ELL INSTRUCTIONONAL MODEL DIFFERENCES IN THE MAP COMMUNICATION ARTS AND MATHEMATICS TEST SCORES

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ABSTRACT

This study was conducted to determine if there is a significant difference in ELL instructional models and MAP test scores in Communication Arts and Mathematics. The findings of this study show that in twenty selected Missouri school districts ELL students at the elementary levels are not achieving academic proficiency levels. The reasoning behind this is not pinpointed in this study, however research suggests that each program model has its advantages and each school must look its ELL students to determine which method is best. Also, a recent shift in ELL teaching of literacy and academic vocabulary could be possible solutions to increasing ELL academic performance. After compiling and review of the findings of this study, current research and literature, and the statistical data from the state, it is found that the ELL instructional methods used do not affect ELL achievement levels. Therefore, other factors must be taken into consideration in order to increase the academic gains of ELL students. Neither students that receive ELL pull-out instruction and students that receive a combination of pull-out and push-in instruction are performing at adequate proficiency levels.
Introduction

*Background, Issues and Concerns*

The United States Educational System has come under scrutiny the last few years. Many school personnel are concerned that students are not performing at adequate proficiency levels. There has been a tremendous effort placed in public schools to ensure that all students are learning and achieving course objectives, especially ELL students. School districts in the United States are mandated by law to have a Lau Plan. A Lau Plan, named after the landmark Lau vs. Nichols U.S. Supreme Court Decision of 1974, is an equal access plan that protects English Language Learners (ELLs). In the court case Lau vs. Nichols the San Francisco Unified School District was not providing the necessary assistance its Chinese American students needed as Limited English Proficient (LEP) students. These students were being denied an equal education because of their language. Therefore, school districts are required by law to ensure that all LEP students are receiving all the assistance needed to become successful in school.

In years past ELL students were not required to take standardized tests due to their limited English. It takes a minimum of seven to ten years for an ELL student to become proficient in the English language. Therefore, ELL students were not required to take standardized tests because of concerns with validity and reliability. Were these tests measuring ELLs academic knowledge and skills or their use of the language? Unfortunately, with the passage of No Child Left Behind (NCLB) ELL students are now required to take standardized tests. Many ELL students are not achieving proficiency levels on these standardized tests. Therefore, many school districts are failing to meet their AMAOs (Annual Measureable...
Achievement Objectives) set forth by No Child Left Behind. When schools are not meeting these standards they must create school improvement plans each year they fail to meet these standards to find ways to improve ELL student achievement. What is the cause of the lack of ELL achievement? Some believe it is the use of certain teaching methods and what is specifically being taught. Others believe it maybe a lack of classroom teacher strategies and cultural understanding or a lack of collaboration between classroom and ELL teachers. Many educators are concerned about this lack of achievement.

*Practice under Investigation*

The practice under investigation is the current teaching methods for ELL students. There are several teaching methods that are used across the country to teach ELL students like; pull-out, push-in, combination of pull-out and push-in, sheltered instruction, bilingual instruction, etc. The most common types used in the state of Missouri are pull-out instruction, where ELL students are removed the general classroom and receive ELL instruction in small group or one-on-one from an ELL teacher. Some districts utilize a combination of pull-out and push-in instruction, where the ELL students are removed for part of the day from their general classroom and then the ELL teacher spends part of the day in their regular classroom assisting ELL students.

*School Policy to be Informed by Study*

Currently, it is left up to each school district to determine which teaching methods is will use to best serve it’s ELL student population. Each district is different and must utilize the method(s) it feels are appropriate for its ELL population. However, all districts must meet AYP and AMAOs and if there is a significant difference in teaching methods, districts must recognize
this and adjust their programs accordingly to increase student achievement. If there is not a significant difference districts must ask themselves what they can do to increase achievement, which could entail providing professional development and training for classroom teachers on strategies that work with ELL students and all students, cultural understanding and tolerance and using their building/district ELL teachers as a resource.

