they retain their identity*. As different as they may be, Old and Modern English are considered different stages of the same language, which attests to the *autopoietic* nature of languages. Finally, languages are *non-linear*, as their developmental trajectories hardly follow straight lines, simplifying some parts of the system (e.g. loss of nominal case endings in English), while complicating others (the development of numerous English tense structures).

**Viewing SLA through the Complexity Theory Lens**

Just as languages themselves can be viewed as complex systems, so second language development can be seen as a creation of a complex system (Larsen-Freeman, 2011). To this end, it can be
viewed as a bottom-up process, in which patterns emerge rather than get acquired. As interlanguages become stable, their parts continue interacting among themselves through soft assembly that is by being changed by the very interaction. They also co-adapt to other parts and external factors. Pivotal among those factors is “frequency of perceptually salient and semantically transparent linguistic features… Thus, language development is a probabilistic process, with learners extracting probabilities of particular forms occurring in particular contexts with particular frequencies” (Larsen-Freeman, 2011, p. 55). It is worth emphasizing that while frequency of occurrence of a given structure plays an important role in acquiring that structure, noticing its meaning and function is required.

Additional points strengthening the argument of applying complexity theory to second language development come from the variability among learners and non-linear learning patterns within each learner as well as from cross-linguistic influence with its own complexities. While the above arguments are accepted by some researchers, others raise objections to applying complexity theory to second language development. Some of those objections are discussed in the next section.

**Objections to Complexity Theory and SLA**

Larsen-Freeman (2011) notes several objections raised to connecting complexity theory to SLA. There are those who object to using a theory that stems from the natural sciences to describe language learning. In reality, the use of a theory from one discipline or field is not new. One only has to think of the how Darwin’s theory of evolution has been applied to the way languages develop in families to know this to be true. Larsen-Freeman (2011) points out that this multidisciplinary borrowing is not something new to other areas of linguistics either, explaining that previously linguistics had followed structuralism, a concept shared with economics, sociology, anthropology and other fields.
That complexity theory disregards the intentionality and agency of learners is another objection (Larsen-Freeman, 2011). Larsen-Freeman (2011) counters this argument, saying, “at the same time as individuals are operating in intentional ways in the moment, their personal language resources and those of their speech communities are being transformed beyond their conscious intentions” (p. 58). In other words, as a complex system, language develops both through the learner’s intentionality and beyond it.

**Implications for Research**

The application of complexity theory to research in SLA has the potential to stand the research in the field on its head. With it, our conceptualization of the purpose of research has changed. Larsen-Freeman, Schmid, and Lowie (2011) note that the previous emphasis on using computer input and output as the metaphor for language acquisition channeled “researchers’ efforts … into searching for a universal stage-like progression towards full rule-governed competence” (p. 4). Complexity theory makes this focus obsolete. Instead, it suggests a wide spectrum of new concepts to be studied. As one avenue of research, Cameron (as cited in Harshbarger, 2007) calls for study of the classroom as a whole as a dynamic system, “not as a static background to performance” (p. 23). Similarly, Burns (2011) calls for researchers to “study classrooms in a way that recognizes and accounts for their complexity, rather than one that reduces it” (p. 20). Furthermore, openness of language calls for a renewed focus on external factors determining its acquisition. Self-organization suggests researching interlanguage as a dynamic play between change and acquiring equilibrium. Finally, non-linearity posits a challenge of teasing out the factors that cause seemingly unpredictable steep curves and plateaus in language learning.
Implications for ESL Teacher Preparation and Professional Development

While complexity theory may undoubtedly seem esoteric and removed from classroom reality, we believe that it has concrete implications for language teaching and as such it should be included in ESL teacher preparation and professional development along with other approaches, considered staple knowledge in the field. Here are some instructional implications, which may not seem novel to a seasoned teacher, yet which provide further validation for some time-honored teaching strategies. Meaningful repetitions of target structures, when both their meaning and form are noticed by learners is of paramount importance to language teaching, as they strengthen the connections among particular language items and help create a robust system. Co-adaptation and soft assembly discussed earlier suggest that language teaching should occur in rich context allowing for negotiations of meaning, function, and form. If nothing, language is a flexible tool and this flexibility is best taught by showing how the same word or phrase can bear different meanings depending on context or intonation and, conversely, how the same message can be expressed by various language structures. Agency calls for making students responsible for their own learning, which can be emphasized by language tasks that need to be performed outside the classroom, e.g. participating in a conversation club, reading books in the target language and the like. Intentionality of learning can be enhanced by using language as a tool for accomplishing non-linguistic tasks. Openness of language can help teachers remain aware of the importance of external factors in its acquisition. Teachers may want to encourage students to engage in meaningful target language activities outside the classroom. They may also take notice of the effect the students’ environment has on their language learning. Self-organization at any given level helps assess students’ progress and perceive errors as a mark of learning. At the same time, knowing that
language learning is non-linear prepares teachers to accept the unpredictability of the outcomes of their labor.

**Conclusion**

As it is argued throughout this paper, complexity theory, although developed in areas conceptually distant from second language acquisition, provides us with a useful, albeit unusual, lens to view ESL teaching and learning, enriching our understanding of this complex and multi-faceted process. While complexity theory, in spite of its universal characteristics, may not provide ultimate answers about the nature of second language acquisition, it is not so due to this particular theory’s inadequacy, but because second language acquisition is best understood when viewed from multiple perspectives.

**Author note**

Marian Woyciehowicz Gonsior is Adjunct Associate Professor at Madonna University, where she has taught ESL courses and courses for the general student population. Andrew Domzalski is Director of ESL/MATESOL programs and Co-Director of MS in Humane Studies at Madonna University. Bogusława Gątarek is Adjunct Assistant Professor in MATESOL and MS in Humane Studies at Madonna University and Ph.D. candidate at the University of Windsor. Correspondence concerning this article should be sent addressed to Marian Woyciehowicz Gonsior at this email address: mgonsior@madonna.edu
References


Assessing the Speaking of LESLLA, SLIFE, and Community College Students

Ildiko Porter-Szucs
Eastern Michigan University

Abstract

Assessing the speaking of a special population warrants careful attention. Several tests that are commonly used to assess the speaking of LESLLA and SLIFE students unfairly disadvantage them. They do not allow the institutions administering the assessment to obtain the most accurate picture of the prospective students’ spoken English because variables extraneous to speaking hinder the prospective students’ ability to do their best on the test. Other tests, on the other hand, may be more suitable for assessing the speaking of the LESLLA and SLIFE populations.

Background

LESLLA. LIFE. SLIFE. SIFE. Various acronyms are used for adult immigrants (16-65 years old) who are both developing proficiency in English and concurrently developing literacy skills (City College of San Francisco, n.d.). And while at times it may matter whether some immigrants are called LESLLA students (Low Educated Second Language and Literacy Acquisition for Adults), or LIFE (Learners with Interrupted Formal Education), or SLIFE (Students with Limited or Interrupted Formal Education), or SIFE (Students with Interrupted Formal Education), for the purposes of this paper the differences among these terms matter less than the similarities among them. This population, which I will henceforth collectively refer to as LESLLA, is the most vulnerable subset of English-as-a-Second-Language (ESL) learners. Their numbers—at least 2% of the US population—are substantial (Organization for
Economic Co-operation and Development, 2013). Even though many have been in the country for five years or longer, their rate of employment is only around 55% and more than 75% of them are in the lowest 10% of the country’s income distribution (Reder, 2014). Women are one third more likely to belong to the LESLLA group than are men (Reder, 2014).

