

McCrocklin, S. (2014). Dictation programs for pronunciation learner empowerment. In J. Levis & S. McCrocklin (Eds). *Proceedings of the 5th Pronunciation in Second Language Learning and Teaching Conference* (pp. 30-39). Ames, IA: Iowa State University.

DICTION PROGRAMS FOR PRONUNCIATION LEARNER EMPOWERMENT

Shannon McCrocklin, University of Texas Pan American

Although autonomy, the capacity to learn independently, has been recognized as a language learning goal since Holec (1981) first applied the idea to language teaching, pronunciation teaching is an area that has been ignored by most proponents of autonomy. This article presents a piloted mixed-methods research study examining whether the use of Automatic Speech Recognition (ASR) as part of a hybrid pronunciation class can help foster learner autonomy more than traditional face-to-face instruction. Survey results indicate that the hybrid course group developed a greater sense of autonomy. Interview results suggest that the incorporation of ASR gave students a clear strategy for practice outside of class, expanding their repertoire of available practice strategies.

INTRODUCTION

Autonomy empowers students, allowing for effective language learning outside of the classroom. Pronunciation, however, has been an area mostly ignored by autonomy research and, without help, many pronunciation students may not know how to improve their pronunciation outside of a pronunciation classroom and may feel powerless to improve without the constant monitoring and feedback from a teacher. This research study examined the potential of Automatic Speech Recognition (ASR) technologies to foster autonomy in pronunciation learners in the context of a hybrid course, which combines traditional face-to-face instruction with ASR work days.

Autonomy

Autonomy, the capacity to learn independently, has been recognized as a language learning goal since the early work of Holec (1981), who defined autonomy as “the ability to take charge of one’s learning” (1981, p. 3). Research indicates that there are educational benefits of autonomy in the learning it enables. Learner autonomy is seen by many “as a means to the end of more effective language learning” (Benson and Voller, 1997, p. 13). Autonomy allows students to work more effectively on their own, allowing them to make progress not dependent on a teacher for constant instruction and direction. Autonomous learners have also been found to have higher motivation and higher learning achievement. Classes that work to foster autonomy have been found to positively affect students’ motivation and achievement (Dickinson, 1995; Furtak & Kunter, 2012; Murray, 1999). Deci and Ryan (1985) explain this relationship by claiming that students who self-determine all or some of the learning content or methods are more likely to be driven by intrinsic motivation, which stems from an interest in the task itself.

Although autonomy has potential benefits, students raised in more traditional teacher-led classrooms may devalue autonomy, appreciating more teacher-led (spoon-fed) approaches (Ming & Alias, 2007). These students may also feel uncomfortable with the idea of directing their own

learning (Luke, 2006). These students may need help and guidance to develop their autonomous learning ability.

Fostering Autonomy

To develop autonomy, this research study takes a gradualist approach to autonomy as set forth by Allford (2007). In gradualist positions, autonomy is seen as a long-term goal, something to be developed eventually. Skill in autonomous language learning, as well as proficiency and skill in the L2, is developed through study and practice. The teacher is also often considered to play a significant role in this process, providing training and guidance (Allford, 2007, p. 14).

Schwienhorst (2008), one researcher that takes a gradualist approach, suggests that fostering autonomy revolves around and depends on experimentation. Students need to be able to explore and experiment with the language itself as well as with language learning styles and strategies (p. 9). In Schwienhorst's framework, students need to be given information about learning styles and strategies as well as be guided to use these strategies and tools for experimentation with the language.

One way of doing this may be to develop a hybrid course design in which students would meet with the instructor for part of the class-time, being introduced to important language features, and then for the other half of the class-time with students doing would practice guided experimentation with the language features. A hybrid plan, however, could be complicated to apply to pronunciation teaching.