**Conceptual Underpinning**

Language and culture influence ELLs learning. According to Vygotsky, learning takes place through social interaction dependent upon culture. In his sociocultural theory he believes that in the initial stages of learning a skill, children attend and respond to adult modeling, teaching and supportive encouragement. Vygotsky contends that learning is facilitated when there are connections forged between home and school. For example, reading comprehension is dependent upon a student’s ability to draw parallels between the content of a book and knowledge previously gain via one’s home or cultural connections. According to Nagy knowledge is structured through relationships; students understand new information by relating it to what they already know. Therefore, teaching vocabulary so that ELLs see relationships between sets of words and concepts helps them understand and remember new ideas and acquire new language. Krashen’s theory of second language acquisition occurs when the learner receives comprehensible input, not when the learner is memorizing vocabulary or completing grammar exercised, which reinforces the need for content based instruction for ELLs. There are many instructional program models that are used to teach ELL students. The effectiveness of various program models for language minority students remains the subject of controversy. Although there may be reasons to claim the superiority of one program model
over another in certain situations a variety of programs can be effective. ELL teachers must not only teach the grammar and rules of English but also reading, vocabulary and content. Also, it is vital that classroom teachers are equipped with the necessary tools to teach vocabulary to ELLs in the regular classroom. It is imperative that there is open collaboration between the ELL teacher and classroom teacher.

*Statement of the Problem*

If there is a proven instructional method that works best for educating ELL students, and what should be done in order to support ELL students achieving academic success.

*Purpose of the Study*

To examine different ELL teaching methods focusing on pull-out instruction and a combination of both pull-out and push-in instruction to determine if the type of ELL instruction increases ELL students’ proficiency on state standardized tests.

*Research Question(s)*

RQ#1  Is there a difference in student achievement between the ELL teaching methods of pull-out, and a combination of both methods (pull-out and push-in)?

RQ#2  Which ELL teaching method should be utilized to help ELL students gain higher proficiency levels on state standardized tests?

*Null Hypothesis(es)*

There is no difference in student achievement between the ELL teaching methods of pull-out, and a combination of both methods pull-out and push-in.
Anticipated Benefits of the Study

The benefits of this study will determine if there is a proven teaching method that is best to use for improving ELL students’ academic success and proficiency level on state standardized tests. This will help school districts find better ways to serve its ELL student population. It will help districts find the areas to focus on for improvement whether it is changing its program methods, including academic vocabulary instruction, or providing training to classroom teachers on specific vocabulary and reading strategies. Provide professional development to classroom teachers and school administrators on second language acquisition, culturally understanding how ELL students learn. The most important benefit of this study will help ELL students become successful learners in school and life.

Definition of Terms

AMAO- Annual Measureable Achievement Objectives

AYP- Adequate Yearly Progress

Content-based- this approach to teaching English as a second language makes use of instructional materials, learning tasks, and classroom techniques from academic content areas as the vehicle for developing language, content, cognitive and study skills. English is used as the medium of instruction

ELL- English Language Learners

L1-first language

L2-second language

LEP- Limited English Proficient

MAP- Missouri Assessment Program
Pull-out- remove students from the regular classroom for part of the day for ELL instruction

Push-in- the ELL teacher comes into the regular classroom for a set amount of time to work with ELL teachers. (Requires collaboration with classroom teacher)

Summary
A study was conducted to determine which ELL instructional method, pull-out ELL instruction or a combination of pull-out and push-in ELL instruction increases students’ academic success and proficiency levels on standardized tests.
ELL Instructional Models

Review of Literature

No Child Left Behind has made schools focus more on strategies and programs they can implement in order to increase all students’ academic gains and ensure that all students are learning. No Child Left Behind has put into place AYP indicators to show if districts are meeting the necessary goals for all students to be Proficient and Advanced in reading and math. Unfortunately, many students are falling behind and none more so than English Language Learners. No Child Left Behind requires that all ELL students receive quality instruction for learning both English and academic content. No Child Left Behind leaves it up to school districts to determine their program of instruction. Schools across the country are looking for ways to work with increasing numbers of students who do not speak English. This increased focus on setting higher expectations and accountability for ELL students, means that it is even more important for ELL and mainstream teachers to ensure quality ELL instruction by teaching reading, academic vocabulary and content. However, the ELL research base is changing as researchers reach consensus on some issues, focus on student outcomes, examine similarities and differences in effective practices for ELLs and non-ELLS, and reduce their emphasis on the language of instruction. A final question remains: Which is the best possible program model for our English Language Learners? If we believe that one size does not fit all, there cannot be one right answer to this question. Each model has its merits; each model has numerous documented success stories. (Honigsfeld, 2009)

