UNIVERSIDAD DE QUINTANA ROO

División de Ciencias Políticas y Humanidades

English language students' research self-efficacy beliefs

TESIS
Para obtener el grado de:

MAESTRÍA EN EDUCACIÓN

Presenta
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Directora
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Chetumal, Quintana Roo, México, julio de 2016.

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Trabajo de tesis elaborado para obtener el grado de

Maestro en Educación

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DIVISION DE CIENCIAS POLITICAS Y HUMANIDADES

UNIVERSIDAD DE QUINTANA ROO
AREA DE TITULACION

Chetumal, Quintana Roo, julio de 2016

ACKNOWLEDGEMENTS

I would first like to thank my thesis supervisor Dr. Rosario Reyes Cruz. To me, this thesis is the conclusion of a journey that started three years ago with my research assistantship. Getting to know you and working with you was a turning point in my life. Even though graduate studies are demanding and tough, I have experienced so many moments of joy I had never thought of before. I want to thank you, along with Dr. Moisés Escudero and Dr. Griselda Murrieta, for revising my thesis and for doing an excellent job in the master's program. In spite of all the difficulties, I know your work has greatly contributed to the quality of the program. Without your dedication, I would not have had the financial support to study at this moment of my life. In addition, I would like to thank the rest of the faculty, but especially to Dr. Edith Hernández, who recommended that I work with you and who, I like to admit, was one of the first role models I met along my college life.

I would like to express my very profound gratitude to my parents, for all your love and support; for convincing me, since I was a child, that I´ve got what it takes to be successful. I love you. Making you proud is one of my life's driving forces. I dedicate this thesis and seven years of school to you.

Finally, I would like to thank Miguel and Maricarmen. I will miss the former one once that this stage of my life concludes and we take different paths. I will miss having you around. And I feel very grateful for having the later in my life. There is no way I can remember these two years without your support, understanding, and love, and your music accompanying me during the writing of this thesis and the completion of this program.

"Esta investigación fue financiada por recursos del Consejo Nacional de Ciencia y Tecnología."

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ABSTRACT

Self-efficacy is defined by Bandura (1997) as the beliefs in one´s capabilities to organize and execute the courses of action required to produce given attainments. Research self-efficacy, an individual's confidence in carrying out research tasks, has been assessed in several fields; however, this construct has not been measured in the field of English Language Teaching (ELT) at the undergraduate level. The aim of this study is to measure UQRoo English language (EL) students' research self-efficacy, and to investigate the relation between this construct and the sources of self-efficacy and seniority. A correlational approach was chosen in order to determine the relationship between these variables, and a new instrument was constructed to include the sources of self-efficacy in the assessment of the program. The Research Self-Efficacy Scale for English Language Students was developed to fulfil the objectives of the study, and it was administered to 101 participants from the 2°, 6° and 10° semesters of the EL program. Among the major findings, students possessed a moderately high sense of research self-efficacy, but this finding was incompatible with the educational level and the curriculum design of the program, which may indicate an overestimation of the capabilities; it was confirmed that mastery experience is the most influential source of research self-efficacy because it obtained a significant correlation and emerged as the strongest predictor; there were relations among the four sources of self-efficacy, but some of these relations were contradictory to the assessment of the sources; and there were not differences across the semesters in research self-efficacy. This analysis of the EL students is important to improve the conduction of research in a language teaching program, and to increase the benefits that pre-service teachers obtain from undergraduate research. Finally, limitations to this study and directions for future research are discussed.

INTRODUCTION

Measuring research self-efficacy has been found convenient to detect graduate and postgraduate students' weaknesses and difficulties in research and to suggest changes in the programs to promote better research learning (Bieschke 2005; Forester, Kahn & Hesson-McInnis, 2004). Studies have been carried out in a number of fields, especially within the field of psychology (Bieschke, Bishop & García, 1996; Helm & Bailey, 2013; Love, Bahner, Jones & Nilsson, 2007; Shivy, Worthington, Wallis & Hogan, 2003). There is a tendency to assess this construct and to determine its relation to variables such as research productivity (Pasupathy & Siwatu, 2013), interest in research (Lambie, Hayes, Griffith, Limbert & Mullen, 2013), and self-esteem (Lane, Devonport & Horrell, 2004). However, one of the fields of study in which this construct has not been thoroughly analyzed is English Language Teaching (ELT).

A brief exploration of the relationship between research and ELT demonstrates that this field has turned into an evidence-based profession in recent times (Borg, 2006); teachers in countries like Australia, the United States, England, and China now consider research as an important part of their professional careers (Borg, 2006; Xu, 2013). Research is currently viewed as a tool to make informed pedagogical decisions, increase professional development and to understand theoretical findings (Gurney, 1989; Hargreaves, 2001; Kincheloe, 2003; Kirkwood & Christie, 2006; Lankshear & Knobel, 2004).

In the Mexican context, a few years ago foreign language instructors were still focused on teaching only (Ramírez, Reyes & Cota, 2010). However, teacher trainers and training institutions have been following this professional trend, and research has now become important for foreign language faculty in Mexican universities (Busseniers, Núñez, & Rodríguez, 2010). Unfortunately, there is still a lack of research training in English language pre-service teachers, who are socialized to become competent teachers but not to become researchers (Ramírez, Reyes & Cota, 2010).

In the University of Quintana Roo (UQRoo), the English language (EL) curriculum states as part of its objectives that undergraduate students will acquire knowledge about and to be able

to carry out educational, methodological, and linguistics research in order to improve their teaching experience (Licenciatura en Lengua Inglesa, 1995). The objectives, despite being in concordance with the current views about research, seem to have been ambitious for the time they were established. In fact, as part of the results of a study focused on EL graduates' research self-efficacy (Reyes & Gutiérrez, 2015), it was found that they constantly experienced hardship and emotional crises in the completion of their master's degree program and dissertations; for the most part, the development of their research self-efficacy did not commence in the bachelor's degree program as stated in the curriculum. Additionally, as noted by Reyes-Cruz and Rueda de Leon (in press) after an examination of the EL program, the only two existing research courses are separated by a long time gap, and just a few teachers might provide the necessary research practice to their students.