Traditional pronunciation teaching does not lend itself easily to autonomous learning or experimentation. Many pronunciation classroom activities still rely on the teacher to model "correct" pronunciation and to monitor, evaluate, and give feedback on student production. Having students monitor their own pronunciation proves difficult because students lack aural discrimination categories appropriate to the L2. Research has indicated that, for most language learners, sounds in an L2 are filtered through the phonological system of the L1 (Beddor & Strange, 1982; Blankenship, 1991; Flege, Munro, & Fox, 1993). Filtering through the L1 can lead an L2 learner to make distinctions that are inappropriate for the L2 and may prevent learners from identifying pronunciation errors when they make them. Without the ability to effectively monitor their production, students will not be able to learn how to control their motor functions to create the appropriate sounds.

While there is potential for pronunciation practice and learning to be autonomous, the task may be daunting or overwhelming to students, especially those not familiar with strategies that can help them. Students need tools that can empower them to experiment with pronunciation, without relying on the teacher for constant monitoring and feedback, tools that will help students become more autonomous as pronunciation learners.

Technology for Fostering Pronunciation Autonomy

Technology offers many tools to potentially help students work on their pronunciation. One technology that shows great promise for pronunciation experimentation work that would allow

both experimentation with the language as well as feedback is Automatic Speech Recognition (ASR), which would allow students to experiment with the language in a safe, private setting. “Automatic speech recognition (ASR) is an independent, machine-based process of decoding and transcribing oral speech. A typical ASR system receives acoustic input from the speaker through a microphone, analyzes it using some pattern, model or algorithm, and produces an output, usually in the form of a text” (Levis & Suvorov, 2012, p. 1).

When used for pronunciation training, ASR is a tool that allows students to practice at their own speed, getting feedback from the words recognized. Research has shown that ASR seems to facilitate pronunciation improvement for diverse populations of learners (Hincks, 2003; Neri, Mich, Gerosa, and Giuliani, 2008; Neri, Cucchiarini, and Strik, 2006). These studies focused, however, on student improvement, measuring accuracy gains with a pre- and post-test design. These studies did not focus on developing student autonomy and made no effort to measure changes in autonomy.

There seems to be little overlap between research in autonomy and research into pronunciation. This research study seeks to bring these two fields together, with the goal of using ASR to foster autonomy in pronunciation learners.

Research Questions

This study seeks to answer the following questions. Does the utilization of technology tools for pronunciation feedback in a hybrid course:

foster learner autonomy?

lead to increased beliefs of empowerment to improve pronunciation ability?

Methods

To answer these questions, a mixed methods approach was taken to measure changes in stated beliefs of autonomy and empowerment over time with surveys (quantitative) and to better understand participants’ beliefs through interviews (qualitative). Each participant completed a survey and interview before and after participating in a three-week pronunciation workshop covering vowels and consonants known to be problematic for many ESL learners.

Participants

Participants were recruited from an undergraduate ESL writing course. Seven participants completed the research study, three males and four females. Six out of the seven participants were native Chinese speakers; one was a native Portuguese speaker.

The surveys and interviews

The stated beliefs of the participants' autonomy and feelings of empowerment were measured at the beginning and the end of the course through surveys and interviews. The surveys were used to determine if the attitudes and skills before and after the class were different. The surveys were administered through SurveyMonkey.com. The pre-course survey had 10 questions that addressed participant background information, language learning habits, as well as nine Likert scale question items that addressed participants' beliefs about their autonomy and empowerment. The post-course survey asked participants to answer the same Likert scale items used in the pre-course survey.

The interviews were primarily used to identify the student's perceptions of the causes of changes in survey responses. Most of the post-interview questions aimed to elicit the student's repertoire of tools, skills, or strategies the students had developed during the course.

