INTRODUCTION AND OVERVIEW

In developed countries all over the world, people frequently use their cell phone, computer, or tablet to interact with others and use apps to do many things from playing games to learning languages. According to Dreyer (2015), “More than 75% of all Americans (age 18+) who use the Internet now access digital content on both desktop and mobile devices, which is an increase from 68% from a year ago.” Further between December 2010 and 2014, smartphone usage has increased “394%, and tablet usage is up a whopping 1,721% as these platforms now combine to account for 60% of digital media time spent” (Dreyer, 2015).

Technology that provides internet access has become more ubiquitous all over the world. The CIA’s The World Factbook provides data about the population, number of cell phones and internet users in different countries. Table 1, gives 2014 data estimates for the number of cell phones and internet users (in millions) and their percentage of the total population for selected countries. (CP% of Pop. is the number of cell phones as a percentage of the population. IU% of Pop. is the number of internet users as a percentage of the population.). All of the countries below, except Canada, have more cell phones than internet users. Some countries, like the United Arab Emirates have almost 3.0 cell phones per capita, while Hong Kong has 2.4 phones per capita. Even countries with relatively few internet users like Indonesia have many cell phones.

The above data does not report whether the cell phones are smartphones. However, Smith (2015) writing for the Pew Research Center gives details on smartphone use in the U.S. for 2015 based on surveys conducted during a one-week study period. He reports that a number of Americans own smartphones but do not have broadband at home (10%). Further, “15% own a smartphone but say that they have a limited number of options for going online other than their cell phone.” Thus, for some people smartphones provide their window into online world. In reporting how smartphones are used, Smith says, 30% use it “to take a class or get educational
content.” For young adults (ages 18-29) “44% have consumed educational content on their phone” (Smith, 2015). In addition,

**Fully 91% of smartphone owners ages 18-29 used social networking on their phone at least once over the course of the study period, compared with 55% of those 50 and older.... Three-quarters of younger smartphone owners (75%) indicated using their phone to watch videos at least once over the study period.... And 64% of younger adults used their phones at one time or another to listen to music or podcasts.**

Since many people now have the technology to access the internet via cell phones, tablets, and computers, it therefore makes sense to utilize these tools much more widely in education in general, and especially in language education. Technology

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**Table 1. Number of cell phones and internet users (in millions) and their percentage of the total population**

<table>
<thead>
<tr>
<th>Country</th>
<th>Cell Phones</th>
<th>CP% of Pop.</th>
<th>Internet Users</th>
<th>IU% of Pop.</th>
</tr>
</thead>
<tbody>
<tr>
<td>United Arab Emirates</td>
<td>16.8</td>
<td>298.5%</td>
<td>5.2</td>
<td>92.4%</td>
</tr>
<tr>
<td>Hong Kong</td>
<td>17.4</td>
<td>244.6%</td>
<td>5.6</td>
<td>78.7%</td>
</tr>
<tr>
<td>Saudi Arabia</td>
<td>52.7</td>
<td>192.7%</td>
<td>16.2</td>
<td>59.2%</td>
</tr>
<tr>
<td>South Africa</td>
<td>79.5</td>
<td>164.3%</td>
<td>24.8</td>
<td>51.3%</td>
</tr>
<tr>
<td>Russia</td>
<td>221.0</td>
<td>155.1%</td>
<td>84.4</td>
<td>59.2%</td>
</tr>
<tr>
<td>Finland</td>
<td>7.6</td>
<td>144.2%</td>
<td>5.1</td>
<td>96.8%</td>
</tr>
<tr>
<td>Brazil</td>
<td>280.7</td>
<td>138.5%</td>
<td>108.2</td>
<td>53.4%</td>
</tr>
<tr>
<td>Denmark</td>
<td>7.1</td>
<td>127.5%</td>
<td>5.4</td>
<td>97.0%</td>
</tr>
<tr>
<td>Indonesia</td>
<td>319.0</td>
<td>125.8%</td>
<td>42.4</td>
<td>16.7%</td>
</tr>
<tr>
<td>European Union</td>
<td>632.5</td>
<td>123.7%</td>
<td>398.1</td>
<td>77.8%</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>78.5</td>
<td>123.2%</td>
<td>57.3</td>
<td>89.9%</td>
</tr>
<tr>
<td>Japan</td>
<td>152.7</td>
<td>120.1%</td>
<td>109.3</td>
<td>86.0%</td>
</tr>
<tr>
<td>South Korea</td>
<td>57.2</td>
<td>116.6%</td>
<td>44.9</td>
<td>91.6%</td>
</tr>
<tr>
<td>Netherlands</td>
<td>19.6</td>
<td>116.1%</td>
<td>16.2</td>
<td>96.0%</td>
</tr>
<tr>
<td>New Zealand</td>
<td>5.1</td>
<td>115.9%</td>
<td>4.0</td>
<td>90.9%</td>
</tr>
<tr>
<td>Norway</td>
<td>5.9</td>
<td>114.6%</td>
<td>4.9</td>
<td>95.2%</td>
</tr>
<tr>
<td>United States</td>
<td>317.4</td>
<td>99.5%</td>
<td>276.6</td>
<td>86.7%</td>
</tr>
<tr>
<td>China</td>
<td>1,300.0</td>
<td>95.9%</td>
<td>626.6</td>
<td>46.2%</td>
</tr>
<tr>
<td>Canada</td>
<td>29.5</td>
<td>84.7%</td>
<td>32.4</td>
<td>93.0%</td>
</tr>
<tr>
<td>India</td>
<td>944.0</td>
<td>76.4%</td>
<td>237.3</td>
<td>19.2%</td>
</tr>
</tbody>
</table>