One may conclude that the current situation of research self-efficacy in the EL undergraduate program is not promising. However, the results provided by these studies need to be supported with more empirical evidence, especially if a proposal is to be put forward. A proposal grows in importance if we take into consideration the number of undergraduate students who opt for the thesis as an option to obtain their bachelor's degree. In the case of the aforementioned bachelor's degree program, from 1998 to 2008 only 11.6 % of the students graduated in this way (Zanier, 2011, p. 78). This means that only a small number of students can gain the benefits of a relevant research experience such as the thesis. As some authors have suggested, doing undergraduate research helps students experience the process of discovery (Kinkead, 2003), gives them greater control to undertake independent projects and to identify with the figure of the researcher (Healey & Jenkins, 2009), and, as a tool for faculty recruitment, it can increase research productivity and add new members to the research community (Brush, Cox, Harris, & Torda, 2010).

A quantitative analysis could then provide a panorama of the actual situation. As it has happened in other fields, an assessment of EL students' research self-efficacy could contribute to confirming shortcomings in their training and identifying new ones, which could lead to proposals to improve their research learning. Thus, the objective of this study is to measure EL students' research self-efficacy. Additionally, this study aims to determine to what extent EL students' research self-efficacy relates to the sources of self-efficacy. One last purpose of this

study is to find out whether or not there are differences in students' research self-efficacy according to their year in the program.

In order to achieve these objectives, the following questions were addressed:

- What is the nature of EL students' research self-efficacy beliefs?
- How do research self-efficacy beliefs relate to the sources of self-efficacy in EL students from UQRoo?
- How do research self-efficacy sources relate to each other in EL students from UQRoo?

Hypotheses:

- H1. Sources of self-efficacy are predictors of research self-efficacy beliefs.
- H2. Enactive mastery experiences are better predictors of research self-efficacy beliefs than other sources of self-efficacy.
- H3. There are differences in students' research self-efficacy beliefs according to their year in the program.

Perceived self-efficacy is understood as the beliefs that individuals hold about how well they can perform a task, and not the actual skills they possesses (Bandura, 1997), so research self-efficacy will be described as an individual's confidence in carrying out research tasks. Then, by assessing this construct in the EL undergraduate students, important empirical evidence could be provided and used to propose a reevaluation of the program. As suggested by Borg (2006), in the absence of empirical evidence, there cannot be serious proposal and changes in the policies about teachers doing research.

In order to train professors capable of including research in their professional development, the University of Quintana Roo should be preparing its students to acquire the necessary skills and tools to be competent EL teachers and to carry out research to solve the problems that arise in their classrooms. In addition, this study could contribute to the research done about research self-efficacy; especially because studies focused on undergraduate research have been found (Levy & Petrulis, 2012; Nicholson, 2011; Yaffe, Bender, & Sechrest, 2014) but only one was focused on EL pre-service teachers (Cabaroglu, 2014), and because the scales identified so far do not include the sources of self-efficacy as components.

CHAPTER I: THEORETICAL FRAMEWORK

The theoretical framework chosen for this study is Bandura's Social Cognitive Theory. One of the main components of this theory is the self-efficacy construct. In this section, the relation between self-efficacy and research is described as a way to define research self-efficacy. In addition, a description of the sources of self-efficacy is included as they are part of the variables. Due to the nature of the subjects in this study, this section ends with an explanation of how self-efficacy works at the college level, and with a description of undergraduate research.

Research self-efficacy

Within the Social Cognitive Theory, Bandura (1997) defines perceived self-efficacy as the beliefs in one's capabilities to organize and execute the courses of action required to produce given attainments. In other words, it is not concerned with the actual ability that an individual possesses but with the beliefs about how well one can perform a certain task. Research self-efficacy beliefs of EL undergraduate students would then be related to their confidence in carrying out tasks such as writing their research projects in the case of the first-year students and junior students, and their research protocols and theses in the case of the senior students.

According to Bandura (1997), people's beliefs in their efficacy affect almost everything they do: their thoughts, motivation, feelings and behaviours. These beliefs also influence the choice of activities. Not having enough confidence makes people avoid tasks which they consider difficult or unattainable; this can sometimes make them pass opportunities. And when they undertake such activities, they tend to lose a lot of concentration by thinking of their weaknesses, which makes it harder to overcome stress and depression. Additionally, these people with a low sense of self-efficacy recover slowly from failure and a major misstep it is not necessary to make them lose confidence.

On the contrary, highly self-efficacious people take greater risks and better opportunities, which in the long run lead to success. This translates into more confidence when undertaking similar activities, and fewer probabilities to be discouraged and lower their self-efficacy once that they have built a strong sense of self-efficacy. In addition, they tend to put more effort and concentration when things get difficult and also recover faster and more easily from failure. They are likely to view themselves as partial architects of their own destiny.

Beliefs of personal efficacy seem to be good predictors of human attainments. However, this is not always true. Actual performance and beliefs of self-efficacy may not be related if the capabilities being measured are not similar. This can occur when the individuals have no adequate knowledge of the tasks being undertaken or the way in which a social system works. This faulty self-knowledge can arise from other sources; for instance, in new and unfamiliar situations, people rely on beliefs of similar situations, which can be sometimes misleading. Self-efficacy can also be misjudged when personal factors distort self-appraisal processes.

Deficiencies of assessment include overconfidence of self-efficacy beliefs and underestimation of the task. People could have an accurate judgment of their skills but as mentioned before, the task demands might be unknown or even underestimated. In contrast, tasks might be well known but the capabilities that one possesses might be overestimated. Misjudgements then create disparity between efficacy belief and action. These misjudgements may carry consequences for the person who makes them. Depending on the activity, the costs of trying to exert control over them unsuccessfully will vary.

On the one hand, an overestimate of capabilities can make individuals set unrealistic goals, which can increase the likelihood of failure. In the case of novice teachers, failure can decrease their self-efficacy beliefs, and their willingness to persist when they encounter future challenges (Oginga & Randall, 2015). However, doubts are not always problematic; self-efficacy doubts can also motivate teachers to learn and improve their teaching skills (Oginga & Randall, 2015). On the other hand, individuals with low confidence in their capabilities may avoid tasks and pass opportunities. People mostly regret risks not taken rather than the consequences of the actions that were actually done, which demonstrates that as long as the consequences do not seem dangerous or life-threatening, taking risks more probably will lead to benefits rather than to losses (Bandura, 1997). In addition, even the most talented people face doubts from time to time, so being optimistic is important at the moment of judging the tasks and one's self-efficacy.