The Pronunciation Workshops

Participants in the study were asked to take a three week pronunciation workshop. Volunteers for the study/workshop were semi-randomly assigned to one of two groups (based on times available and technology owned):

Control (traditional face-to-face course)

Experimental (hybrid with technology/online day)

Both groups participated in workshops with two work days per week and one homework assignment. For both courses, the first workday met together as a class doing listening practice with the sounds, controlled production activities, and guided production activities. Students were also introduced to spelling patterns for the targeted vowel sounds. Finally, both courses were introduced to pronunciation practice strategies, including focused listening, practicing with ASR (through Windows Speech Recognition or voice search on smart phones), and covert rehearsal, a form of private practice in which learners monitor their speech for pronunciation issues or errors (Dickerson, 1994).

The second workday included a listening review, but focused mostly on production for both class, but differed in format. For the traditional course the second workday was again face-to-face and instructor led, but the hybrid course moved online using technological tools. For the hybrid this included listening activities done through online listening activities and production practice performed with software already a part of Windows, Windows Speech Recognition (WSR). Students were directed to monitor the dictation provided by WSR and work on correcting their pronunciation if the program was not able to correctly identify targeted sounds in their intended word. The computer based listening and production activities for the hybrid course were managed through Moodle, a course management website.

Both classes were asked to submit a recorded file each week as homework. The assignment asked participants to record activities that demonstrated work in these areas. Figure 1 shows how the two courses aligned for each week:

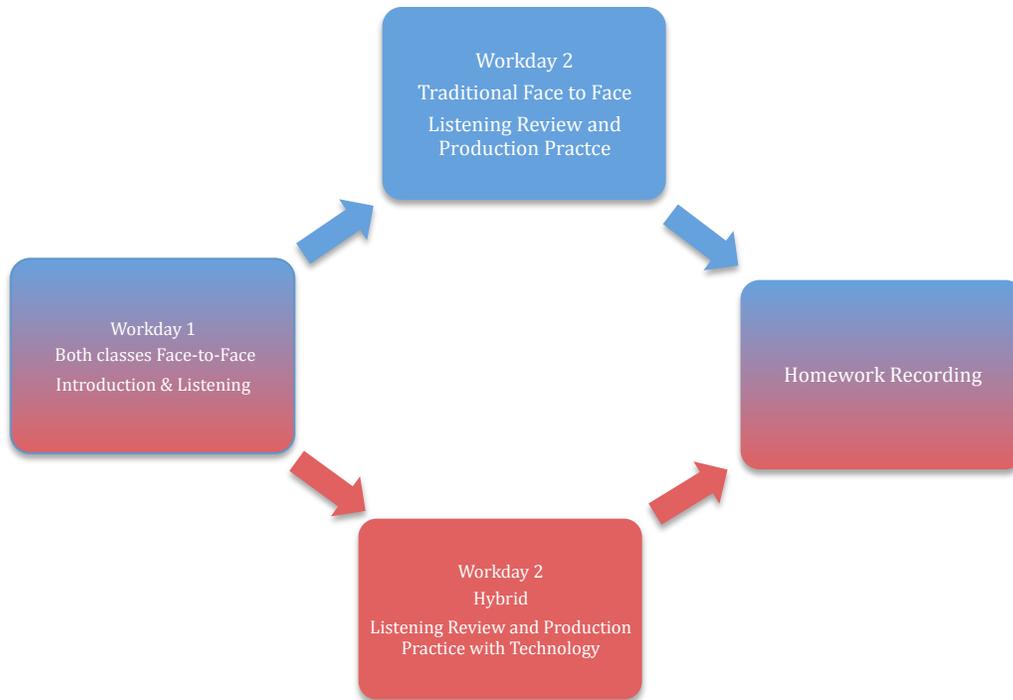


Figure 1. Course Design for each Week

The topics for the course, the vowel pairs /ɛ/ vs. /æ/, /a/ vs. /ʌ/, and /i/ vs. /ɪ/ and the consonants /ɹ/, /θ/, /ʒ/, and /dʒ/ were chosen mainly based on the likelihood of the sounds being a problem for the participants, using Nilsen and Nilsen (2002) to identify the contrasts that are likely to be problematic to speakers of many languages. Because this course was short, it was neither possible to make a comprehensive class covering all of the contrasts problematic for all students, nor to design a course in advance without already enrolled participants that could target problems for the particular class. It is important, however, that students find as much of the training valuable as possible so it is important that students recognize a need for the training. This is more likely to happen if students do not have mastery of a sound or contrast. Thus, while functional load as proposed by Brown (1988) was considered, I decided that it was more important to choose sounds that were likely to affect most students.