There are many Limited English Proficient students all across the country and school must be ready to meet the challenge of increasingly diverse student populations. Most schools on the secondary level utilize sheltered instruction. Most elementary schools utilize pull-out
instruction, or a combination of pull-out and push-in instruction. However, there are two problems with these programs; the learners’ reduced access to the full curriculum and the lack of curriculum articulation with grade-level and mainstream teachers. Students in pull-out programs are missing content in their academic classrooms and mainstream classroom teaching are not teaching ELLs academic language proficiency they need to understand the content in the regular classroom. (Minaya-Rowe, 2008) Therefore, it is essential that classroom teachers are equipped with strategies to help ELL students that will in turn help all of their students understand content, vocabulary and literacy strategies. Successful program models for promoting the academic achievement of language minority students are those that enable these students to develop academic skills while learning English. The best program organization is one that is tailored to meet the linguistic, academic and affective needs of students; provides language minority students with instruction necessary to allow them to progress through school at a rate commensurate with their native-English-speaking peers; and makes the best use of district and community resources.

One way to incorporate English language instruction, reading and academic vocabulary is through content-based instruction. Content-based instruction provides ELLs with the necessary components for learning a second language. Content-based instruction supports Krashen’s theory of acquiring a second language when the learner receives comprehensible input. Methods that provide students with many opportunities in content-based instruction, the focus is on the subject matter and not on the form or, as Krashen says, on “what is being said rather than how.” (Celce-Murcia, 2001) Content-based instruction gives students several
opportunities to navigate the language but also the content in reading, writing, listening and speaking.

Vygotsky’s sociocultural approach ties in with content-based instruction as well as reading instruction. Allowing social interaction and making connections between school and home is crucial in ELLs academic gains. Literacy is one key component in increasing academic gains of ELL students. Research has identified many critical components of effective balanced literacy program for ELLs. One component is that if students are to build language and literacy skills they must connect with texts in meaningful, engaging and purposeful ways. (Hickman & Pollard-Durodola, 2009)

Hickman and Pollard-Durodola (2009) conducted an experimental, intervention to study designed to look at how teachers build literacy, oral language, and listening comprehension skills of first-grade Spanish-speaking ELLs in literacy settings. The students who participated were from seven elementary schools located in geographical areas with a high density of ELLs: two urban school districts in Texas and one district located along the Texas-Mexico border. Four of the schools in the study were rated as exemplary and three as recognized based on student performance on state accountability tests. As a result, they concluded that the schools were successful in providing literacy instruction to most students on campus and were teaching students to read in environments conducive to learning. Part of their study included students participating in strategic read-aloud lessons that were based on scope and sequence that explicitly and systematically developed oral vocabulary, listening comprehension and general oral language skills. The lessons were designed to reflect a number of key research findings of effective language and literacy development for ELLs including: 1) connecting and building on
cultural and linguistic experiences; 2) scaffolding students’ second language instruction; 3) providing students with many opportunities to develop language skills including vocabulary development and listening comprehension. The students who participated in the study received 50 minutes of daily reading instruction in small groups. The first 40 minutes of instruction, students participated in 6-10 short activities that ranged from simple to complex skills about phonemic awareness, letter knowledge, word study, listening comprehension and fluency building. The last 10 minutes focused on strategic read-aloud procedure. The results of the study showed, the students that received daily reading instruction outperformed the students in the contrast groups in phonological awareness, letter-sound knowledge, word attack, spelling dictation and passage comprehension. These students made tremendous gains. Therefore, it shows that all students, not just ELL students can benefit from this read-aloud strategy. The read-aloud strategy includes: grouping students effectively, choosing text that are culturally relevant and interesting, building content knowledge and active engagement with vocabulary.