Regarding optimism, realists may adapt to the reality of the situations but optimistic people are likely to change those situations (Bandura, 1997, p. 74). In fact, even though they were rejected at the beginning, most innovators and greater achievers struggled to succeed over adversity. The most resilient people then will stand against anything. The beliefs in themselves motivate them to continue even in the face of obstacles. They will invest the necessary effort to accomplish their objectives. It does not mean that they are not aware of the difficulty; they are, but they do not see goals as unachievable in spite of the negative instances.

Sometimes, optimistic people may face a dilemma when their self-efficacy generates non-productive effort. Then, when they consider they are facing way more superior tasks they are likely to focus their effort in other activities. However, some might decide to continue despite the evidence that the task is unattainable or that they do not have the necessary capabilities. Self-deception would then occur when someone insists on ignoring them. They will even question and reject the evidence they are presented.

EL students' research self-efficacy could be then measured through the number of good experiences and results they have had in the conduction of research projects. It may be possible that those students who decide to write a thesis or a final course research project and present their results at conferences have a greater sense of self-efficacy in research. On the contrary, students that have turned down or have failed at these research tasks or plan to graduate by other options of qualifications, might be low efficacious in research. This situation can be regarded as enactive mastery experience, one of the sources to build self-efficacy. A description of these sources is explained next.

Sources of self-efficacy

Bandura (1997) hypothesized that self-efficacy beliefs are constructed from four sources of information: a) enactive mastery experiences, b) vicarious experience, c) verbal persuasion and d) physiological and affective states. Being part of the variables, these four sources are important for this study.

To begin with enactive mastery experiences, these are the most influential source to develop self-efficacy (Bandura, 1997; Pasupathy & Siwatu, 2013; Zimmerman, 2000) because

they are about the successes and failures that individuals go through. Generally, success raises self-efficacy whereas failure diminishes it; however, this is not always true. Setbacks can also give people experience in overcoming obstacles as well as performing well without much effort might not raise self-efficacy at all. The type of enactive mastery experience that EL undergraduate students could have are the writing of their research protocols and the elaboration and presentation of research projects as final work from their several courses, specially, those courses linked to linguistics, as graduates who majored in English language have shared (Gutiérrez, 2014).

When undertaking new activities, people rely on pre-existing self-knowledge structures. How to judge and reconstruct new experiences in memory partly depends on the previous experiences. Efficacy beliefs then function as constructors of experiences. Similar experiences will be given more importance, strengthened and remembered; they will be stored in memory and become part of the beliefs of self-efficacy. Experiences that are inconsistent with previous ones will be diminished or forgotten. Continuously choosing similar activities that will reinforce the beliefs of self-efficacy and having repeated success is helpful to develop a strong sense of self-efficacy. Once this occurs, occasional failures will be unlikely to lower the beliefs in one's capabilities. Self-efficacious people will instead relate poor performance to faulty strategies, situational factors and insufficient effort. This last element is an important factor related to mastery experiences.

Ability and effort are seen as interdependent determinants of performance. Some people view effort as a compensation for low capabilities whereas others think that effort enhances ability. This means that the amount of effort expended affects the perceived efficacy that results from performance accomplishments. Effort is also an important factor in self-appraisal of efficacy from failures. On the one hand, to perform well without much effort does not raise self-efficacy. On the other hand, to fail in spite of making a great effort will surely lower it. Highly efficacious people then view failure as a lack of effort while low efficacious people consider it happens due to a lack of ability.

The second most influential source of self-efficacy is the vicarious experience (Bandura, 1997; Pasupathy & Siwatu, 2013; Zimmerman, 2000). When people lack knowledge of their own capabilities they tend to judge their self-efficacy in relation to other's performance. This source of self-efficacy acts more commonly when people see others as models rather than as

competitors. When we see our models overcome adversity, we can aspire to succeed; we think that if they have certain results, then we could also obtain them. But we can also be discouraged from trying when such models fail at a given task. Nonetheless, this might not happen if we believe that our strategies to face a problem would give us better results. EL undergraduate students could regard their own teachers as role models because some of them hold posts as research professors. However, it might not be necessary to have more experienced models. Students from previous cohorts or even their own peers could be regarded as models as well.

Similarity plays an important role in vicarious experience. The person we are comparing to should have the same or a slightly similar level of capabilities; otherwise, there will not be a great effect. In that case, EL students' beliefs of self-efficacy should not be raised when a model that is way more skilled than them surpasses them or lowered when the less skilled fail. In addition, social comparison works better when attributes like age, sex, educational and socioeconomic level are similar. This means that ideal models for the EL students are precisely professors who teach or once taught English.

Verbal persuasion occurs when people receive feedback from others. Some people may be good at a certain field but not be confident enough to try it. Then, when they are motivated by the points of views, positive critics and support they receive from others they are encouraged not to pass good opportunities and in some cases to surprisingly succeed in activities they have not thought before. Of course, the positive persuasion should not be far from people's reality. When someone is given false hopes and that leads to failure, not only efficacy beliefs are lowered but also the persuader loses credibility.

Self-efficacy will increase based on the persuader's credibility and knowledge of the capabilities being judged. It is better if the persuader already masters the skills he or she is judging. However, some people might rely more on their own knowledge of their skills than in what other people tell them. Teachers of the EL program may not only be models but also reliable persuaders for their students. Due to the knowledgeableness and experience of professors, their comments and feedback could have a great influence in students' self-efficacy. An example of this persuasion could be that of the students who are praised by their research skills. Within the findings of a previous study (Gutiérrez, 2014), students indicated that when they write good research projects they are invited to present and participate in conferences like the *Foro de Estudios en Lenguas Internacional*, which is organized by the EL program.

Finally, the physiological and affective states involves the body states and reactions that people experience when doing certain tasks and more importantly the interpretations that they give them. Emotions have different physiological reactions which can also change from individual to individual. Additionally, one same reaction could have several causes. For example, the heart races alike in fear, euphoria and vigorous physical exertion (Bandura, 1997, p. 109). Then, how these reactions are read is very important. People with high self-efficacy might regard nervousness as a typical reaction to activities such as giving a speech whereas people with low self-efficacy might think it is a consequence of their unpreparedness and weaknesses. Then, EL students who experience nervousness or anxiety while presenting their research projects could interpret those feelings as normal or as indicators of their lack of ability.