is one way educators can address students’ different perceptual learning styles (visual, auditory, tactile, kinesthetic, group, and individual), multiple intelligences (verbal/linguistic, musical, logical/mathematical, spatial/visual, bodily/kinesthetic, interpersonal, and intrapersonal), as well as character and personality differences (Reid & Byrd, 1998, p. x). Thus, language-teaching methods should incorporate a wide variety of learning activities in order to optimize individual students’ learning styles and preferences. Teachers should help students discover their learning styles and encourage them to stretch beyond methods they are already accustomed to using. Educators should teach students how to plan, monitor, and evaluate their language learning as well as gain a greater awareness of the language-learning process (Brown, 1994, p. 115).

Learning is the process of developing educational connections between artificial and real-life learning. Healy (1998, pp.132 -137) notes six major principles of brain growth with the practical educational implications that flow from them. They are given below with author comments inside angle brackets.

1. The brain grows as it responds actively to its environment, and it becomes ‘custom-tailored’ to that environment.
2. ‘Critical’ or ‘sensitive’ periods open the brain to new windows of development [possibly Zones of Proximal Development] at certain ages and stages. [In language development, these most teachable moments seem to be at youngest ages when the brain is most plastic and its absorbance rate is the highest.]
3. The brain uses multiple systems which interconnect with practice. [A drive for further brain integration and organizing raw materials into some new form comes with time-consuming practice.]
4. Emotional brain centers exert powerful controls over learning. Unless we get the emotional brain involved, higher-level thinking and problem-solving will be short-circuited. [Today’s cyber-culture and social networking definitely relate to emotional and motivational stimulation.]
5. Language helps us develop higher cognitive functions. [Here Healy notes that since language development plays such a crucial role in brain development, solitary computer use could severely limit a child’s verbalization, stating that “Children need plenty of interactive ‘talk’ for maximum mental development” (p. 137).]
6. The brain makes sense of its world by seeking patterns.

The best practices in education help students make meaningful connections between the material, emotional, and invisible worlds to help them recognize and extract patterns from their environmental experiences. Since our world is flooded with “information overload,” too much media can fragment learners experience and
distract their minds from integrating knowledge in a way that is sense-making and productive for life. One goal of eLearning and flipped instruction is to learn how to best harness technology’s potential for more brain-appropriate uses.

Living and working successfully in today’s technological world requires higher-level thinking skills than in past centuries. Lorin Anderson, Bloom’s former student, updated his 1956 Taxonomy of Thinking Skills (in Anderson & Krathwohl, 2001), making it more relevant to our current environment. Instead of Bloom’s original hierarchy moving from lower to higher orders of: (6) Knowledge, (5) Comprehension, (4) Application, (3) Analysis, (2) Synthesis, and (1) Evaluation; we now have students called to move from tasks requiring (1) Remembering, (2) Understanding, (3) Applying, (4) Analyzing, and (5) Evaluating, to (6) Creating. For example, rather than simply verbally justifying an opinion or decision, today’s student may be asked to create a new product or digital expression showing their own point of view.