What is academic vocabulary? Academic vocabulary is the language that students need to know in order to be successful in each content area. All students struggle with academic vocabulary, many struggle with reading. The same applies to ELL students; therefore, it is essential that ELL students acquire academic vocabulary and literacy. Research shows, that ELLs often “know fewer English vocabulary words than monolingual English speakers but, in addition, know less about the meaning of those words. Many ELLs have difficulty inferring meaning from context. Therefore, instruction to build language and word knowledge must further ELLs understanding of word meanings, shades of meaning, and their uses across
contexts as well as the relationships between words. There are several ways to help ELLs learn vocabulary according to the National Reading Panel: 1) Vocabulary should be taught both explicitly and implicitly to have the most impact on acquisition 2) asking and answering questions during read-alouds results 3) explicitly teach ELLs how specific strategies can help them deduce word meanings 4) active engagement on the part of students in activities that promote use of words 5) specific and explicit teaching of vocabulary words 6) repeated read-alouds of a story produce higher gains in vocabulary than single reading 7) multiple and repeated exposures to words in different contexts 8) preteaching vocabulary words prior to reading the text. (Hickman & Pollard-Durodola, 2009)

Learning vocabulary is essential for success in school and life. Children of poverty and ELL students enter school with insufficient vocabularies that are much smaller than their middle class, native-English speaking classmates. Without this knowledge of academic vocabulary these students are at high risk of failing school. Dr. Sharon Faber, is an expert in teaching academic vocabulary. According to Dr. Faber there are six things that all must do in their classrooms if we want students not only to learn, but also to remember what we teach them, especially academic vocabulary. Those six things are: 1) Create a receptive state for student learning that is risk free; 2) Make content meaningful to students’ lives; 3) Get and maintain students’ attention; 4) Help students retain information; 5) Help students transfer learning; 6) Teach direct, explicit learning strategies in a systematic way. (Faber, 2010) Which goes along with Nagy’s theory that knowledge is structured through relationships and building on their prior knowledge.
In the article “Lost in Translation” Kristina Torres (2008) examines a school in South Carolina that is struggling to meet the needs of its ELL student population just as many schools are struggling throughout the United States. Midland Park Elementary in South Carolina, where 17 percent of its English Language Learner students scored “proficient” or better on the 2007 state-mandated Communication Arts test. However, this school is not alone, most school districts across the country have the majority of their ELL students falling below proficiency. Unfortunately, many districts have limited funds and resources and may be limited on the number of ELL teachers available in the building. That’s where classroom teachers play a crucial role in ELL learning, but they often have no training in how to work with ELL students. It is essential that classroom teachers and ELL teachers collaborate often, but it is also very important for classroom teachers to be equipped on how to teach and relate to ELL students. A survey by the National Center for Education Statistics indicates that only 12.5% of teachers with ELL students in their classrooms have had even a day’s worth of ELL training in the past three years. (Torres, 2008) Therefore, it’s not surprising that less than 5% of 8th grade English language learners scored at or above “proficient” in reading in 2007, according to the National Assessment of Educational Progress.

Many school districts do not have enough ELL teachers to properly serve their ELL student population. Therefore, it is important that ELL teachers and classroom teachers collaborate often. However, it is imperative that classroom teachers are given the necessary tools to assist the ELL students in their classroom. Many of the strategies used for ELL students will benefit all students in the general education classroom. Here are several strategies that can be used for English Language learners in language arts in the general education classroom: read to
students as you point to the text so they can follow along, use the process-writing approach when writing because it has manageable parts, allow students to keep learning logs in their native language, use small group discussion, allow students to work with a partner, emphasize comprehension over pronunciation, connect prior knowledge to new content and label items in the classroom. (Yellin, Jones & Devries, 2008) Many of the effective teaching practices used in L1 instruction apply to English Language Learners such as: clear goals and objectives, well-designed instruction and instructional routines, clear input and modeling, active engagement and participation, informative feedback, application of new learning, practice and periodic review, interaction with other students, frequent assessments, with reteaching as needed. (ARCC) Sometimes classroom teachers are afraid to make modifications or accommodations for ELL students. However, there are many simple things that can be done such as using graphic organizers, using pictures or real objects. These will not only help ELL students but all students in the classroom. School districts must provide professional development to classroom teachers on how to teach ELL students. The diversity of the student population is increasing every year across the United States. We are doing all of our students a disservice by not training our classroom teachers on how to incorporate simple reading and vocabulary strategies that will assist all students in the classroom. We must also train our classroom teachers how to appreciate the cultural diversity in their classrooms and how to incorporate their students diversity in their teaching.
Research Methods