One way in which the interpretation of reactions and body states functions is by the level of attention. People who start paying attention to their body reactions will lose focus on how well they are performing the activity in which they are involved. In addition, the level of activation also plays an important role. Moderate reactions help by heightening the necessary attention for the task but intense reactions turn out to be disruptive instead. The level of activation will depend on the complexity of the task. Therefore, activities which are complex could lead people to get distracted more easily than those activities that are simpler.

The sources of self-efficacy described by Bandura are not independent; they operate together. Moreover, these four sources of self-efficacy along with time can increase or diminish self-efficacy and their impact depends on how that information is cognitively processed. Now that they have been explained, a brief explanation of how self-efficacy works at the undergraduate level is given.

Students' cognitive self-efficacy

Within the social cognitive theory, Bandura describes how self-efficacy is modified through the different stages of life. One of these stages is the high academic life, in which he explains how self-efficacy influences on students' academic achievement. The following description is important due to the nature of the participants as undergraduate students.

According to Bandura (1997), when we are younger, school is seen as the place for cultivating and validating cognitive capabilities. One of the goals of education is to give students the self-regulatory capabilities that enable them to educate themselves and to continue like this throughout their lifetime. Self-regulatory skills like the division of goals into sub goals and the use of self-incentives can help students raise their self-efficacy in school. Highly self-efficacious people may divide the amount of effort to ease certain tasks, and in a program like the EL program from UQRoo, research projects from previous courses could be recycled to serve as the first steps for major projects like theses, which could ensure successful experiences and an increase in students' self-efficacy. Self-motivation can also be best sustained when a goal is divided into sub goals because it functions as rewards letting people see the results of their work. When people develop a strong sense of self-efficacy, they also develop an attraction to academic achievement and a rewarding sense of fulfilment through personal accomplishments.

Bandura (1997) states that students' beliefs in their efficacy to master different academic subjects operate as important contributors to the development of cognitive competences that govern academic achievement. This occurs directly by affecting the quality of thinking and good use of acquired cognitive skills and indirectly by heightening persistence in the search for solutions. Effective intellectual functioning requires metacognitive skills for organizing, evaluating, and regulating one's thinking processes. In fact, failures in intellectual performance are often caused by deficient use of these skills rather than by lack of knowledge. The most self-efficacious students are the ones who make use of cognitive strategies, manage their time and learning environments better, and monitor and regulate their learning closer.

Three more factors that are related to students' intellectual self-efficacy are teachers' feedback, peers' influence and academic anxiety. Teachers' feedback can influence students' judgements of their capabilities and their performance at school. As seen before, some people might raise or lower their self-efficacy depending on the reasons they attribute to their success, like ability or high effort. Moreover, the quality of the work is important when giving feedback. Telling someone that their work is of good quality will raise self-efficacy whereas giving feedback without making reference to its quality will not alter it.

In the absence of teacher's feedback and appraisals, students can judge their performance by comparing themselves to others. Thus, peers have certain influence in the development and validation of intellectual efficacy. Apart from comparison, modelling and interpersonal affiliation

contribute to social construction of intellectual efficacy. By means of interpersonal affiliation, the peers with whom one associates partly determine which potentialities will be cultivated. If students are taught to value education since children, they will likely associate with peers at the college level who promote attitudes, achievement standards, and socio cognitive skills that lead to intellectual pursuits.

University students' low sense of efficacy to manage the academic demands is accompanied by high levels of anxiety and symptoms related to stress. In addition, the effects of school successes and failures increase with the academic level. Therefore, it may be normal that students in upper levels be more apprehensive because at that stage their performance affect their future careers. To alleviate some anxiety, students can be taught self-regulatory skills like time and academic resources management that can raise self-efficacy and in turn, reduce anxiety. The proposal to relieve anxiety may go beyond the scope of this study, but its importance relies on the correlation between high levels of self-efficacy and low levels of affective states (Bandura, 1997; Rezaei & Zamani-Miandashti, 2013).

Finally, Bandura (1997) broaches the subject of research within academic life. In his words, research, by its very nature, requires resilience and a firm sense of purpose (Bandura, 1997, p. 240). These qualities are necessary to deal with the difficulties of research projects like the long periods of time required and the critical scrutiny to which one's work is subjected to. He suggests that mastery experiences, modelling of research strategies and supportive feedback are important factors to build a strong sense of self-efficacy during the development of an academic career.

As part of a well based and accepted theory, self-efficacy is a construct used to analyse and explain phenomena. For this reason, it has been widely investigated in different fields; research self-efficacy is one of the branches that has resulted from this investigation. This study examines both research self-efficacy and the self-efficacy sources in an attempt to explain the phenomenon of research in an EL undergraduate program, and to contribute to the body of research conducted in the EFL field.

Undergraduate research

Different activities can fit into the category of undergraduate research depending on the authors that define it. The National Science Foundation (as cited in Hunter, 2007) defines it as "an inquiry or investigation conducted by an undergraduate that makes an original intellectual or creative contribution to the discipline." Originality seems to be an important element; in fact, Healey and Jenkins (2009) explain in their analysis of the US context that undergraduate students are expected to produce original knowledge suitable for publication. These authors also describe undergraduate research as students learning through courses how research is conducted in their disciplines. One more definition is that of Brush, Cox, Harris, and Torda (2010) who describe it as students taking part in faculty members' research.

These definitions are presented due to the lack of a definition by Mexican authors or organizations. However, the aforementioned conceptualizations of undergraduate research partly describe the work conducted by the EL undergraduate students in UQRoo. Although, originality may not be required in the EL program, the enrollment in research methodology courses, the conduction of their research courses projects, and the writing up of their theses can be considered as undergraduate research. In addition, EL language students who participate in faculty research projects are also involved in undergraduate research as Torda (2010) suggests.

A central part of this study is the benefits that research offer to undergraduate students. It helps students experience the process of discovery (Kinkead, 2003), gives them greater control to undertake independent projects (Healey & Jenkins, 2009), and can increase the research productivity and add new members to the field of researching (Brush et al, 2010). In addition, it contributes to the socialization of students by making them begin to think like professionals in their respective fields (Healey & Jenkins, 2009), i.e. like a chemist, like a historian, like an engineer or like a teacher. Precisely, the conduction of research at the undergraduate level has been found to be beneficial for the professional development of pre-service teachers, because it promotes reflection, and help students to address the problems encountered in their practice (Cabaroglu, 2014). In the case of EL pre-service teachers, research increases their self-awareness as language teachers, and prepares them to identify, investigate and overcome the teaching challenges they may face in the future (Cabaroglu, 2014).