Despite the fact that there are millions of LESLLA learners, little is known about them. According to the homepage of the organization dedicated to the advancement of LESLLA students,

Only a small fraction of current research concerns the most vulnerable second language (L2) learners: low or non-literate adults with at the most primary schooling in their native language. …. Studies of adults have either focused on educational practices or have involved adults who failed to learn to read and write in their native language despite schooling. (LESLLA, n.d.)

The most obvious educational need of LESLLA students is the improvement of their literacy skills. This is not surprising considering that the greatest barrier they face is their low level of literacy (in English or any language). While there is some information in the literature about LESLLA learners’ literacy acquisition (Alver & Dregelid, 2014; Bigelow & King, 2014; Maffia & De Meo, 2014; Nicholas & Starks, 2014; Vinogradov, 2014), the topic of assessing their spoken English has not previously been covered.

LESLLA learners enroll in ESL programs in various educational settings, including adult education programs, literacy programs, refugee resettlement organizations, faith-based groups, and community colleges. It is in particular at open-access postsecondary institutions (such as community colleges) where LESLLA students may face further challenges when asked to take a placement test.
The Issue

It is common practice at institutions of higher, adult, and lifelong education to assess the English-language proficiency of incoming students for placement purposes. Prior to the administration of a placement test, open access institutions do not know much about the educational background of prospective students who walk through their doors, not even their level of English. A well-chosen assessment tool can quickly and accurately sort prospective students into appropriate courses. Test takers who sit for English-language examinations (whether for secure tests administered at authorized test centers or institutional tests administered at the school) usually receive subscores on the four skills: listening, speaking, reading, and writing. For instance, the mean subscores of all test takers who took one such test worldwide in 2013 breaks down as seen in Table 1:

Table 1
*Test Takers’ Mean Subscores on the TOEFL iBT Worldwide in 2013*

<table>
<thead>
<tr>
<th></th>
<th>Listening</th>
<th>Speaking</th>
<th>Reading</th>
<th>Writing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Score</td>
<td>19.7</td>
<td>20.1</td>
<td>20.1</td>
<td>20.6</td>
</tr>
<tr>
<td>S.D.</td>
<td>6.7</td>
<td>4.6</td>
<td>6.7</td>
<td>5.0</td>
</tr>
</tbody>
</table>


On a scale of 0 to 30, the mean subscores for the four skills on the TOEFL iBT in 2013 were around 20 points each. To be sure, variations in subscores at the level of the individual test taker get lost in the presentation of aggregate data. However, anecdotal evidence from ESL programs at institutions of higher education where I have taught confirms the generalization that most students have fairly
uniform skill profiles. More often than not, if an ESL student is placed in a low-intermediate-level reading class, she is likely to be able to write, speak, and comprehend spoken English at a low-intermediate level as well.

One cannot, however, make a similar generalization when speaking of LESLLA students, who are likely to have uneven score profiles. Because many of them have lived in the United States for years, they may be quite proficient verbally yet not know the alphabet. Their scores for oral communication (listening and speaking) are likely to be much higher than for written communication (reading and writing). Therefore, in order to accurately assess the speaking of LESLLA learners—the focus of this paper—it is important to select the appropriate assessment tool, one that does not hinge on variables extraneous to oral skills.

**Choosing the Right Test of Spoken English**

When choosing a placement test of spoken English, the test user—i.e., the institution—must consider a variety of factors. Knowing the test-taking population well is the first step in this direction. Considerations include the age range, first languages, cultural backgrounds, life experiences, educational backgrounds, aspirations, cognitive levels, and special needs of the prospective students. In other words, if an institution is likely to have applicants with limited or interrupted educational backgrounds, the assessment instrument must take this into account.

It is also essential that the construct definitions used by the test developer and test user be aligned. A *construct*, in this sense, is the abstract skill-set that the test attempts to measure. For instance, if a test claims to assess speaking, then the construct defines how speaking is understood. Does it include pronunciation? Grammar? Fluency? Vocabulary? Interaction? Speed of delivery? The ability to give extended answers? The ability to speak both formally and informally? Does it specify the setting within which speaking is to be performed (educational, occupational, personal, social, etc.)? Does it
specify the topic(s) about which the speaker is to speak? The test developer must consider all of these questions when defining the construct “speaking ability.” All further steps will build on this foundation. When a test user, such as a community college, considers the adoption of a test developed by an assessment organization, the user needs to be clear about the construct definition that lies at the heart of the test.

A good construct definition must not only include information about what the test measures, but also exclude what is not being assessed. As Messick (1995) warns,

Aspects of the task that are extraneous to the focal construct make the task irrelevantly difficult for some individuals or groups…. In general, construct-irrelevant difficulty leads to construct scores that are invalidly low for those individuals adversely affected…. construct-irrelevant difficulty for individuals and groups is a major source of bias in test scoring and interpretation and of unfairness in test use. (pp. 742-743)

Even setting aside the basic question of fairness to the test taker, institutional users cannot obtain an accurate picture of the prospective students’ spoken English if construct-irrelevant variance hinders the test takers’ ability to do their best on the test.

**Examples of Misalignment**

Currently several tests that are commonly used to assess the speaking of LESLLA students are badly misaligned with the students taking such tests. While these tests may be appropriate for some populations in some settings, they are likely to unfairly disadvantage other individuals or groups.

One popular test of spoken English begins by requiring the test taker to read sentences out loud from the test paper, as instructed (Pearson Education, Inc., 2013; see Figure 1).
While this computer-based test purports to assess speaking, the ability to speak hinges on the test taker’s ability to read. For students whose reading ability lags behind their speaking, this task is insurmountably difficult. This test may also present a challenge for students who are unfamiliar or uncomfortable with the computer. Finally, the test taker’s basic numeracy is assumed, because the sentences are to be read out loud in the order in which the computer elicits them rather than in the order in which they appear on the test paper.

Another widely used speaking test, though discontinued by the test developer, remains popular at institutions that serve LESLLA students (Educational Testing Service, n.d. a). Although the name of this test—Speaking Proficiency English Assessment Kit—even contains the word proficiency, the test is often used for placement rather than to assess proficiency. This misalignment in purpose leads
to test results whose validity is questionable. Furthermore, several of the tasks on this test rely on the test taker’s ability to read. The task below asks the test taker to read, interpret, and explain the verbal, numerical, and pictographical information contained in the graph. Individuals with limited or interrupted educational backgrounds, however, are unlikely to have the skills required to perform this task, leading to construct-irrelevant variance (Xi, 2010) (See Figure 2).

10. The graph below presents the actual and projected percentage of the world population living in cities from 1950 to 2010. Describe to me the information given in the graph. (60 seconds)

![Graph of Percentage of World Population Living in Cities 1950-2010](http://cte.illinois.edu/testing/pdf/TSE_SampleTest060906.pdf)


The two aforementioned tests can be purchased and administered by institutions directly. The next test, on the other hand, is administered by secure test centers. The speaking section of this very
popular test contains tasks that integrate multiple skills, as in the following sample question (See Figure 3).