Research Design
A quantitative analysis was conducted to determine if the type of instructional method improved ELL students’ performance on the MAP test in Communication Arts and Mathematics. The independent variable that was tested was the teaching method and the dependent variable tested was the Communication Arts and Mathematics scores on the MAP test. If the difference is found to be significant then schools must determine if they should alter their ELL program. If the difference is found not to be significant then school districts must analyze what they are teaching ELLs and incorporate literacy, vocabulary and content instruction.

Study Group Description
20 Missouri School Districts were chosen based on their instructional methods focusing on the elementary buildings. MAP Communication Arts and MAP Mathematics scores were collected from DESE for the 2009-2010 and 2010-2011 school years.

Data Collection and Instrumentation
Archived data from DESE was collected to identify scores for schools that utilize pull-out instruction and schools that utilize pull-out and push-in instruction on the MAP Communication Arts and the MAP Mathematics tests from the 2009-2010 and 2010-2011 school years.

Statistical Analysis Methods
A t-test was conducted to determine if there is significant difference in the MAP Communication Arts and MAP Mathematics scores based on ELL instructional method. The source was broken into two categories: Pull-out instruction, and combination of pull-out and push-in instruction. The mean, mean D, t-test, df and p-value were concluded from this test. The alpha level was set at 0.25 to test the null hypothesis. The null hypothesis states there is
no difference in student achievement between the ELL teaching methods of pull-out, and a combination of both methods pull-out and push-in.
Findings

A t-test was conducted to determine if there was a difference of performance on the 2009-2010 and 2010-2011 MAP Communication Arts and MAP Math tests based on ELL instructional method. The following tables, charts and graphs will illustrate the findings found the DESE website in 2012.

Figure 1

**t-Test Analysis Results for Instructional Methods and MAP Communication Arts 2010-2011**

<table>
<thead>
<tr>
<th>Source</th>
<th>Mean</th>
<th>Mean D</th>
<th>t-test</th>
<th>Df</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pull-Out Instruction(n=10)</td>
<td>16.362</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Combination Pull-out/Push-in Instruction(n=10)</td>
<td>16.329</td>
<td>0.033</td>
<td>0.006</td>
<td>18</td>
<td>0.995</td>
</tr>
</tbody>
</table>

Note: Significant when p<=0.25

Twenty school districts in the state of Missouri were selected to observe differences between ELL instructional methods and MAP Communication Arts scores in the elementary schools. As shown in Figure 1, there is not a significant difference (t-Test = 0.006; p-value = 0.995, Mean D = 0.033) in mean scores in MAP Communication Arts based on instructional method. The mean of the schools that utilize Pull-out instruction only was 16.362 and the mean of the schools that incorporate both Pull-out and Push-in was 16.329. The Mean D, or difference between the two groups, was 0.033. The t-test result was 0.006 and the df was 18. The null hypothesis states there is no difference in student achievement between the ELL
teaching methods of pull-out, and a combination of both methods pull-out and push-in. The null hypothesis should not be rejected because the p-value was 0.995, which is more than the Alpha, 0.25. Therefore, there is no significant difference in ELLs academic achievement levels on the MAP Communication Arts test based on the ELL instructional method. The students that received pull-out instruction only had a mean of 16.362 and did not perform at a significantly higher rate than the students that received a combination of pull-out and push-in instruction with a mean score of 16.329. Therefore, ELL instructional methods do not influence ELL academic achievement levels.