In the Mexican context, higher education institutions have started to include research as an important aspect of the formation of English teachers (Bussieners, Núñez, & Rodríguez, 2010). In the case of UQRoo, it is now stated in both the Educational Model and the EL curriculum that research is an elemental aspect of the formation of its students (Licenciatura en Lengua Inglesa, 1995; Modelo Educativo, 2010). The most important means to fulfill the objectives of the curriculum is the thesis, but students can also benefit from the conduction of research projects in their courses, and in programs like the summer research organized by the Mexican Council of Science and Technology (CONACyT). In addition, the descriptions of previous authors (Healey & Jenkins, 2009; Torda, 2010) demonstrate that EL students from UQRoo carry out undergraduate research when they enroll in their research projects and participate in faculty's research projects. The identification of these research experiences is important to have a clearer idea of the students' tasks that are included in the present study.

CHAPTER II: LITERATURE REVIEW

Nowadays, there are diverse points of view concerning how favorable research can be for undergraduate students; it is said that research fosters problem solving skills (Nicholson, 2011), independent learning (Kinkead 2003; Spronken-Smith & Walker, 2010) and critical thinking (Levy & Petrulis, 2012) among other skills. Thus, before presenting the studies related to research self-efficacy that support the present one, this section begins with the studies that demonstrate some of benefits of undertaking undergraduate research.

Benefits of undergraduate research

In order to clarify the terminology of the following studies, it is necessary to mention that they make use of different denominations for this construct. As Spronken-Smith and Walker (2010) have remarked, undergraduate research can also be referred as "enquiry-based learning", "guided-inquiry", "problem-based learning", and "research-based teaching". By using these concepts, the following studies present the gains that undergraduate students obtained after carrying out tasks like attending summer research programs, enrolling in research courses and writing dissertations.

To begin with the benefits of research courses, Todd, Bannister, and Clegg (2004) carried out a mixed study to explore the lived experiences and perceptions of final-year social science undergraduate students and faculty members who were engaged with a dissertation module in a UK university. The authors collected the data by administering a questionnaire to 44 students enrolled in the course module and by conducting interviews to 14 students and eight faculty members. It was found that the dissertation helped them develop skills related to independent work since both students and their supervisors commented that the dissertation was a tool to promote autonomous learning. Additionally, students developed a sense of rewarding after completing the hard work that the dissertation implied.

Levy and Petrulis (2012) carried out a qualitative study to explore the inquiry and research experiences of first-year students in a UK university. The authors conducted interviews to 29 students from arts, humanities and the social sciences who had undertaken inquiry experiences such as question- oriented lectures, seminars and online discussions, tasks including essays, and small-scale empirical investigations. Among their views, students mentioned that the research experience helped them develop their own ideas and find justifications for their arguments. Others mentioned instead that it was helpful to analyze others' views. Additionally, students mentioned some benefits such as the development of skills to find and evaluate information sources and the development of a more critical thinking.

In another qualitative study, Hunter (2007) aimed to explore the benefits of a summer research experience in undergraduate students from four UK universities. Besides from the summer research experience, undergraduate research programs in these liberal arts colleges also offered a series of seminars and field trips that explored various science careers, discussed the process of choosing and applying to graduate schools, and other topics that focused on students' professional development. Seventy-six senior students were interviewed in the 2000, and two subsequent interviews were administered within the next four years, once that the students had finished college. A comparison group of 62 students who had not undertaken undergraduate research and faculty advisors were also interviewed. Among the results, students expressed benefits like personal-professional gains, thinking and working like a scientist, gains in various skills, clarification of career plans, and a better preparation for graduate school. Analysis of data from the faculty advisors interviews also indicated benefits which led students to "become scientist" such as the development of personal growth in the attitudes, behaviors, and temperament required in a researcher.

Continuing with the studies that analyze the benefits of courses, Valter and Akerlind (2010) conducted a case study about biosciences undergraduate students enrolled in a research-led course in an Australian university. Fifty students in their third year undertook the course and carried out research tasks such as collecting small amounts of data in laboratories, engaging in data analysis, exploring the literature in a research field and finding gaps in the research in that field. The gains in students' learning were measured through the assignments included in the course and a final exam. The results of the assessment gave a good representation of the students' scientific abilities. It was suggested that these students achieved a deep understanding of the

practice in their field. The authors added that many students were willing to continue on the path of research and consequently enrolled in the university's honor program.

Nicholson (2011) conducted another case study in which final year undergraduate physical geography students took a research-based field course. The purpose of the field course was to provide an authentic learning experience that reflected professional environments, processes and relationships. The types of research experiences in which students were involved were preparatory field training, research design, implementation in collaborative teams, preparation of a journal article and engagement in the peer review process. It was found that this research-based learning facilitates progressive skills development and learner autonomy. Students, for example, increased their confidence in their own ability and discovered the freedom to take ownership of their own learning. Moreover, the module facilitated the development of various employability skills (e.g. problem solving, communication and presentation skills, and collaborative enquiry) which are beneficial for students' professional careers.

Tsang (2010) carried out a study to evaluate the implementation of a research project into the first and second year undergraduate curricula of the School of Dentistry at The University of Queensland. Ninety-six first year oral health and dentistry students, and twenty-four second year oral health students participated in a 13-week long research project which was part of their courses. Students formed groups of five to seven members and elaborated quantitative projects in which they interviewed health professionals, performed and analysis and presented the results. In order to evaluate the research project the author collected data through a student experience questionnaire and the formative feedback from the examiners of the assignment. The results indicated that the project had a positive impact on students' professional development and communication skills. Moreover, the project encouraged them to take responsibility for their own learning and to socialize with their peers. Students mentioned that they gained insights into research, their appreciation of research was enhanced, they learned about the research process better as the experience was more helpful than course explanations and precisely that it provided them with a real-world research experience.