A number of books talk about using computer-assisted language learning (CALL) and mobile-assisted language learning (MALL). Other books discuss flipping classrooms to increase students’ motivation and independent learning. Additional books deal with building various EFL/ESL (English as a Foreign Language/English as a Second Language) language acquisition skills. There are also individual articles dealing with technology and individual language skills, like vocabulary and writing. However, there are few recent books that discuss using CALL and flipped classrooms to maximize second language (L2) education. Further, since technology is rapidly evolving, new books are needed to explore the latest technologies. While past principles may remain applicable, older programs and technologies are often no longer supported or have become unattractive to students and teachers because of their limited or obsolete interface.

This book, *Flipped Instruction Methods and Digital Technologies in the Language Learning Classrooms*, reviews some of the more recent research utilizing technology to enhance language acquisition, especially in a flipped classroom environment. In this book, flipped instruction, flipped classrooms, inverted classrooms, and blended learning refer to similar concepts.

Bergmann and Sams are credited with pioneered flipped instruction in 2007 in their Colorado high school classes. It was originally designed for football players who missed class while on the road. They recorded their PowerPoint™ presentations for absent students and made them available online or via DVDs or flash drives (Knewton, 2011; Bergmann, 2011; Reynolds, 2014). They and other teachers began using 5 to 7 minute podcasts to introduce material to students as homework. Corresponding tasks might include writing questions about the materials and taking notes for in-class use. Then during class, students would utilize and apply what they had previously studied (Knewton, 2011). For language learning this could include interacting using vocabulary, practicing topic-related conversations, and employing...
grammar concepts. Rather than teacher-fronted lectures where students are largely passive receivers. Students become the teachers as they share their learning in pairs, in small groups, or with the entire class. Further, students utilize class time interact or create with the material they have studied outside. In a flipped class, the lecture part of the class is done at home while traditional “homework” assignments are done during class. This is a much more collaborative method than used in most traditional, textbook-based classes. Thus, classes are flipped from having “the sage on the stage” to teachers as “the guide on the side” (Knewton, 2011).

While this flipped classroom model has gained many followers in K-12 through college education, it is as yet under-utilized and under-explored in second or foreign language education. Chen, Wang, Kinshuk, & Chen (2014), developed an acronym that enhances the understanding of the flipped classroom model. It is as follows.

- **F**: Flexible environments
- **L**: Learning culture
- **I**: Intentional content
- **P**: Professional educators
- **P**: Progressive activities
- **E**: Engaging experiences
- **D**: Diversified platforms

Their study found that student attendance improved, study efforts increased, students became much more motivated and satisfied with their learning. However, they also suggest that some students retained their former, more passive, learning styles. This can be an obstruction to the full adoption of this method, especially in more teacher-fronted learning environments or cultures, where students tend to be more passive or reticent by training (Chen et. al, 2014).

As reported by Pappas (2015), the advantages of eLearning include being (1) convenient since learners can access resources from anywhere and anytime, (2) flexible because learners can study at their own pace, choosing where and when to learn, (3) tailored to different learning styles and needs, (4) immediate, giving quick individual feedback and results, and (5) interactive. However, he also cautions that improperly designed eLearning resources have limitations. These can include students feeling isolated when they “need personal contact with their educators” or want individual support and reassurance. Online courses can be impersonal and require more self-discipline, which learners may not have developed yet (Pappas, 2015). These problems can be ameliorated through blended learning which combine eLearning or online media and resources with in-class activities and instruction.

Research on flipping education has flourished since 2007 and flipped classrooms continue to expand. For example, Clintondale High School near Detroit saw a re-
duction in failures in their Freshman English classes from 50+% to 19% (Knewton, 2011). However, the use of flipped education in language learning classrooms is only beginning to emerge. Combined with the emergence of digital technologies that enhance language acquisition, today’s innovative flipped language learning classrooms now incorporate new methods and tools, and provide new paths for language research, teaching, and learning.