Figure 2

Figure 2 illustrates the scores of ELL students that received pull-out instruction and a combination of pull-out and push-instruction. There are four scoring categories on the MAP test; Below Basic, Basic, Proficient and Advanced. It is ideal to have the majority of students scoring in the Proficient and Advanced categories. Unfortunately, the majority of ELL students
scored in the Below Basic/Basic range on the 2010-2011 MAP Communication Arts test. The mean scores for the students that scored in the Below Basic/Basic range were 84.282 for the students that received pull-out instruction and 83.665 for the students that received both pull-out and push-in instruction. The mean for the students that scored Proficient/Advanced was 16.362 for the students that received pull-out instruction and 16.329 for the students that received both pull-out and push-in instruction. The scores were almost identically in each group.

Figure 3

Figure 3 shows how the mean scores of each group are almost identical. The line for the students that receive pull-out instruction is very similar to the line of the students that receive both pull-out and push-in instruction.
Figure 4

t-Test Analysis Results for ELL Instructional methods and MAP Mathematics 2010-2011

<table>
<thead>
<tr>
<th>Source</th>
<th>Mean</th>
<th>Mean D</th>
<th>t-test</th>
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</tr>
<tr>
<td>Combination Pull-out/Push-in</td>
<td>34.058</td>
<td>-6.834</td>
<td>-0.666</td>
<td>18</td>
<td>0.514</td>
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<tr>
<td>Instruction(n=10)</td>
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<td></td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: Significant when p<=0.25

Twenty school districts in the state of Missouri were selected to observe differences between ELL instructional methods and MAP Mathematics scores in the elementary schools. As shown in Figure 4, no significant difference was found in the mean scores of MAP Mathematics scores based on ELL instructional methods in the school districts. The null hypothesis states there is no difference in student achievement between the ELL teaching methods of pull-out, and a combination of both methods pull-out and push-in. Therefore, the null hypothesis is not rejected because the p-value was 0.514, which is greater than the Alpha, 0.25. The Mean D, or difference between the two groups, was -6.834. The t-test result was -0.666. Therefore, there is no significant difference in MAP Math scores based on ELL instructional methods. The mean of the students that received pull-out only instruction was 27.224 and the mean of the students that received a combination of pull-out and push-in instruction was 34.058, which indicates that ELL instructional methods do not impact the number of students that perform Proficient and Advanced on the MAP Math test.
Figure 5 illustrates the scores between the students that received pull-out instruction and the students that received both pull-out and push-in instruction. Again, the majority of the students scored in the Below Basic/Basic Range. The mean score for the student that received pull-out instruction was 74.159 and 65.344 for the students that received both pull-out and push-in services. There is not much difference between the two scores. A small percentage of ELL students scored in the Proficient/Advanced range. The mean score of the students receiving pull-out services was 27.224 and 34.058 was the mean score for students the received both pull-out and push-in instruction.
Figure 6 shows the MAP Math scores for the 2010-2011 school year. The academic achievement levels of ELL students is very similar. The students that received pull-out instruction had more students that were Below Basic/Basic, while the students that received a combination of pull-out and push-in instruction had more students score Proficient/Advanced.
Figure 7

t-Test Analysis Results for Instructional Methods and MAP Communication Arts 2009-2010

<table>
<thead>
<tr>
<th>Source</th>
<th>Mean</th>
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<td>Pull-Out Instruction(n=10)</td>
<td>10.332</td>
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<tr>
<td>Combination Pull-out/Push-in Instruction(n=10)</td>
<td>15.564</td>
<td>-5.232</td>
<td>-0.918</td>
<td>18</td>
<td>0.371</td>
</tr>
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</table>