Yaffe, Bender, and Sechrest (2014) investigated the long-term impacts of an undergraduate experience in an American university. They also explored the differences between two groups: Biology students, whose curriculum includes an undergraduate research program, and medicine students, who did not conduct research as their biology counterpart. The authors

used an online survey and conducted follow-up phone interviews to some of the 496 students in their sample. It was found that for both groups, undergraduate research experiences were not the main reasons to choose their current career path. However, the experience did help them to clarify their career paths during their undergraduate studies. Some students discovered the excitement of science and that it can even be a career. On the other hand, some students realized that they are not suitable for a scientific career. In addition, almost all biology students reported that undergraduate research had some effect on their level of career satisfaction. In contrast, two thirds of the medicine students reported that it had very little or no effect on their career satisfaction.

One study that did use a sample of English language students as in the present one was carried out by Cabaroglu (2014). This author aimed to explore the views of the students about the action research process as related to their professional development. The study adopted a mixed method approach. Sixty English language students from a Turkish university participated in a 14-week research course in which they carried out an action research project and then wrote their reflections on a diary. In addition, they were given a course evaluation form with open-ended questions and a teacher self-efficacy scale before and at the end of the course. Students' participation in the action research project resulted in an increased self-awareness as language teachers, a growth in reflection, enhanced autonomous learning and more learning about students and language teaching strategies; specially, they felt that they acquired the necessary skills to identify, investigate and overcome the teaching challenges they may face in the future. In relation to the course evaluation forms, students shared that the conduction of their projects had positive effects in their autonomy, creativity and confidence building. One of the quotes reports that "they were responsible for their own learning" or "learned to put theory into practice".

The previous studies were focused on a wide variety of disciplines. In spite of this, students were willing to undertake undergraduate research activities. The students from the following case study, however, did not accept the research activities at the beginning, probably because of the technical nature of their discipline. In this case study conducted by Wood (2009), 190 arts media students from an Australian university undertook a first-year course with an enquiry-based approach. To fulfill the objectives of the study, the curriculum of their Digital Media Techniques course was redesigned to introduce research concepts and research activities including the design and implementation of a small research project. Even though at the

beginning students exhibited some resistance to the enquiry-based approach, at the end they appreciated the opportunity to undertake a research project. Among the benefits of completing the course, they mentioned that it enabled them to explore an area of personal interest, it helped them to build a solid foundation for their careers and to have a better understanding of the role of research. Nevertheless, a few students still did not feel that research had a strong relation to their careers.

In order to compare the different types of inquiry-based learning, Spronken-Smith and Walker (2010) conducted a cross-case analysis of three different types of this learning. They compared the results of three case studies focused on New Zealand university courses from different fields. An endocrinology module used a structured inquiry approach, a political communication module used a guided inquiry approach, and an ecology field course used an open inquiry approach. Students enrolled in each course undertook research activities which vary in their degree of relation to research depending on the approach. It was found that the ecology field course, which had the strongest relation to research, had a major emphasis on high order metacognitive skills: creativity, understanding, analyzing, applying and evaluating. Furthermore, the majority of the students in this course commented that it helped them develop their research abilities and that they felt they were apprentice researchers. This course along with the endocrinology module also encouraged students to take responsibility for their own learning, and to be challenged.

Hu, Kuh, and Li (2008) examined the effects of student engagement in inquiry- oriented activities on a range of self-reported college outcomes (gains in general education, personal development, science and technology, vocational preparation, and intellectual development). The authors used data previously collected in the College Student Experiences Questionnaire, an American national survey designed to gather information about students' background and their experiences in college. The sample consisted of 5,557 students who responded the questionnaire between 1998 and 2004. The results indicated that engaging in inquiry-oriented activities has significant and positive effects on a global measure of gain, especially in intellectual development and science and technology outcomes. Nevertheless, it appeared to have negative effects on the acquisition of general education knowledge and skills as well as personal development.

Justice, Rice, and Warry (2009) examined how a single first-year inquiry-based seminar can have a lasting impact on students' academic skills. A quasi-experimental approach was chosen in which 54 social science and kinesiology students took an inquiry course concerning academic research while a control group of 71 students did not. Generally, when compared, the inquiry students obtained slightly higher scores in academic skills like reading and summarizing research articles, accessing to information and self-assessment of their performance throughout the seminar. However, the advantages over the non-inquiry group lessened with the passage of time. The effects of the course could be better seen when the authors compared the results of the students who had taken the course within two years of testing to the students who had taken it earlier. This led the authors to suggest that their institutions might have been providing the experiences for reaching a certain academic level, but that they were failing at challenging their students to surpass that level. Even though the inquiry group was never outperformed by the control group it was worrying that there was little or no effect on performance measures of critical thinking, question development and research planning. However, the results cannot be generalized due to the design of the study.

As it has been presented, there are other findings that show students did not always obtain benefits from conducting undergraduate research, especially when students themselves were reluctant to embark on those research tasks. In addition, there were cases in which focusing in the conduction of research appeared to have negative effects, for example, on the acquisition of general education knowledge (Hu, 2008). Nevertheless, a comparison of the pros and cons can demonstrate that it is more favorable than detrimental.

Overall, the majority of the findings lend support to the inclusion of research at the undergraduate level. The fact that these previous studies were conducted in different disciplines also suggests that undergraduate research brings benefits to the students that undertake such activities no matter what is their field of study. Among the most cited benefits, participants of these studies mentioned the development of a better understanding of research, the development of a more critical thinking, and the encouragement to take responsibility for their own learning.

Research self-efficacy

Now that the importance of undergraduate research has been addressed, the studies focused on research-self-efficacy are presented. It has to be mentioned that literature on English language students' research self-efficacy could not be found. Thus, the following ones are presented because of their study of research self-efficacy on high academic level students. Firstly, research conducted at the doctoral level is presented. The first studies explore the relation of research self-efficacy to variables like interest in research and the research training environment. Then, research with a focus on master's and undergraduate students is presented starting with different variables and contexts but narrowing the review with studies focused on undergraduate educational programs. This section ends with a discussion of these studies.

Doctoral level studies

Bieschke, Bishop and García, (1996) examined research self-efficacy beliefs among doctoral students and if this construct was related to interest in career choices. One more goal was to determine which variables contributed to the development of research self-efficacy. One hundred thirty-six doctoral students from humanities, biological, social and physical sciences completed the Research Self-Efficacy Scale (RSES) developed by Greeley, a 51-item scale with a coefficient alpha of .96. The subjects also completed a background questionnaire that contained an interest in doing research section. It was found that the number of years in the program and previous experience are significant predictors of higher research self-efficacy and that prior research experience partly predicts interest in research. The authors discussed that early experiences in research could contribute to research self-efficacy because it is logical to infer that the more time students spend in a program the more exposure to research-related activities they have. Therefore, training programs should provide those early experiences in research in order to develop students' research self-efficacy. They also speculated that other variables like the sources of self-efficacy may be involved in the prediction of research self-efficacy.