The construct of “speaking skills” implied by this computerized test includes the ability to read an academic text, listen to an academic lecture, take notes on the lecture, synthesize the information, and relate it verbally. The ability to perform all these tasks is central to the design of the task. Test takers who will lack the necessary academic preparation to perform these tasks will be penalized for this in their speaking score. An institution that uses this proficiency test (Educational Testing Service, 2014b) for placement purposes needs to be aware that the speaking subsection score is unlikely to accurately reflect LESLLA students’ ability to speak.
In questions 3 and 4, in an actual test, you will first read a short text and then listen to a talk on the same topic. You will have to combine appropriate information from the text and the talk to provide a complete answer. Your response will be scored on your ability to accurately convey information, and to speak clearly and coherently. In this sampler, you will read both the text and the talk. (Reading)

Flow
In psychology, the feeling of complete and energized focus in an activity is called flow. People who enter a state of flow lose their sense of time and have a feeling of great satisfaction. They become completely involved in an activity for its own sake rather than for what may result from the activity, such as money or prestige. Contrary to expectation, flow usually happens not during relaxing moments of leisure and entertainment, but when we are actively involved in a difficult enterprise, in a task that stretches our mental or physical abilities.

(Listening)
(Male professor) I think this will help you get a picture of what your textbook is describing. I had a friend who taught in the physics department, Professor Jones, he retired last year. . . . Anyway, I remember . . . this was a few years ago . . . I remember passing by a classroom early one morning just as he was leaving, and he looked terrible: his clothes were all rumpled, and he looked like he hadn’t slept all night. And I asked if he was OK. I was surprised when he said that he never felt better, that he was totally happy. He had spent the entire night in the classroom working on a mathematics puzzle. He didn’t stop to eat dinner; he didn’t stop to sleep . . . or even rest. He was that involved in solving the puzzle. And it didn’t even have anything to do with his teaching or research; he had just come across this puzzle accidentally, I think in a mathematics journal, and it just really interested him, so he worked furiously all night and covered the blackboards in the classroom with equations and numbers and never realized that time was passing by.

Question: Explain flow and how the example used by the professor illustrates the concept.

Preparation Time: 30 seconds
Response Time: 60 seconds

Figure 3. Integrated reading-listening-speaking task on the TOEFL iBT. From Educational Testing Service, n.d. b. From https://www.ets.org/toefl/ibt/prepare/sample_questions.
Misalignment between the test takers and the assessment instrument can, therefore, manifest itself in a variety of ways. The ability to read, familiarity with numbers and graphs, being able to memorize details heard aurally, note-taking skills, and facility with computers are just a few of the unrelated skills that cause construct-irrelevant variance in the score. Using a test to assess skills it was not designed to assess (for example, using a proficiency test for placement purposes) also leads to misalignment. The resulting information will be of limited value for either the prospective student or the institution.

Examples of Alignment

There are tests that are more suitable for assessing the speaking of LESLLA learners. The definition of speaking will vary depending on the institution, but the following assessments may provide better alignment.

The John Test is described by its creators as a one-on-one, face-to-face “oral placement test for non-native speakers of English, which was originally developed by ESL teachers” (Language Innovations, Inc., 1974). It consists of a series of drawings from one day in the life of a man named John (See Figure 4). The test taker is asked to listen to the questions and respond to them based on the pictures. The questions that follow each picture are of increasing linguistic complexity. The test is fully scripted and does not assess interactional ability. The rating rubric assesses fluency, structure, vocabulary, and pronunciation. Full scores can be given if “the answer is completely right,” in other words, nativelike (Language Innovations, Inc., 1974, p. 2).
This test does not rely on the test taker to read, take notes, memorize, use the computer, or interpret cognitively challenging information. While the latter may be a drawback for some educational settings, it will allow LESLLA students to accurately demonstrate their speaking abilities.

Another test that may be appropriate for LESLLA learners is the CaMLA Speaking Test (Cambridge Michigan Language Assessments, 2014). This one-on-one, face-to-face assessment tool is advertised as “a quick, reliable way to test a person’s ability to speak comprehensible English” (Cambridge Michigan Language Assessments, 2014).
Assessments, 2014). It consists of a series of five tasks of increasing difficulty and cognitive complexity (See Figure 5). The goals for all five tasks are both printed on the test paper and read aloud by the examiner. The first three are connected to the same drawing, while the last two are on different topics. Like the John test, this one is also fully scripted and does not assess interactional ability. The rating rubric claims to assess “fluency and intelligibility, vocabulary range and relevance to task, grammatical complexity and accuracy, ability to successfully complete a specific task” (Cambridge Michigan Language Assessments, 2014).
Again, this test does not rely on the test taker to read, take notes, memorize, or use the computer. It does, however, challenge the test takers to perform at the A2-C1 (high intermediate to low advanced) levels of oral proficiency on the Common European Framework of Reference for Languages (Council of Europe, 2001). This means that some LESLLA learners will only be able to successfully complete the initial tasks of the test, while other LESLLA students as well as students with uninterrupted educational backgrounds will be able to engage with all the tasks fully.

**Conclusion**

Institutions that teach students with limited or interrupted educational backgrounds—students who are acquiring both literacy and English-language skills at the same time—need to be mindful of a variety of factors when assessing the spoken English of this population:

- They must have a thorough understanding of their entire student population.
- They must have a clear understanding of how they define the construct “speaking skills.”
- They must purchase (or develop) a speaking test that reflects this construct.
- They must carefully determine the cut-scores that sort students into appropriate classes.

If these steps are taken, the institution will be in a better position to accurately measure the spoken English of their students.

**Acknowledgements**

This paper is based on a presentation given at the 2014 MITESOL Conference. The author would like to thank her co-presenters Crystal Collins and Kristin Graw for their invaluable contribution to the presentation.
Author note

Ildiko Porter-Szucs is Assistant Professor of ESL/TESOL at Eastern Michigan University. Correspondence regarding this article should be addressed to Ildiko Porter-Szucs at this email address: iporters@emich.edu
References


Synesthesia’s Magic: Tell Me About the Personality of Your Word

Patrick T. Randolph
University of Nebraska-Lincoln

Abstract

What does it mean to know a friend? What does it mean to know a lexical item? And what does the neural condition of synesthesia have to do with the interplay between the two? This paper suggests that drawing a connection between these three subjects—friends, lexical items, and synesthesia—can robustly improve English language learners’ cognitive ability to successfully encode, learn, and recall a wide range of lexical items—from single word terms to phrasal verbs and idioms. Drawing on work done in synesthesia (Cytowic & Eagleman, 2011; Simner et al., 2006), and research done on personalizing learned material, making emotional connections with it, and developing a sense of ownership toward it (Medina, 2009; Ratey, 2001; Willis, 2006), this paper introduces the unique activity of writing word-personality character sketches and shows how they help English language learners to personalize and internalize the lexical items, enabling them to use the vocabulary terms at a high level of sophistication and ease.