Results

Survey

Results from the surveys indicate that generally both courses seem to have increased beliefs of autonomy and empowerment. The averages for both groups before and after the course on each item are displayed in Table 2, along with the calculated difference between the groups.

Table 1
Average Group Responses by Item

	F2F Pre	F2F Post	F2F Diff	Hy- brid Pre	Hy- brid Post	Hy- brid diff
I am concerned about my accent in English.	4.33	4.67	0.34	5.5	5.25	-0.25
I feel that I practice my pronunciation in English frequently.	3.33	4.0	0.67	3.5	4.75	1.25
I can hear when I mispronounce a sound or word in English.	4.0	4.67	0.67	3.5	4.5	1.0
I am aware of different ways to practice my English pronunciation.	3.33	5	1.67	5.25	5.75	0.5
I am prepared to practice my English pronunciation on my own.	4.33	4.33	0	4	5	1.0
I feel like I need to hear a native speaker to know how to produce a word.	5	4.67	-0.33	5.25	4.25	-1.0
I have tools that can help me work on my pronunciation.	3.67	4.67	1	4.5	5	0.5
I feel like I need a native speaker of English to correct me on my pronunciation to improve.	5	4.67	-0.33	5.5	4.5	-1.0
I feel that I have the ability to improve my English pronunciation on my own.	4.33	4.0	-0.33	3.5	4.75	1.25

It is important to notice that in this chart, scores decline for “I feel like I need to hear a native speaker to know how to produce a word” and “I feel like I need a native speaker of English to correct me on my pronunciation to improve.” Lower scores on these items suggest higher autonomy and empowerment because they suggest less reliance on others. To give a more accurate representation of the changes, Figure 2 and 3 separate out the “anti-autonomy items”, those for which *lower* scores are thought to indicate higher autonomy, and “pro-autonomy items”, those for which a *higher* scores are thought to indicate higher autonomy.