Note: Significant when p<=0.25

Twenty school districts in the state of Missouri were selected to observe differences between ELL instructional methods and MAP Communication Arts scores in the elementary schools. As shown in Figure 7, there is not a significant difference (t-Test = -0.918; p-value = 0.371, Mean D = -5.232) in mean scores in MAP Communication Arts based on instructional method. The mean of the schools that utilize Pull-out instruction only was 10.332 and the mean of the schools that incorporate both Pull-out and Push-in was 15.564. The Mean D, or difference between the two groups, was -5.232. The t-test result was -0.918 and the df was 18. The null hypothesis states there is no difference in student achievement between the ELL teaching methods of pull-out, and a combination of both methods pull-out and push-in. The null hypothesis should not be rejected because the p-value was 0.371, which is more than the Alpha, 0.25. Therefore, there is no significant difference in ELLs academic achievement levels on the MAP Communication Arts test based on the ELL instructional method. The students that received pull-out instruction only had a mean of 10.332 and did not perform at a significantly higher rate than the students that received a combination of pull-out and push-in instruction with a mean score of 15.564. Therefore, ELL instructional methods do not influence ELL academic achievement levels.
Figure 8 illustrates the scores between the students that received pull-out instruction and the students that received both pull-out and push-in instruction. Again, the majority of the students scored in the Below Basic/Basic Range. The mean score for the student that received pull-out instruction was 89.653 and 85.27 for the students that received both pull-out and push-in services. There is not much difference between the two scores. A small percentage of ELL students scored in the Proficient/Advanced range. The mean score of the students receiving pull-out services was 10.332 and 15.564 was the mean score for students the received both pull-out and push-in instruction.
Figure 9 shows the MAP Math scores for the 2009-2010 school year. The academic achievement levels of ELL students is very similar. The lines are almost identical. The students that received pull-out instruction had more students that were Below Basic/Basic, while the students that received a combination of pull-out and push-in instruction had more students score Proficient/Advanced. This shows that the instructional method does not influence academic achievement levels of ELL students.
Figure 10

$t$-Test Analysis Results for ELL Instructional methods and MAP Mathematics 2009-2010

<table>
<thead>
<tr>
<th>Source</th>
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<th>t-test</th>
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<tr>
<td>Combination Pull-out/Push-in Instruction (n=10)</td>
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<td>-11.738</td>
<td>-1.645</td>
<td>18</td>
<td>0.117</td>
</tr>
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</table>

Note: Significant when $p<=0.25$

Twenty school districts in the state of Missouri were selected to observe differences between ELL instructional methods and MAP Mathematics scores in the elementary schools. As shown in Figure 10, a significant difference was found in the mean scores of MAP Mathematics scores based on ELL instructional methods in the school districts. The null hypothesis states there is no difference in student achievement between the ELL teaching methods of pull-out, and a combination of both methods pull-out and push-in. Therefore, the null hypothesis is rejected because the $p$-value was 0.117, which is less than the Alpha, 0.25. The Mean D, or difference between the two groups, was -11.738. The $t$-test result was -1.645. Therefore, there is significant difference in MAP Math scores based on ELL instructional methods. The mean of the students that received pull-out only instruction was 15.971 and the mean of the students that received a combination of pull-out and push-in instruction was 27.709, which indicates that ELL instructional methods do impact the number of students that perform Proficient and Advanced on the MAP Math test.
Figure 11 illustrates the 2009-2010 MAP Math scores between the students that received pull-out instruction and the students that received both pull-out and push-in instruction. Again, the majority of the students scored in the Below Basic/Basic Range. The mean score for the student that received pull-out instruction was 84.628 for the students that received both pull-out and push-in services. There is not much difference between the two scores. A small percentage of ELL students scored in the Proficient/Advanced range. The mean score of the students receiving pull-out services was 15.971 and 27.709 was the mean score for students the received both pull-out and push-in instruction.
Figure 12 shows the 2009-2010 MAP Math scores for ELL students. The students that received both pull-out and push-in instruction performed better on the test. There were less students in the Below Basic/Basic range and more students in the Proficient/Advanced range. While the students that received pull-out instruction only had more students score in the Below Basic/Basic range and less students score in the Proficient/Advanced range.