Current digital tools and methods are changing the way teachers interact in the classroom, and the way language learners acquire language. For example, when studying a foreign or second language, good flashcards can build learners’ vocabulary and grammar. Research indicates that spaced repetition is important for vocabulary retention and reinforcement (Pimsleur, n.d.; Stellero, 2014). Rather than creating paper flash cards, digital flashcards like those of Anki or Quizlet.com can incorporate spaced repetition timing.

Anki has mobile apps, web, and desktop versions (http://ankisrs.net/). Anki allows you to import vocabulary “decks” from popular textbooks and other lists and then converts them into flashcards. These can range from single words – to vocabulary placed in sentences to help you understand the context for its use. They can include audio and stock photos. When presented with a flashcard, students must think of the answer, and then click to have it revealed. They then self-mark the item from “Again” to “Easy,” with the time period in which the card will be repeated or answers revealed. Anki has a range of features, including an answer timer and the ability to flip the questions and answers. This enables learners to switch between reading and vocabulary to checking their writing. Both students and teachers can create their own decks. When creating decks, it is quickest to use the desktop version and then sync it with one’s mobile device or phone. The app and website are free for all versions although iOS users have a paid app option.

The subject area of this book is second-language learning, and each chapter presents ways to leverage flipped classroom methods and digital technologies in the language-learning classroom. This book gives recent research on digital learning tools and provides practical applications. It lists technology-enriched language skill resources. This book provides additional voices and techniques, and focuses on more learner-centered approaches to CALL and MALL, flipping the responsibility for preparing and using learning materials onto students. As Rosen, Maeda, and Roberts (in this book) say, flipped instruction for language learners enables students to build “their lower order thinking skills of memorizing and understanding at home” while instructors facilitate “the development of [their] higher order thinking skills (for example, creating with the target language in meaningful ways) during class.”

As an example of available language learning resources, Brooks and Byles’ *General ESL Resources* (2015) on their Internet4classrooms website provides links to 46 webpages that support English language learners. The supported activities
include developing vocabulary, practicing listening and pronunciation, games and quizzes as well as audio-visual stories and digital books. In addition, Loucky’s www.CALL4all.us website (referenced in this book in his chapters) provides over 8,000 links for teachers and learners to use and browse. The resources are mainly language learning CALL resources, which include programs and open source websites.

AUDIENCE

The primary audience for this book is EFL/ESL teachers and second-language researchers who wish to learn more about how technology is affecting second language acquisition theory and practice. (Many of these tools are also applicable to first-language English teachers.) This book can be used by CALL practitioners and teachers wanting to use a more student-friendly flipped classroom approach to language learning, as well as eLearning for content areas. Thus, it is a unique volume that will be valued by researchers and practitioners alike. Program administrators can see the value of flipped instruction and learn steps they can use to implement programs under their jurisdiction. Students who have used flipped instruction have commented that they wished flipped online materials were available in their prior courses (Rosen, Maeda & Roberts, this book). Educators will be inspired to implement these technological innovations in their classes. Researchers will be able to use this collection of resources to gain a better understanding of this emerging and burgeoning field, which will enable them to move forward and further extend research on technology-based language acquisition.

ORGANIZATION OF THE BOOK

The book has 12 chapters. A brief description of each chapter is given below.

Chapter 1 explores the pedagogical rationale for using flipped learning and digital technology in second language acquisition. It discusses the use of digital technology to provide learner autonomy and providing language-learner motivation through tasks such as self-reflection on learning and discussions of the students’ feelings. It also reviews communicative language learning and teaching, language learning strategies, and task-based language learning.

Chapter 2 relates the process of transforming their college’s ~100 English for Academic Purposes courses from standard face-to-face (F2F) classes into flipped courses supported by Moodle as their Virtual Learning Environment. Courses incorporate F2F meetings with online sessions. They include digital tools for building vocabulary and listening skills as well as online material and readers with support
for text-to-speech, which enable students to listen while reading. PoodLL is used to support audio or video feedback and student to student communication as well as evaluating students’ oral proficiency. The gamification tools, Kahoot and Socrative, add an “adventurous activity with greater excitement” to the language learning process.