Introduction

What does it mean to know a friend? What does it mean to know a word? And what does synesthesia have to do with the interplay between the two? I would like to suggest that these three subjects—friends, words, and synesthesia—can robustly improve English language learners’ (ELLs’) ability to successfully encode, learn, and recall a wide range of English lexical items.
Lightbown and Spada (2006) ask the following questions about what it means to know a word in a second language:

What does it mean to know a word? Grasp the general meaning in a familiar context? Provide a definition on a translation equivalent? Identify its component parts or etymology? Use the word to complete a sentence or to create a new sentence? Use it metaphorically? (p.100)

The above, to be sure, is a good start, but doesn’t truly knowing a word, phase, or idiom entail a great deal more? I ask this crucial question, because I believe that when students genuinely know a word, they will remember it. I think we can add to Lightbown and Spada’s list by including the knowledge of synonyms, antonyms, a word’s register, the best location of its use, with whom to use it; in addition, we ought to be familiar with its collocations, parts of speech, know if it has a positive, negative, or neutral feel—verbpathy¹—, and perhaps most important, shouldn’t we know how to “play” with the word? And this is where the notion of becoming friends with words settles in (Randolph, 2009).

How do we truly know a friend? I think first we start by perceiving a person. Perhaps we see her walking into a coffee shop. The following day we recognize her, and we may even say hello. After a few brief meetings, we may ask to meet and chat. During the conversation, we begin to use new information in our conversation that we learned from our new acquaintance. We might ask certain questions that seem to open some doors and close others, but nonetheless, we are becoming familiar with the person and beginning

¹ Verbpathy is a term I coined which means “word-feeling” (verb→word; pathy→feeling). Knowing the verbpathy of a lexical item means understanding its positive, negative, or neutral feel. For example, the verbpathy of bliss is positive; depression is negative.
to establish a friendship. Now we have come to understand our new friend. Once the friendship deepens by using questions and conversations as our means of communication, we get to know each other. This knowing then facilitates a sense of feeling, perhaps intuitively, how each other is on days we meet for coffee or dinner. This deeper understanding through feeling evolves into a love for our friend. And ultimately, we own this friendship through being friends and being responsible for each other.

This evolution of perceiving, meeting, and establishing a friendship with a friend is not unlike how we experience “getting to know” a word, a phase, or idiom (Randolph, 2009). First you perceive it on paper or hear it, and after that you may recognize it at a later time. Next, you start to use it and understand it. Through the course of using it, (and making mistakes occasionally), you learn it and get to know it. Then, you develop a certain intuitive feeling toward the word, you may even love it. And ultimately, you own the word—it becomes yours like the friend.

An Explanation of Synesthesia

Enter synesthesia. What does this have to do with vocabulary acquisition and friendship? Before we attempt to answer this question, let’s take a look at what synesthesia is, who has it, how many kinds there are, and what the benefits appear to be.

We can glean a good bit of insight into its meaning by examining the word *synesthesia*. The prefix “syn” means “together,” or “with” and the root “aisthaesis” means “feeling,” or “sensation.” Thus, synesthesia means to “sense or feel together.” But what specifically is synesthesia? The answer is fascinating. Synesthesia is a distinct but not uncommon neurological condition where senses react differently than their normal, defined function. According to Cytowic and Eagleman (2011), two experts in neuroscience, “Synesthesia is a hereditary condition in which a triggering stimulus evokes the automatic, involuntary, affect-laden, and conscious perception of a physical or conceptual property that differs from that of the trigger”
(p. 112). For example, the author of this paper “sees temperatures;” other synesthetes “see smells,” “taste colors,” “smell tastes,” or “attribute personalities to colors” (Day, 2013). The famous synesthete, Franz Liszt, is reported to have told his orchestra on one occasion, “Please gentlemen, a little bit bluer if you please. This key demands it” (Seaberg, 2011, p. 24).

There appear to be over 80 different kinds of synesthesia, two in particular—personality→number synesthesia and personality→grapheme synesthesia—are the inspiration for this paper. (I will address these two below.) Some types of synesthesia are more common than others (e.g., graphemes→colors, musical notes→colors), and one common trait is that a synesthete will have more than one kind of synesthesia (Cytowic & Eagleman, 2011).

The first recorded case of synesthesia, according to Hochel and Milan (2008), was in 1812. However, Cytowic and Eagleman (2011) have evidence that the great mathematician and philosopher, Pythagoras, had the aforementioned personality→number synesthesia. Thus, their research shows it could date all the way back to 500 B.C.E. For instance, according to Brumbaugh, Pythagoras perceived detailed personality traits for whole numbers. That is, “each number had its own personality—masculine or feminine, perfect or incomplete, beautiful or ugly” (as cited in Cytowic & Eagleman, 2011, p. 82).

What is the percentage of individuals who have synesthesia? According to Simner et al. (2006), one out of 23 people have some type of synesthesia. This ratio is repeatedly confirmed in my own classrooms. I typically have 15 to 18 students in my classes, and I usually have anywhere from one to two students who claim to have one form or another of synesthesia. But perhaps what is more intriguing is that the number would be higher if I included the students’ childhood. Students will frequently (two-three per class) tell me that they used to have some kind of synesthesia when they were in elementary or junior high school. They often claim that they started to
lose the synesthetic experience in high school. This brings us to the research of Maurer and Mondloch.

Maurer and Mondloch’s (2006) research, based on the work of Maurer and Maurer (1988), claims that as newborn babies, we all have synesthesia. They argue that because the newborn’s brain has not gone through the process of neural pruning, it has many more cross-wiring connections, so really newborns have one sense (Mondloch & Maurer, 2004). According to their research, a baby can smell, hear, and see its mother’s voice. When my students tell me that they “used to have” synesthesia or it “used to be” stronger, they are more than likely referring to a time before their brains went through the neural pruning.

Two questions arise from the above research: (1) Have the minds of synesthetes not undergone the natural neural pruning and thus have more neural connections? and (2) Does this mean everyone has synesthetic potential?

The answer to the latter question has direct relation to the main activity of this paper, described below. The German-American psychologist, Wolfgang Köhler, conducted an experiment focusing on shapes’ relationship to sounds. He found that a significant number of people matched takete with a star-shaped object and baluba with a soft, round, cloud-shaped one (Ramachandran & Hubbard, 2001). Ramachandran and Hubbard conducted a similar experiment but used the terms kiki and bouba (see Figure 1). An overwhelming 95% of the respondents again matched kiki with the star shape and bouba with the soft, cloud-shaped form. I conducted the experiment on my daughter when she was 2 years and 9 months, and she also agreed that the term kiki was “sharp” and bouba “soft.” What this shows us is that perhaps we do have the foundational mapping for synesthesia, and it is all a matter of teasing it out and relearning this cross-wiring of senses in the brain.
What, then, if any, are the benefits of synesthesia? Cytowic and Eagleman (2011) have shown that it helps develop strong memory skills. “When asked what good synesthesia does, a common response is, ‘It helps you remember’” (p. 81). Ward (2008) has also gathered data showing that synesthesia strengthens memory, particularly dealing with dates and appointments. Ratey (2001) of the Harvard Medical School offers a valuable insight into why synesthetes are blessed with a better capacity to remember. His explanation focuses on the simple truth that synesthetes use more neural connections; these help reinforce each other, and consequently synesthetes use more of the brain.

In this sense, if there are more connections of say, color, taste, and smell at the moment of encoding, then the synesthetic experience is not far removed from normal multisensory experiences of learning (Randolph, 2014a). That is, the more elements used in learning, for example, a vocabulary item, the stronger the neural connections of memory will be forged.

**Background**

As a lecturer in English lexical items and their usage, I am continually looking for ways to increase my students’ retention of vocabulary. I am developing a teaching method called *The Head-to-Toe Method of Associations for Vocabulary Acquisition*. A large part
of that method rests on creating activities to help my ELLs acquire lexical items.