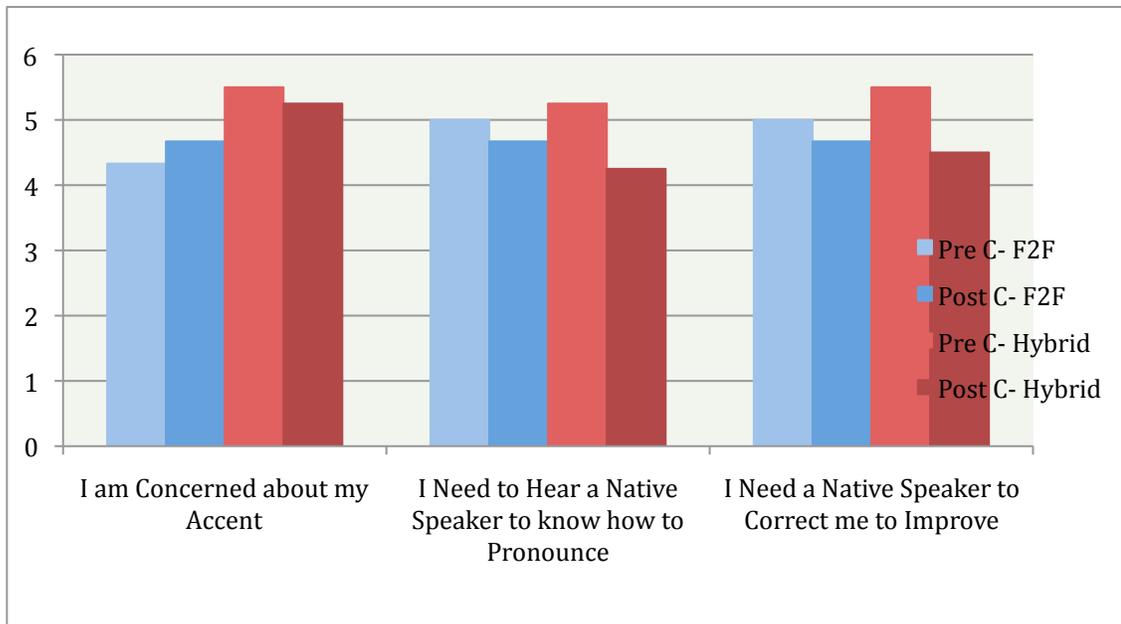


Figure 2. Anti-Autonomy Items by Group

While the Face-to-Face group grew more concerned about their pronunciation (Figure 2), the Hybrid group became less concerned about their pronunciation. Also, the hybrid group had a more decreased reliance on native speakers than the face-to-face group for both hearing and correction.