Other authors that supported some of the results of Bieschke et al. (1996) but with subjects from another field were Lambie, Hayes, Griffith, Limbert and Mullen (2013). They conducted a correlational study to investigate the relation among students' research self-efficacy, interest in research and research knowledge. In addition, they wanted to find out whether or not there was a relation among these three constructs and the students' year in the program. The authors also used the Research Self-Efficacy Scale developed by Greeley but this time it contained 38 items instead of 51; the other instruments were the Interest in Research Questionnaire and the Research Knowledge Assessment; the three of them were administered to 67 students enrolled in a full-time doctoral program in education. The authors found that students with more prior research experiences such as courses and publications obtained higher scores in the three instruments. Additionally, the higher results of the students in the third year suggested that they become more comfortable as they have spent more time in the program and perform more research-related tasks. However, interest in research was not related to the students' year in the program. The authors also suggested that since interest in research and research knowledge were predictors of research self-efficacy, doctoral programs may want to promote the first ones in order to enhance students' research self-efficacy.

Lambie along with Vaccaro (2011) had previously carried out a study that included research interest as a variable but with different results. They examined the relationship between research self-efficacy, perceptions of the research training environment and research interest in the development of the research and scholarship competencies. They used three instruments: a research self-efficacy scale, the Research Training Environment Scale (RTES) and the Interest in Research Questionnaire. The instruments were responded by 89 counselor education doctoral students from 16 programs in American universities. The authors found that doctoral students who had published scholarly work obtained higher scores in the RSES, older students obtained lower scores in the RTES, students in their third year scored higher on the RSES and that, this time, scoring at higher levels of research self-efficacy was predictive of higher interest in research scores. This last finding shows that whether there are inconsistencies between this and the previous study or research self-efficacy and interest in research have a bidirectional relation in which both predict one another. Regarding the age variable, the authors discussed that the influence that age had on the perception of the research training environment could be explained by the recent work students within the age of 21 and 30 had done in their master's programs,

taking into account that older students probably had a long time gap between their master's degree and their doctoral training. Additionally, younger students might be more comfortable with the new technologies used in research.

Bard, Bieschke, Hebert and Eberz (2000) compared doctoral students' and faculty's research self-efficacy, research outcome expectations and research interest. In order to fulfill this objective, the authors administered three scales to 93 rehabilitation counseling students including the Research Self-Efficacy Scale from the previous studies. Even though the main objective was the comparison among these constructs on both students and faculty, the results from the students' examination could be important to this study. Surprisingly, outcome expectations determined more the interest in research than research self-efficacy did. Research self-efficacy was a predictor of interest in research on faculty but not on students. One of the implications of the results is the influence that faculty modeling has on students. Faculty members who conduct research for the sake of contributing to the expansion of knowledge might have a more positive impact on students than faculty members who conduct research only as an academic requirement. Faculty members' encouragements of students to become more involved in research projects throughout their graduate careers, may help foster research self-efficacy independent of students' outcome expectations.

Apart from research interest, research training environment has also been correlated to research self-efficacy in a number of studies with interesting results about the importance of the advisors. One of these studies was carried out by Faghihi, Rakow and Ethington (1999). They examined the relationship among research self-efficacy, research environment and student-advisor relationship as well as other variables like research preparation, research involvement and dissertation progress. In order to fulfill their objectives the authors used a questionnaire for the background information and most of the variables and a revised version of the Self-Efficacy in Research Measure. They sent an e-mail with these instruments to doctoral candidates in a college of education and received 97 responses. Among the results, it was found that research self-efficacy along with the relation of the advisor and committee members contributed to students' dissertation progress. Since this correlation was not affected by any background characteristics that students provided it was concluded that faculty advisors play an important role in the research environment. However, the most important factor that influenced dissertation progress in this study was research self-efficacy. In addition and in concordance with previous research, it

was found that students who had undertaken research activities during their graduate studies like in assistantships were more confident in the conduction of research.

One year later, Kahn (2000) obtained similar results regarding faculty advisors. He carried out a longitudinal study to explore how changes in the research training environment relate to changes in research interest and research self-efficacy. One aspect of the research training environment in which the author focused was students' relationship with a mentor. One hundred twenty-five doctoral students from different psychology programs responded two surveys in a one-year period. This survey consisted of the Research Training Environment Scale-Revised, a scale to measure the adequacy of the mentoring relationship and a short form of the Self-Efficacy in Research Measure adapted from Phillips and Russell. As it was expected, positive changes in the relationship of the students-mentors were associated with positive changes in research self-efficacy and research interest. On the contrary, global research training environment scores were not related to research self-efficacy. According to the author, this suggests that even though there are many factors affecting the career of doctoral students, mentors play an important role like Faghihi (1999) have also found. The author continued his suggestions by adding that verbal reinforcements and modeling can be effective ways to promote the scientific development of a student.

One last study about the importance of the advisors for research interest and the research training environment was conducted by Shivy et al. (2003). The authors wanted to demonstrate how a comprehensive evaluation of a research training environment could be performed using a combination of existing and exploratory methods. In addition, they wanted to develop recommendations for the better teaching of research in psychology programs. They used the Research Training Environment Scale-Revised, the Self-Efficacy in Research Measure and free-response data from doctoral students in a counseling psychology PhD program. The results from the quantitative data indicated that faculty modeling, positive reinforcement and early involvement were the factors of the research environment that students valued the more; it was also found that the interpersonal aspects of the research training environment were most important to those students. In concordance with the quantitative data, the qualitative analysis led the authors to suggest that two personal qualities of faculty advisors promote student involvement in research. Firstly, faculty advisors who are helpful, caring and involved with students draw them into research. Secondly, faculty advisors who are passionate and positive about their

research and convey that passion, will likely motivate students. These suggestions concur with those of Bard et al. (2000) by remarking that showing passion in the conduction of research has a positive influence on students.