As a result of this study, there is no difference in student achievement between the ELL teaching methods of pull-out and a combination of both methods (pull-out and push-in). Which answers the first research question, is there a difference in student achievement between the ELL teaching methods of pull-out, and a combination of both methods (pull-out and push-in)? However, in regards to the second research question, Which ELL teaching method should be utilized to help ELL students gain higher proficiency levels on state standardized tests? This study did not answer that question sufficiently. This study shows that pull-out and a
combination of pull-out and push-in instruction is not effective because the majority of ELL students scored Below Basic and Basic for the 2009-2010 and 2010-2011 school years in both Communication Arts and Mathematics.
Conclusions and Recommendations

The findings of this study show that the majority of elementary ELL students across the state of Missouri are not reaching academic gains using push-in and a combination of pull-out and push-in instruction. The outcomes of this study show that there is no significant difference between these two instructional models. The t-test results for the 2009-2010 MAP Communication Arts scores indicated that the p-value was 0.370, well above the alpha level of 0.25 and in 2011 the p-value was 0.995 again well above the alpha level of 0.25. The t-test results for MAP Mathematics in 2010 had a p-value of 0.117 which was below the alpha and in 2011 the p-value was 0.514 which was above the alpha 0.25. Therefore, the null hypothesis tested is not rejected. There is no significant difference between ELLs academic performance and ELL instructional methods.

The results of this study leads to further questions. What exactly is the best teaching method for ELLs to reach academic success? What are the academic gains of secondary ELL students? At the secondary level ELLs are taught mainly through sheltered instruction. It would be interesting to see if the majority of these students score Proficient and Advanced. So now the question remains what is the best teaching method for ELLs? The research suggests that all of the different ELL instructional models have their advantages and disadvantages. Therefore, it is up to each district to determine how best to meet the needs of its ELL student population. However, most researchers believe that regardless of the instructional delivery, ELL instruction should include literacy, academic vocabulary and content. While most districts utilize different instructional methods, several ELL programs fail to teach literacy, academic
vocabulary and content. Many districts may focus only on English grammar instruction, which is not enough for ELLs to be successful in the classroom. Many school districts’ ELL programs are going to have to evaluate their programs and see where they need to adjust instruction. Obviously, something has to be done because ELL pull-out and a combination of pull-out and push-in instruction are not working.

Another possible question that arises from this study is whether or not standardized tests are fair to ELL students. It takes seven to ten years for an ELL student to become proficient in English. Most standardized tests in all content areas are linguistically complex for ELL students. It would be interesting to see how ELL students score compared to native English speakers. More than likely ELL students will score significantly lower than native English speakers.

In recent years, there has been a push for ELL instruction to include literacy, academic vocabulary and content. This new way of teaching ELLs supports Vygotsky’s theory that students learn through social interaction, modeling and making connections between home and school. This theory supports the importance of teaching literacy, vocabulary and content to ELLs by helping them make connections with their culture and their prior knowledge. Also, scaffolding or modeling is essential for ELLs learning, so that eventually they can use the skills they have learned independently. This makes learning meaningful to them and while they are learning the content they are also using the English language in reading, writing, speaking and listening. Also, Nagy’s theory that knowledge is structured through relationships; students understand new information by relating it to what they already know is key to helping them understand new ideas and acquire language.
Finally, ELL teachers must change their thinking. They cannot think that they only need to teach English grammar. The educational world is constantly changing and so is the world around us. ELL teachers must think about what is best for their students and how they can help them reach academic gains. ELL teachers using instructional methods where students miss some of the general classroom instruction, it only makes sense for ELL teachers to teach English grammar while incorporating the content, vocabulary or reading into their lessons. The key to this being successful is collaboration on the part of the ELL teacher and the classroom teacher. Each teacher has to be willing to work together in order to improve student performance. There must be open communication between the ELL teachers and classroom teachers.

Also, professional development should be provided for classroom teachers. Many classroom teachers have several ELL students in their classrooms. Unfortunately, many teachers feel like they are not equipped to teach ELL students. However, what many classroom teachers do not realize is that the same simple strategies that they may use for students in their classroom will also work for ELL students. Therefore, it is essential that classroom teachers have background on how ELLs learn and are given strategies they can use in their classroom to assist ELL students. ELL students are not reaching academic gains and it takes a team of teachers to help them become successful.
References