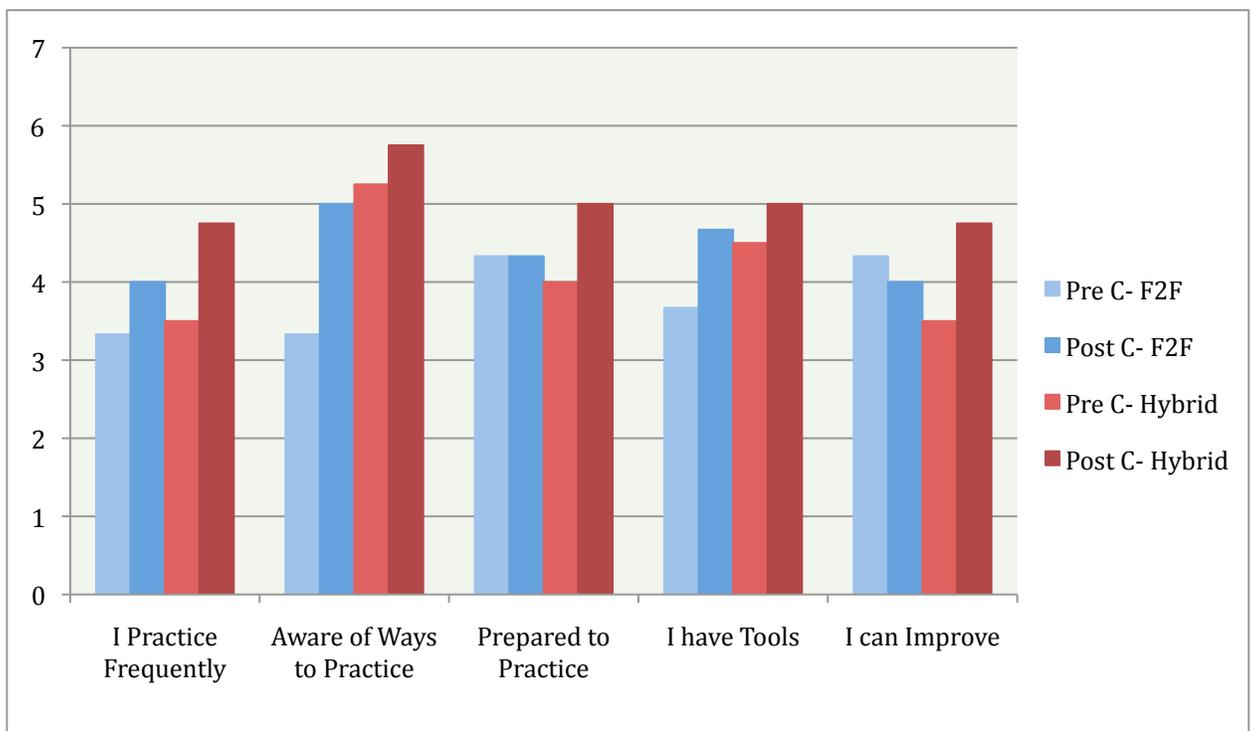


Figure 3. Pro-Autonomy Items by Group

In Figure 3, the hybrid group had a greater difference (more gains in autonomy) on three items “I feel that I practice my pronunciation in English frequently,” “I am prepared to practice my English pronunciation on my own,” and “I feel that I have the ability to improve my English pronunciation on my own.” It is surprising to note, though, that the hybrid group had lesser gains on two items “I have tools that can help me work on my pronunciation” and “I am aware of different ways to practice my English pronunciation.” This might have been partially due to the fact that the hybrid group started with higher levels of agreement with those items (they had less room to “improve”). The hybrid group did have higher levels of agreement on those items, though, at the end than the face-to-face group did, with a score of 5.75 out of 6.0 on the prepared to practice item and a 5.0 out of 6.0 on the tools question.

Interviews

The pre- and post- workshop interviews were focused on the participants’ language learning/pronunciation practice skills. In both the pre- and post-interviews, questions were asked what tools or skills participants used as part of their pronunciation practice repertoire. Before the workshop, most participants reported watching movies and using dictionaries. When asked what they did while watching movies, participants responded that they just listened to the language, hoping it would help.

After the course, both groups had expanded their repertoires. One member of each group mentioned that the spelling rules were of great help, and they were working to practice and apply those patterns. Also, one member of the face-to-face group mentioned using covert rehearsal, the one non-technology based strategy introduced during the course. Both groups were introduced to the idea of using voice recognition software as a pronunciation practice strategy, but none of the face-to-face participants mentioned using voice recognition. On the other hand, two members of the hybrid course specifically mentioned enjoying using Windows Speech Recognition and their plan to continue doing so. A third member of the hybrid group also mentioned continuing the activities done as homework, which would include work with WSR, but did not specifically mention WSR.

It is also interesting to note that while both groups still mentioned movie or video watching as part of their plan for future work, two of the hybrid group specifically mentioned enjoying or planning to continue work with TED talks, which were introduced in the course. One of these members also described the value of focused listening that students worked with in the course.

DISCUSSION

While this study included a limited number of students, it showed promising results that guided work with technological tools may help students feel more autonomous and empowered in their language learning ability, specifically in regards to pronunciation. Results from the survey seem to suggest that the hybrid group did develop their sense of autonomy and empowerment more than the face-to-face course did. Although both groups were introduced to the same pronunciation practice strategies, the hybrid group, which was asked to spend time working alone with the technologies and strategies seems to have increased their sense of autonomy more.

Although there were two items in which the hybrid group's autonomy beliefs scores increased less, this might have been due to the high starting scores. The hybrid groups did end, though, with higher scores (post-course) on those items than the face-to-face group.

Comments from the interviews suggest that guided practice with Windows Speech Recognition led to an expansion of students' repertoire of language learning/pronunciation practice strategies for pronunciation work. WSR was mentioned in student's plans for continued pronunciation work and allowed for more specific plans for continued learning.

These findings support the idea that use of technology, which can provide an opportunity for experimentation (Schwienhorst, 2008) in a safe environment (Banafa, 2008), can enhance student autonomy (Benson, 2011) for language learners, including fostering autonomy for pronunciation learning, an area that has traditionally been very teacher dependent.

ABOUT THE AUTHOR

Shannon McCrocklin is an assistant professor at the University of Texas-Pan American. She earned her Ph.D. in Applied Linguistics and Technology at Iowa State University in Ames, IA. She holds an M.A. in Teaching English as a Second Language from the University of Illinois at Urbana-Champaign where she developed an interest in pronunciation teaching and applied phonetics and phonology. Shannon has taught English pronunciation to undergraduate and graduate students as well as to international faculty at Iowa State and the University of Illinois. Her research focuses on improving pronunciation training for students and CAPT (Computer-Assisted Pronunciation Teaching). She has presented at CALICO, NCTE, PSLLT, and AAAL.