The two kinds of synesthesia that intrigued me were number→personality and grapheme→personality synesthesia; the former, you might recall, is the one Pythagoras had. One synesthete interviewed by Cytowic and Eagleman (2011) reported that the number 4 was “very yellow, deeper than A; female, feminine, playful but no flirtations; sisterly;” the number 1 was “white; male; quiet character; youthful appearance but serious in character” (p. 42). Mächler (2009), a synesthete and scholar of synesthesia, explained that as a child, he perceived 4 and 6 as characters who were destined to marry each other. “These personifications were elicited involuntarily and were not created actively by myself. It supported me in dealing with numbers” (Mächler, 2009, p. 12).

With the above research in mind, I asked the following question: In order to help my students retain vocabulary, and given the strong possibility that we all have either an opaque or transparent manifestation of synesthesia, what if I developed an activity that “personified” the lexical items we learn in class, gave them their own life and personal characteristics—physical and psychological—, and wrote character sketches about them to bring the items to life (Randolph, 2014b)?

It was soon after posing this question that I did an experiment in one of my advanced writing classes by asking the students to give personal and physical characteristics to the terms we had studied thus far in the semester. The results were impressive. I first asked the students to consider the word meticulous and list as many personal and physical characteristics of it as if it were a person. Within a three-minute period, they came up with the following list of attributes for meticulous.

(1) He is a 37-year-old man; (2) serious; (3) well dressed; (4) British; (5) very silent; (6) uses a cane to walk; (7) always hits the books at the library; (8) lives in the library; (9) is a bachelor; (10)
wants a wife; (11) slowly but surely responds to people’s requests; (12) has only a few (carefully picked) friends; (13) always carries a small mirror; (14) is traditional; (15) wears a tie; (16) is fashionable; (17) is rather tall; and (18) is thin. (Randolph, 2014b, p. 2)

Based on the quick response and enthusiasm the students showed during the activity, I set up the procedure (detailed below) for my advanced writing class that met five days a week for two hours a day. Since that particular lesson, I have included this activity as a key component in my Head-to-Toe Method of Associations for Vocabulary Acquisition. The character sketch and its variations are seen in a very positive light by my students. In different survey results (see below), the students commented on the fact that they like the feeling of befriending the words and really getting to know them.

**Objectives of the Character Sketches**

At the onset of this paper, I asked the reader what it means to know a lexical item. The primary objective of using the synesthetic-based idea of word-personality as an underpinning for vocabulary retention is based on three significant elements underscored in what neuroscience tells us are pivotal in learning: emotion, personalizing information, and ownership. That is, if we can somehow incorporate emotional content and elicit emotional responses from our students (Medina, 2009), personalize the information so that it has meaning in the learners’ minds (Willis, 2006), and help them own the material in question (Jensen, 2008; Sousa, 2011), then our English language learners will be better equipped to truly learn and internalize the information—in this case, vocabulary items.

I think that this activity also gets the students to freely play with the lexical items, make them as real as possible, and befriend the vocabulary terms and know them on a whole different and intellectually profound level. The once distant and sometimes abstract terms actually become familiar in the minds and intuitions of the
students. This activity is the great equalizer that takes abstractions and makes them concrete and tangible.

And lastly, the central goal is to get the students to retain these lexical items for their academic and professional careers, and for their personal growth as holistic learners of the English language.

The Procedure and Implementation

It is important to underscore one point before laying out the procedure for this activity. It should be noted that this is not an activity that I use to introduce lexical items, but rather it is used to reinforce a deeper intuitive feeling and understanding of the terms, and it is used to help make the learners feel more confident and comfortable. This is by no means to say that this activity cannot be used for lower to intermediate levels of instruction—it can.

As above, this is an activity I use to reinforce my students’ understanding after they have gone through the various parts of the Head-to-Toe Method of Associations for Vocabulary Acquisition. For instance, they will have studied: (1) the definitions; (2) the parts of speech; (3) the verbpathy; (4) register; (5) examples; (6) emotional connections; and (7) sensory components. After understanding the terms at a relatively complex level, I use this character sketch activity.

Before moving on to the breakdown of the procedure, I would like to say a word or two about how instructors can best integrate this character sketch/word-personality activity in their classes. Overall, the activity is very flexible, and I think it can be used in all of the major skill-based classes: speaking and listening, grammar, reading and writing. That is, the activity can be modified for each skill: for speaking and listening, these character sketches can be presented versus written; in a grammar class, teachers can have students work with a specific grammar point and dovetail it with the vocabulary terms. For reading and writing classes, the procedure below will be a natural fit.

If instructors teach vocabulary in each of these skill courses, they can recycle the lexical items by using the word-personality activity.
If, on the other hand, their time is constrained, and they do not have a great deal of time to devote to teaching vocabulary, then I suggest instructors use some of the ideas listed below.

**Word Warm Ups:**

Try to devote a mere five to ten minutes of each class to teaching one or two new vocabulary items. These terms can then be gathered and used for the character sketch activity.

**Recycling Terms Through Brainstorming:**

Another quick and relatively easy activity is to simply have a brainstorm session in which the instructor helps elicit a number of previously learned terms from the students’ past English language classes. These terms can then be used for the activity.

**Online Adjective Hunt:**

It is also fun to have students search for various adjectives online and then bring them to class. Some adjectives might work better than others for these character sketches. The instructor will know which ones to select for the activity.

**On Campus Interviews:**

A great way to get students to mingle with native speakers and acquire new lexical terms is to have them interview either domestic students or faculty and ask them what, in their opinion, are the “top ten English lexical items” that any and all ELLs should know. They will gather quite an eclectic blend depending on the demographics of the campus. These terms can then be used for the word-personality activity.

In the final analysis, this play with words can be used in any number of classes and in any kind of skill-based class. Let us now turn to the procedure I use in my writing classes at my current institution.
DAY ONE: Pair Up and Review

First, I like to have the students pair up and review the lexical terms of the week or a sampling of words from previous weeks. Here, I have them quiz each other on the definitions, parts of speech, and give original example sentences.

Word Background: Personal History and Characteristics

Next, the same pairs ask each other what they think the personal history or characteristics of each term are. This part of the activity is first done as a class, but then I allow the students to do the set-up in pairs. Table 1 is an example of what we use in class to elicit the ideas for the character sketches.

Table 1
Sample Backgrounds and Characteristics for the Lexical Items

<table>
<thead>
<tr>
<th>Personal Background</th>
<th>Hobbies</th>
<th>Education</th>
<th>Physical</th>
<th>Personality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residence</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• country</td>
<td>• film</td>
<td>• high</td>
<td>• hair color</td>
<td>• emotional;</td>
</tr>
<tr>
<td>• big city; small</td>
<td>• music</td>
<td>school</td>
<td>• complexion</td>
<td>rational</td>
</tr>
<tr>
<td>town</td>
<td>• sports</td>
<td>• college</td>
<td>• height; weight</td>
<td>extrovert;</td>
</tr>
<tr>
<td>• house; apartment</td>
<td>• cooking</td>
<td>• grad</td>
<td>• young; old</td>
<td>introvert</td>
</tr>
<tr>
<td>• pets; no pets</td>
<td></td>
<td>school</td>
<td></td>
<td>loquacious;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• post doc.</td>
<td></td>
<td>reticent</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>optimistic;</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>pessimistic</td>
</tr>
</tbody>
</table>

Table 1 continues...