Chapter 3 provides definitions of “flipped classes” and blended learning, and their developmental history. Blended learning mixes synchronous and asynchronous learning events (same time, same place; different time, different place, and the various permutations). The chapter also presents research done in Asia on flipped learning programs. Included are lists of top websites and apps for flipped classrooms. The author relates his experience helping graduate Engineering and English students find eLearning tools that best help them improve their English and science skills.

Chapter 4 discusses the development of flipped classroom methods starting with peer instruction, then moving to online educational videos, inverted classrooms, and flipped instruction. The main focus of the chapter is using technology to develop English as a Second Language proficiency from Basic Interpersonal Communication Skills (BICS) at the everyday verbal skill level to Cognitive Academic Language Proficiency (CALPS), which includes formal language for analyzing and conceptualizing abstract thoughts. Online media enable students to gain confidence in their ability to learn course content autonomously. Class time often includes cooperative and collaborative learning in small groups. Quizzes, as well as formative and summative assessments enable teachers to evaluate their students’ achievements.

Chapter 5 offers definitions of flipping classes, which shift more responsibility towards students who utilize media outside of class to prepare for contributing during their class time. It discusses blended learning as a combination of face-to-face instruction and eLearning and presents a history of motivational studies. It reports findings from Asian based CALL studies. Included is the author’s study, which had students develop their own teaching website and collections of favorite eLearning materials using Symbaloo WebMixes. The chapter also includes links to students’ presentations and Symbaloo creations as well as lists of applications and websites that support flipped learning.

Chapter 6 discusses computer-assisted vocabulary learning and issues related English as a Foreign Language (EFL) vocabulary. For example, how many word families do students need to learn and which tests measure vocabulary size. The author then discusses six vocabulary building tools which include *GSL* (General Service List) *Builder*, *AWL* (Academic Word List) *Builder*, *Shanbei* (a digitized spaced-repetition flashcard system), *Word Engine* (which targets the vocabulary needed for English proficiency tests like the TOEIC™ and TOEFL™), *Cavoca* (Computer Assisted VOCabulary Acquisition), and *V-Admin*, which tracks students’ vocabulary development. Two benefits of using digital vocabulary building tools include self-paced learning and instantaneous feedback.
Chapter 7 discusses how Russian and Japanese instructors moved the “fact learning” parts of their lessons to independent study while increasing opportunities for students to practice creating with the language in a supported teacher-guided environment. The time teachers freed from moving introductory material outside of class time allowed them to differentiate their instruction to meet students’ learning styles. The authors’ courses utilized Interactive Two-way Videoconferences (ITV) for language learning. Students in their study choose whether to watch video explanations of grammar content via their Desire2Learn (D2L) course management system and/or to read explanations in their textbook. They were then required to take an online concept check in D2L prior to class. Class time could then be used to practice their target language, ask questions, and clear up misunderstandings. The teachers’ role “shifted from language teacher to learning facilitator, motivator, organizer, and coach.”

Chapter 8 applies the Zone of Proximal Development (ZPD) and experiential learning theory to the field of management information systems (MIS). For MIS courses, skill transfers occur at workstations and in computer labs, while using software and applications, and through solving real business problems. Students review their lectures outside of class with pre-recorded slides, sound and videos, and then use their valuable class-time completing class exercises such as team problem solving, experiential learning, and problem based learning. Students acquire desirable skills in consultation with subject matter experts. Then after the experts have left, learners continue practicing to perfect their skills. Flipped instruction improves teacher-to-student mentoring, peer-to-peer collaboration, and team learning in socially constructed learning environments.

Chapter 9 shows how flipped learning can be applied to EFL academic writing classes. The authors present empirical research via surveys of EFL students in two scientific writing classes, examining how students interacted with the video content as well as their perceptions of the flipped learning format. The course taught two sets of students how to write a typical scientific research paper in the IMRaD format (Introduction, Method, Results, and Discussion). Students were required to write one research paper of 8–12 pages during 13 weeks. Most of the students had no experience writing using academic English. They were also inexperienced in the creative and critical thinking processes needed to design an original scientific experiment. Class activities included collaborative writing, peer-to-peer and teacher-student interactions, and individual writing practice. The written products from the flipped learning classes were compared with earlier traditional style classes. The results showed that “Students from the flipped classroom had better control over the organization of the method section than the students from the traditional classroom, who tended to organize their methods poorly.”
Chapter 10 summarizes the psychological assumptions of flipped instruction and implementations of flipped instruction in EFL classes. It then discusses a study of students’ engagement in a flipped EFL academic writing course in Oman. Online discussions and collaboration were done via padlet.com. Data was collected via a self-report questionnaire and focus-group interview. In general, the emotional and behavioral engagement subscales were higher than the cognitive and agentic engagement subscales, with persistence versus avoidance, behavioral involvement, and deep strategy use ranking the highest on the questionnaire. During the interview participants talked about their positive reaction to flipped learning and the collaboration they did as part of their writing assignments.