REFERENCES

- Allford, D. (2007) Introduction: language, autonomy, and the new Learning Environments. In D. Allford & N. Pachler (Eds.), *Language, Autonomy, and the New Learning Environments* (pp. 11-34). Bern, Switzerland: Peter Lang.
- Banafa, F.H. (2008) *Effects of IT on Pronunciation*. LaVergne, TN: Lightning Source Inc.
- Beddor, P.S. & Strange, W. (1982). Cross-language study of perception of the oral-nasal distinction. *Journal of the Acoustical Society of America*, 71, 1551-1561.
- Blankenship, B. (1991). Second language vowel perception. *Journal of the Acoustical Society of America*, 90, 2252-2252.
- Benson, P. (2011) *Teaching and Researching Autonomy* (2nd ed). Harlow: Pearson Education Limited.
- Benson, P. and Voller, P. (1997) Introduction: autonomy and independence in language learning. In P. Benson & P. Voller (Eds.), *Autonomy and Independence in Language Learning* (p. 1-12). Edinburgh: Addison Wesley Longman Ltd.
- Brown, A. (1988) Functional Load and the Teaching of Pronunciation. *TESOL Quarterly*. 22(4) p. 593-606.
- Deci, E. L. & Ryan, R. M. (1985) *Intrinsic Motivation and Self-Determination in Human Behavior*. New York: Plenum Press.

- Dickerson, W. B. (1994). Empowering students with predictive skills. In J. Morley (Ed.), *Pronunciation pedagogy and theory: New views, new directions*. Alexandria, VA: TESOL, Inc.
- Dickinson, L. (1995) Autonomy and motivation: a literature review. *System*, 23(2), 165-174.
- Flege, J.E., Munro, M.J., & Fox, R.A. (1993). Auditory and categorical affects on cross-language vowel perception. *Journal of the Acoustical Society of America*, 95, 3623-3641.
- Furtak, E.M. & Kunter, M. (2012) Effects of autonomy-supportive teaching on student learning and motivation. *The Journal of Experimental Education*, 80, 284-316.
- Hincks, R. (2003) Speech technologies for pronunciation feedback and evaluation. *ReCALL*. 15(1), 3-20.
- Holec, H. (1981) *Autonomy in Foreign Language Learning*. Oxford: Pergamon.
- Levis, J. & Suvorov, R. (2014). Automated speech recognition. In C. Chapelle (Ed.) *The encyclopedia of applied linguistics*. Retrieved from <http://onlinelibrary.wiley.com/store/10.1002/9781405198431.wbeal0066/asset/wbeal0066.pdf?v=1&t=htq1z7hp&s=139a3d9f48261a7218270113d3833da39a187e74>.
- Luke, C. (2006) Fostering learner autonomy in a technology-enhanced, inquiry-based foreign language classroom. *Foreign Language Annals*. 39(1), 71-86.
- Ming, T.S., & Alias, A. (2007) Investigating readiness for autonomy: A comparison of Malaysian ESL undergraduates of three public universities. *Reflections on English Language Teaching*, 6(1), 1-18.
- Murray, G. (1999) Autonomy, technology, and language-learning in a sheltered ESL immersion program. *TESL Canada Journal*, 17(1), 1-15.
- Neri, A., Cucchiari, C., & Strik H. (2006) ASR-based corrective feedback on pronunciation: does it really work? *Proceedings of the ISCA Interspeech 2006*, Pittsburgh, PA, 1982-1985.
- Neri, A., Mich, O., Gerosa, M., & Giuliani, D. (2008) The effectiveness of computer assisted pronunciation training for foreign language learning by children. *Computer Assisted Language Learning*, 21(5), 393-408.
- Nilsen, D. L. & Nilsen, A.P. (2002) *Pronunciation Contrasts in English*. Prospect Heights, IL: Waveland Press.
- Schwienhorst, K. (2008) *Learner Autonomy and CALL Environments*. New York: Routledge.