Note: I go over any of the above terms that the students may not know before continuing with the activity.

Other possible categories for this activity may include marital status, religion, political affiliation, favorite food, drink, restaurants, and travel interests.

Choosing a Favorite Lexical Item and Creating an Oral Character Sketch

The third step focuses on choosing one lexical item from the ones reviewed, creating, and informally presenting an oral character
sketch. The main reason I have the students do an oral character sketch before a written one rests on the notion that offering an oral description of a term “acts as a ‘creative-midwife’ in that speaking helps elicit ideas in the ‘birthing’ process” (Randolph, 2014b, p. 2).

That is, when students “talk out” their character sketch first, they are more likely to “just talk” and not be overly critical. This step gets them to produce many human characteristics of the lexical terms and be highly creative. In addition, this part of the activity inspires the students to start thinking of the terms as living individuals, and more important, it gets them to look at the terms as friends or at least acquaintances.

An effective homework assignment to summarize the day’s activity is to have the students write down short phrases or sentences about their selected words, or have the students simply continue to think about their lexical items as friends and make as many mental notes as possible in preparation for the next day’s writing activity.

**DAY TWO: Writing the Character Sketches**

I spend the first part of the second day on a brief *review and elaboration session*. I have the students match up with a new partner and retell their previous day’s oral character sketch. This *review and elaboration session* allows the students to present their word-descriptions with a fresh mind-set, and it gives them the opportunity to tell them to a fresh set of ears. As a consequence, they will be able to elaborate on their characters and answer any questions from their partners. As a general practice, I always like my students to talk about their writing topics before actually writing about them. This helps them organize their ideas, feel more comfortable about and confident in the topic, and gain new insights into their own ideas.

After a 10-12 minute review and elaboration session, the students are prepared to write their word-personality character sketches. Throughout the years, I have found it more beneficial for the students to write these and other assignments in class as opposed to writing them at home. Not all writing can be done during class time, for
example, lengthy research papers and long, involved essays. But, when possible, it’s best to have the students write during a focused time limit in class. The quality, coherence, and flow of the writing is often better. I attribute this to a productive, concentrative energy in class versus a desire to multitask at home with digital devices and other diversions.

The homework for the second day is to edit, develop, check over spelling, and add definition-related details to the word-descriptions. For instance, if the character sketch for the word-personality is Ms. Juxtapose, then I ask the students to highlight her personality with synonyms or circumstances that both bring her character to life and show her definition in a clear and intriguing light. An example would be “Ms. Juxtapose often spends her mornings comparing different kinds of coffee flavors. She likes to contrast the flavors in order to find out which ones are more to her liking.” These two sentences use the terms compare and contrast, which are related to juxtapose. We also get an insight into her character and her love for juxtaposing coffee flavors.

**DAY THREE: Reading Aloud and Revising**

The final stage of this project requires the students to make groups of three and take turns reading their character sketches. The two students who are listening are asked to pay close attention and write down one strong point of the description and one point that needs development. These notes and suggestions are then given to the author to read and incorporate in his or her final draft.

The final drafts can either be assigned as homework, or they can be done in class. The final draft is submitted together with the first draft and the student suggestions. I like to review the final draft and see how much the students incorporate their classmates’ suggestions, and also I like to see the development from the first to the last draft.

I try to make it a point before returning the first work to read a selection of the sketches to the class; it helps the students develop confidence in their own work (Koch, 1978), and they see the activity
as a chance to see the progress and development in themselves as writers (Randolph, 2012). Moreover, this culminating step allows the students to hear and review the vocabulary items in an interesting and humanistic setting.

**A Note on the Kinds of Character Sketches**

There are two types of formats I use for the activity (also see the appendix for other variations). The first kind of character sketch is a basic paragraph in which the students are required to simply describe the word, phrase, or idiom as best they can with descriptions focusing on the physical characteristics and the personality traits.

The second type of character sketch is a bit more detailed and developed. The first paragraph demonstrates the physical makeup and personality of the item. The second paragraph details a special moment, scene, or situation that epitomizes the personality of the word. In short, the second kind is flash fiction (i.e., an extremely brief fictional account of something in 300 to 1,000 words).

In both types of sketches, however, the students are asked to use words and ideas that help elicit the basic definition of the term in question. I also stress that they use other lexical items we’ve studied. This helps review the previously learned terms, and it also nurtures a better understanding of how to use them.

The rubric that I use is relatively simple and straightforward (see Table 2). I stress the creative descriptions of the physical characteristics and personality traits, the use of previously learned lexical items, and the implementation of classmate ideas and feedback. I also emphasize the differences between the first and second drafts so that the students become aware of the importance of the writing process.
Table 2

Example Rubric for Grading the Basic Character Sketch

<table>
<thead>
<tr>
<th></th>
<th>Great</th>
<th>Good</th>
<th>Needs Work</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description of physical</td>
<td>5</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>characteristics</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Description of personality</td>
<td>5</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>traits</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Use of previously learned</td>
<td>5</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>vocabulary</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Use of classmates’ suggestions</td>
<td>5</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Improvement between drafts</td>
<td>5</td>
<td>3</td>
<td>1</td>
</tr>
</tbody>
</table>

Comments:  
Total: ___ / 25

Results from a Student Survey

In the spring and fall semesters of 2014, I administered a short, two-part survey on “personalizing words” in six ELL courses: one advanced speech course, three advanced writing courses, and two high advanced writing courses (bridge classes) for international students. (n=51)

The survey included the following two parts:

(1) Have “word-personality” activities (characters sketches, poems, dramas) helped you remember the words, phrases, idioms we studied?
  Yes       No
  Why?      Why not?

(2) If you answered “Yes,” then continue to the next part. Please write down the things that you feel “word-personality” activities have helped you with.
The six classes all responded with favorable opinions towards the word-personality activities. I would like to point out that I asked the students to answer as honestly as possible; that is, if they truly felt that the activities did not help, then I asked them to feel free to answer accordingly. In addition, all surveys were answered in an anonymous fashion—with no names placed on the surveys.

All of the students in the advanced speech class rated the activities as favorable and the respondents claimed the activities helped them learn the lexical items. The advanced writing class from the spring term answered with 83.3% in favor. Only 16.7% claimed the activities did not help.

The two advanced writing classes from the fall term, however, both answered with 100% in the affirmative. That is, all students felt the activities developed their retention of the vocabulary. What is interesting is that the majority of the high advanced university bridge classes also answered in favor of the activities. Both the spring and fall groups, comprised predominantly of graduate students, answered with a 90.9% approval and only a 9.1% disapproval.

As above, all six classes found the word-personality activities to be very beneficial. Perhaps their perspective could be summed up in the words of one Iraqi graduate student, “How do you expect us to ever forget these words now that we have become friends with them and made them into people?” (Randolph, 2015, para. 17).

The following is a small sampling of answers from the second part of the survey:

(1) Can express my feelings in English. I trust my writing skills now.
(2) Helps because I have to feel the word.
(3) These activities they make many connections with the words.
(4) Words are easy to remember when I personalize words.
(5) Makes it easier, smoother to get impression of words; it gave me a lot of images when I’m trying to remember the words.
(6) Makes me feel the word deeper.
Yes, it helps because I create stories for that word/idiom. Because it makes a connection with my life.