Chapter 11 suggests how to build effective flipped learning programs and the questions that should be asked before designing and using CALL and computer-assisted second-language acquisition (CASLA). The author discusses if, how, and when to use CALL (or not) in the language-learning areas of (1) content-based learning, (2) vocabulary, (3) grammar, (4) reading, (5) writing, (6) speaking, and (7) listening. For each area, questions are included to determine the appropriate use of CALL and CASLA. CALL programs need to be evaluated by examining their “(1) language learning potential, (2) learner fit, (3) meaning focus, (4) authenticity, (5) impact, and (6) practicality.”

Chapter 12 reviews the pedagogical basis supporting flipped learning and discusses the recent research in the use of flipped learning methodology in foreign language classrooms. Flipped language instruction teaches students how to self-direct their language learning outside of the classroom and utilize their in-class activities to gain confidence in their communication skills. Classroom practice enables students to engage more deeply with the material and “move through the levels of Bloom’s Taxonomy to higher order interactions” such as analyzing, evaluating, critical thinking, and creating. Using these interactions increases students’ understanding and retention. The chapter references flipped instruction tools and concludes with suggestions for future research into the field of flipped learning in foreign language education.

**CONCLUSION**

Science teacher Collin Black was the main teacher interviewed by Dean Reynolds (2014) on the topic of flipped instruction. Black “helps kids do homework in class and sends his lectures home.” He commented, “I can challenge the ones who are doing really, really well and help the kids who are really struggling with it. But no matter what, every day now I talk to every kid” (Reynolds, 2014).
For Black, the flipped classroom is right-side up. “As I’m helping them, all of
a sudden you see them like, ‘Oh!,’ and that light switches on. I love seeing that.
When I see a kid who’s been struggling, and then they understand it, that’s what
does it for me” (Reynolds, 2014).

Bergmann and Sams (2012) wrote the book *Flip Your Classroom: Reach Every
Student in Every Class Every Day*. As stated in the amazon.com book synopsis
(n.d.), they describe their eureka moment as follows.

> It started with a simple observation: Students need their teachers present to answer
questions or to provide help if they get stuck on an assignment; they don’t need their
teachers present to listen to a lecture or review content... Students watched recorded
lectures for homework and completed their assignments, labs, and tests in class with
their teacher available. Bergmann and Sams found that their students demonstrated
a deeper understanding of the material than ever before.

Using the flipped instruction model, where students learn at their own pace,
teachers are finding that their students have an increased enthusiasm for learning
and better achievements in both learning and participation at-home and in-class.
Further, that “Once you flip, you won’t want to go back!” (amazon.com, n.d.).

As Bergmann stated in an interview with Reynolds (2014) of CBS News, “The
question I like to ask is, ‘What’s the best use of your face-to-face class time?’” He
reported:

> We have school backwards. We’re sending kids home to do the hard stuff. We’re
sending them home to apply, analyze and synthesize content, and they can’t do it...
Now when they come to class in a flipped classroom, the difficult tasks – applica-
tion, analysis and synthesis – happens with the expert, the most important person,
the teacher, present.

For many, a flipped classroom approach puts learners back on their own two
feet, or in the driver’s seat so to speak, accepting more accountability for their own
learning, and better balancing face-time and homework-preparation time in ways that
are more motivating and effective – for teachers, parents, and students themselves.
Who would not want to try an approach that seems to be working so well?

*Jean L. Ware*

*Tokai University Fukuoka Junior College, Japan*

*John Paul Loucky*

*Seinan JoGakuin University, Japan*
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