The Benefits

Before briefly reviewing the benefits of these character sketches inspired by the magic of synesthesia, I’d like to revisit the inspiring quote from my Iraqi graduate student: “How do you expect us to ever forget these words now that we have become friends with them and made them into people?” Based on this statement, and the responses in the previous section, I believe it is clear that the students perceive this activity as a significant aid in helping them learn and internalize the lexical items they study.

The ideas of personalizing the material, making emotional connections to it, and achieving a sense of ownership are three essential elements discussed at length by both neuroscientists (Medina, 2009; Willis, 2006) and educators (Jensen, 2008; Walker Tileston, 2004) who claim these help learners truly acquire the material. As we have explored in this paper, the above three components are at the foundation of using character sketches to personalize words and internalize their function and usage. This activity better prepares our students for their academic career and life in their English-speaking host cultures.

Concluding Remarks

If, as Maurer and Maurer (1988) argue, we all come from a synesthetic past, and if personalizing material is a sure way to learn it (Medina, 2009), and if both synesthesia-like experiences and personalizing lexical items generate stronger memories (Cytowic & Eagleman, 2011; Jensen, 2008; Leatherdale, 2013), then I believe that there is a certain magic about synesthesia, and I believe that having our students tell us about the personality of a word is a fail-safe way to teach vocabulary. I think the best way to help our English language learners is to make their learning process fresh, new, and exciting; and, above all, we must somehow light a fire that ignites a
sense of self-eagerness in learning. What better way to do this than have them befriend the English language through an interest in and a love for words.

Author note
Patrick T. Randolph is Senior Lecturer in the Programs in English as a Second Language and English Department at the University of Nebraska-Lincoln. Correspondence regarding this article should be addressed to Patrick T. Randolph at this email address: patricktrandolph@gmail.com
References


Appendix

Possible variations of the character sketches:

(A) Different poetic forms;
(B) Short skits/dramas;
(C) Presentations: Monologues depicting the lexical items;
(D) Personal letters describing word-characters;
(E) Written dialogs between word-characters;
(F) Song lyrics;
(G) News, presenting stories on the life or situation of word-characters.

For examples of (B) and (E) in the Appendix, go to www.catesolnews.org/2014/05/becoming-personality-word/
Implementing Differentiated Instruction in the Classroom

Teresa F. Renkema
Kuyper College

Abstract
As the student population in many English Language classrooms in the U.S. becomes more diverse, educators seek ways to address their many, varying language learning needs. One way to provide optimum language learning opportunities for students with a variety of language learning needs is for teachers to differentiate instruction. Differentiating the content, the process, and the product allows teachers to meet the specific and varying needs of the language learning students in their classrooms. This student centered approach puts the students’ language learning needs directly in the center by taking into account student readiness for learning, student interests, and student learning styles. This article will discuss how teachers can begin to use differentiated instruction in the language learning classroom

Introduction
The scenario is familiar to every English language teacher. After the teacher introduces the day’s topic, teaches the language lesson, and demonstrates with a few examples, several students still approach the assignment with hesitation, a multitude of questions, and missing some language needed to accomplish the assignment successfully. Even in classrooms to which students are assigned after careful testing, the mixture of reading, writing, speaking, and understanding abilities in the new language can vary greatly. The teacher offers extra help and encouragement and even then the students flounder and lose motivation. Most teachers recognize that more individualization
would be helpful, but the prospect is simply too unrealistic and overwhelming to undertake on a daily basis. It is here that a teacher’s ability to differentiate instruction can be a helpful solution to providing quality instruction at all levels without causing undue and unrealistic pressure on the teacher. Differentiated instruction means adapting instruction to meet individual needs. In differentiated teaching, the teacher makes deliberate plans and uses flexible grouping strategies within one of three broad areas of lesson planning: the content, the teaching process or the final product, to make the class more accessible for the student (Tomlinson, 2014).

**Background**

Differentiated instruction was first used in the general classroom mainly to enhance the education of the gifted and talented student who needed an additional challenge (Hall, Strangman, & Meyer, 2003). Tomlinson (2014) suggests that differentiated instruction is not really a novelty as it is similar to the kind of instruction that occurred in the one-room classrooms in which all of the students of all ages received instruction together, or were divided into small groups, or taught individually while other students worked independently. Having experienced a one-room schoolhouse classroom myself growing up in Canada, it is easy for me to imagine the type of differentiation that is being discussed. More than anything it involved a carefully orchestrated plan on the part of the teacher, who sequenced through her teaching plan with a rhythm that grew out of rigorous pre-planning and strong expectations for students to work individually and collaboratively. While one-room schoolhouses are less than ideal for today’s educational demands, the idea that students can be grouped according to learning needs and can work together collaboratively for optimal learning is still a good one and forms the basis for some of the ideas behind differentiated instruction. In the 70’s, the terms “mainstreaming” and “inclusion” became common as the desire to include all students in the learning process, and collaboration and grouping according to learning needs became
common. So while it wasn’t until more recently that the term “differentiated instruction” has become common, the philosophy and educational theories that support it are not new (Pavelock & Harlin, 2013).

**What is differentiated teaching?**

Differentiated instruction is a teacher’s response to learners’ individual needs and is implemented through flexible grouping, ongoing assessment, and respectful tasks which are all part of the planning process (Tomlinson, 2014). Differentiated instruction is based on the premise that instructional approaches should vary and be adapted to individual students in the classroom (Tomlinson, 2014). In other words, differentiated instruction allows teachers to approach their lesson planning not with the content as the primary focus, but with the needs of their students as their focus (Tomlinson, 2014). This subtle shift in focus is a very important component of differentiated instruction. Making the student the center of the teaching reconfigures how teachers need to think about the planning for the teaching of their content, their processes, and the products that demonstrate learning.

However, differentiated teaching is not individualized instruction (Tomlinson, 2014). In differentiated teaching, the teacher does not try to individualize everything for every student every day. Individualized instruction is not sustainable because the teacher cannot maintain the effort for a classroom of students every day in every class. Differentiated instruction is an overall approach to teaching which focuses on planning for learning beginning with the needs of the student, the readiness of the student, and the interests of the student and then adapting the lesson plan to encompass those needs into the framework of the class. It is student-centered teaching.

Lessons can be differentiated in three general ways: the content, the process, or the product (Tomlinson, 2001). Differentiating content includes what the student should know, understand and be able to do after the lesson. It also includes developing meaningful objectives which in turn is made easier by
knowing the students (Pavelock & Harlin, 2013). Content is perhaps the most difficult area in which to differentiate teaching simply because students need to learn the material or skill being taught. Reading material with simplified language or materials using video or audio recordings to convey key concepts are examples of ways to access similar content using a variety of techniques.

The second area in which a lesson can be differentiated is in the process used by the learner to make sense of the skill or content. The teacher might think of it as the activity or the process the students use to learn the content (Tomlinson, 2001). A useful way to change the difficulty of a task is to tier the demands of the activity in such a way that all students no matter what their language level will be able to perform their assigned task. One of its benefits is that all of the students in the class are working on the same material, and so oral feedback can go to the whole class. Another advantage is that the activity can be designed so students can choose their own level of support (Richards & Renandya, 2002).

The third area that a lesson might be differentiated in is the final product which demonstrates learning and can be used for assessment. When the teacher sets the goals for the lesson, the next step is to determine how the learning goals will be assessed. Again, teachers can make choices as to what differing ways the goals of the class can be met.

Procedures

How can differentiation best be implemented? The first step and the key to differentiation is knowing the individual needs of each student (Pavelock & Harlin, 2013; Tomlinson, 2014). Teachers need to know the current knowledge level of their students in order to be able to predict what their needs are going to be and how much accommodation they will need. I often use the results of standardized testing, such as the CASAS test if they are available to give me to give me a starting idea of the students’ abilities. I also listen closely to students’ responses both orally and in written work to confirm their
linguistic strengths and learning needs. Initial interviews with adult students often help me understand their motivations, areas of interest, and challenges. Closely related to an assessment of the students’ language knowledge and ability is knowing the students’ readiness for language learning, their interests, and their learning styles. Initially this may seem daunting, but it can be done by checking student records, by using both formal and informal assessments in the first few days of class, and by holding group discussions and encouraging students to share their learning needs and interests. Obviously, ongoing relationships with the students and formal and informal assessment will provide further evidence as the learning continues. While this may sound like a lot of work for teachers, and there is no denying that it is, this initial investment in students will make all the difference in the success of the teaching and how well students flourish in the classroom. Gathering information about students’ needs and interests is an ongoing process, and influences decisions as to how to group students for ideal learning. Using this information, teachers can then begin to plan differentiation in their classes by using a framework that focuses on three general areas: the content, the process or the product (Tomlinson, 2001).

Decisions about which of these general areas should be differentiated are determined by the objectives of the lesson. For example, a lesson focused on comprehension of a concept would lend itself to differentiation of content simply because the focus of the lesson is learning the content and that is what the students need to understand. On the other hand, a lesson in which the learning objective is focused more on process such as learning to use a variety of vocabulary words correctly, students could practice the words using a variety of different processes such as word/definition matching exercises, writing the words using playdough after the definition has been read orally, or drawing examples of the word meanings. Visual learners, aural learners and tactile learners would benefit from a variety of activities that would suit their learning styles.
and the end goal still would be attained. Finally, a lesson in which the final product is differentiated would be one in which students would be able to choose from a variety of end products which would all show mastery of the material taught but perhaps would demonstrate that mastery in a variety of ways. For example, if the goal is mastery of content, then students could write reports, present reports orally or demonstrate content mastery in a visual manner. Determining the best way to differentiate is always based on the objective of the lesson and accomplishing that objective for all of the students.

Once the decision has been made where it is appropriate to differentiate the lesson, how does it work? Differentiating the content is challenging, yet there are ways to do so successfully. For example, in a lesson that differentiates content, students may be given different reading levels of the same material. The teacher may work with one group to explain vocabulary before the students tackle the content, whereas another group may not receive this instruction but may be required to spend some time explaining the vocabulary after they have read the content. A variety of computer programs are available which allow teachers to upload content and vocabulary explanations are provided just by highlighting the appropriate words. Closely related to differentiating the content is differentiating the process which allows for a lot of flexibility for the students. Perhaps all students begin by reading the same story or paragraph. Weaker students are given a list of statements which are correct but are not in right order. They need to choose the correct order for the statements. Midlevel students might do a multiple choice test on the reading. Advanced students would be given open-ended questions to answer.

Another example might be that the weaker students would get a word bank to help them find the correct word to a list of questions, whereas the stronger students would not receive the word bank.

The third area in which to differentiate learning is in the product that demonstrates learning (Tomlinson, 2001). When setting the learning goals for the lesson, the teacher also needs to determine how
learning will be assessed. Again, options can be given so that the students may choose individual reporting or team reporting. A variety of resources and modes can be used to prepare the final product taking into account the learning styles of students. These resources could include video, audio, or realia based products. Students can be given choices as to how to express what they have learned, but the final determination of how learning is demonstrated is determined by the teacher based on the needs of the students.

An integral part of the differentiation process is the use of flexible grouping of students so that students are sometimes working with students of higher or lower ability and sometimes in homogeneous ability groups, or according to their learning needs and interests. Students could sometimes be allowed to group themselves and sometimes the groups are predetermined based on criteria that the teacher has planned to create the best learning environment.

Students should learn to be flexible and collaborative learning should be encouraged. How much support students receive from other students, individuals, or the teacher is part of teacher planning. Building in time for small group instruction and reading circles provides opportunities for individualized help within a small group. Depending on the situation or student, the teacher can also allow the use of a variety of responses, both individual and group. The beauty of this is that differentiation allows the teacher to meet the needs of the individual students in the class in an achievable manner.

Assessment

While proponents of differentiation often write about improvements in their classrooms, there seems to be very little evidence to date that the full use of differentiation in English language classrooms has been researched extensively (Hall, Strangman, Meyer, 2003). Perhaps this is because teachers often implement differentiated instruction in only some areas of their teaching. Hall, Strangman, and Meyer (2003) do note that there has been significant classroom research supporting the concept of zone of proximal development, a
foundational idea in differentiated instruction. In fact, “researchers found that in classrooms where individuals were performing at a level of about 80% accuracy, students learned more and felt better about themselves, and the subject area under study” (Hall, Strangman, & Meyer, 2003, p. 5).

A review of the current literature on differentiation in the classroom does indicate that “the best teaching practices are those that consider all learners in a classroom setting and pay close attention to differences inherent to academic, cultural, linguistic, and socioeconomic diversity” (Santamaria, 2009, p. 241). While the literature is generally very positive about differentiation, and it seems obvious that teachers would want to take advantage of the variety of gifts, talents, and backgrounds that language learners bring to the classroom, deliberate planning for how to make the most of the language learning opportunities in the classroom is ultimately up to individual teachers and their own desire and expertise in designing differentiated learning opportunities for their students.

**Evaluation, limitations, and implications for future**

English language teachers must recognize that differentiated instruction is a student-centered approach to English language teaching and as such it colors all the choices that are made in the language classrooms. It helps teachers do what they want to do most: serve their students. However, as with any other philosophical approach, it must be implemented with care and thought. Since it can seem overwhelming, the process should begin slowly by embedding some differentiation into some of the classes some of the time.

The focus on learning and meeting learning goals may need to be explained to students as they experience the dynamics of a differentiated classroom. Some students may feel the need to accomplish the same assignments as others simply because the focus has always been on completion rather than learning. Once students understand this, they become motivated to learn and increase their abilities.
Conclusion

As a teacher, the thought of individualizing my classroom to meet the diverse learning needs and styles of my students seemed overwhelming at first. However, once I recognized differentiated teaching as an approach to the learning needs in the classroom, it provided me with a very helpful framework for the planning that is required to provide the very best instruction for my students. Thinking in terms of differentiating the content, the process, and the product and using flexible grouping allowed me as a teacher to build successful lessons on a framework designed to meet the specific and varying needs of the language learning students in my classrooms. Differentiated instruction gives the teacher a way to deliberately plan for instruction which benefits all the students in the classroom.

Author Note

Teresa F. Renkema is Professor of Intercultural Studies at Kuyper College, Grand Rapids, MI, where she serves as Director of Intercultural Studies/TESOL Field Practicum. Correspondence concerning this article should be addressed to Teresa F. Renkema at the email address: trenkema@kuyper.edu
References