Finally, even though Brown, Lent, and Ryan (1996) targeted at graduate students, they continued with the research about the research training environment. They aimed to revisit the possibility that the relationships of this construct and self-efficacy beliefs to productivity may be somewhat different for female and male graduate students. They carried out a reanalysis of previously collected data about graduate students from a counseling psychology program. These data included measures of research training environment, research self-efficacy and productivity. This new analysis showed that there was not significant sex differences on any of the three measures. However, it could be found that the perceptions of the research training environment was more related to self-efficacy in women, but self-efficacy in men was more related to their research productivity than in women.

All these previous studies did not only share some variables like the interest in research and the research training environment but also the instruments. The authors made use of the Research Self-Efficacy Scale (RSE) developed by Greeley in 1989 and the Self-Efficacy in Research Measure (SERM) developed by Philip and Russell in 1994. In relation with their validity, Forester, Kahn and Hesson-McInnis (2004) conducted a study to explore the factor structure of responses to three instruments developed to measure research self-efficacy: the RSES and the SERM aforementioned and the Research Attitudes Measure. These instruments were completed via on-line by 1004 graduate psychology students. It was discovered that the dimensions of research self-efficacy on these three instruments were not distinct enough to be considered separate factors. The authors proved that the global results of such scales are valid, but they did not recommend using the subscales because they were not supported in the confirmatory factor analyses. This in no way diminishes the results of the previous studies which used these instruments.

One last study that performed an exploratory factor analysis for structural validity of the Research Self-Efficacy Scale was conducted by Büyüköztürk, Atalayb, Sozgunc and Kebapçı (2011). They concluded that the RSES for university students can be indicated psychometrically satisfactory. It was further considered that the scale can contribute to the identification of students' self-efficacy beliefs so as to allow for possible intervention-oriented studies.

With regard to other studies focused on the doctoral level but with different variables, some authors included autonomous learning, achievement goals and the research experiences. To begging with autonomous learning, Overall, Deane and Peterson (2011) carried out a study to test how the different combinations of supervisors' academic and personal support and autonomy promotion contribute to research self-efficacy. The sample consisted of 359 doctorate students from several programs in a New Zealand university, 15% of them belonging to an educational program. The authors administered a questionnaire with six different measures: supervision satisfaction, supervision support, academic support, personal support, autonomy support and research self-efficacy. Among the results, they found that autonomy support was the strongest predictor of research self-efficacy. In addition, personal support and academic help contributed to build a strong sense of self-efficacy only when the supervisors combined them with an autonomous learning. Therefore, it was discussed that facilitating students' learning without promoting their autonomy might hinder their learning process and train researchers without independent thinking. The ideal scenario proposed was then the one in which students receive a balanced amount of academic help and autonomy in their work. The authors, however, remarked that depending on the learning style of the students this could vary.

Deemer (2010) conducted a study to determine if achievement goals (mastery approach, mastery avoidance, and performance avoidance) were predictors of research self-efficacy and what was the relationship among these variables and age and gender. The author administered an on-line survey to 228 doctoral students in counseling psychology from 71 American and Canadian universities. In concordance with his hypothesis, the author found that the pursuit of mastery approach goals was a predictor of greater research self-efficacy. Besides, it was discovered that high mastery avoidance goals appeared to have negative implications for research self-efficacy among older students, which led the author to suggest that those older students who leave research for a while may strive harder than younger students who might have shorter periods of research inactivity. A negative effect of research inactivity had been previously commented in the study of Lambie and Vaccaro (2011), but in that study the inactivity affected the research training environment. Finally, gender was also found to be a significant univariate predictor of research self-efficacy over and above the contributions of age and mastery avoidance goals, meaning that females reported less confidence in their research abilities than their male counterparts.

In another study that focused on research self-efficacy related to gender differences, Wright and Holttum (2012) tested the relation among gender, research self-efficacy and the intentions to conduct research in the future in clinical psychology trainees from British courses. Fifty-five men and sixty-five women completed two research intention scales and a research self-efficacy questionnaire. Among the results, research self-efficacy was a strong predictor of research intention. Interestingly, masculinity was related to greater research self-efficacy, and predicted level of research intention when measured as a scale variable; but the authors could not support their hypotheses about women and these variables. In light of these results, the authors considered it important to challenge or encourage trainees to reflect on stereotypical views of gender and research.

Continuing with research within the psychology field of study, Love, Bahner, Jones and Nilsson (2007) carried out a study to determine the influences that early research involvement had on the research self-efficacy of doctoral psychology students. One hundred thirty one students enrolled in counseling psychology programs responded a survey via on-line which included the 51-item version of the Research Self-Efficacy Scale developed by Greeley. Besides, the authors added two open-ended questions to examine what factors contributed to make students' prior research experiences satisfactory or unsatisfactory. Among the results, early team research experiences were found to be significant contributors of research self-efficacy and surprisingly there was no significant difference in research self-efficacy of students with more experience and those with less. With regard to the qualitative analysis, previous team research experiences were positive because of the affective support and the mentoring from the supervisor whereas they were negative mostly because of problems with the group dynamics. In concordance with Lambie and Vaccaro (2011), the authors commented that one way of promoting a better research training environment is by providing research-specific mentoring. The authors also discussed that previous team research experiences could have been more significant than individual experiences because they foster all sources of self-efficacy, for example, through peer assistance (vicarious experience) and group encouragement (verbal persuasion). The authors also proposed that emotional arousals can be important because they are related to dissatisfaction and negative experiences.

Odaci (2013) investigated the relation among research self-efficacy and several variables: computer self-efficacy, self-esteem, subjective well-being and other demographic variables. The

sample consisted of 247 students from master's and doctoral programs in a Turkish university; a third of them were enrolled in non-thesis master's programs. Students were given a demographic data form and a research self-efficacy scale, a 51-item version developed by Bieschke and adapted into Turkish. As part of the results, students' self-efficacy varied depending on the number of hours they used the computer for scientific purposes; the longer they used it the higher their levels of research self-efficacy. In addition, research self-efficacy varied according to the field of study; students from science faculty obtained higher results than students from social sciences and health. The nature of the program was also included in the demographic data. Students from a doctoral program obtained higher scores than master's students and these last group obtained higher scores than students in master's programs who were not required to write a thesis. Additionally, results showed that students with more research experiences (participations in congresses, scientific papers written and scientific journals read) scored higher in research self-efficacy as it has been found in previous research. Finally, research self-efficacy did not have a significant correlation to self-esteem.

In regard to studies with a different approach, one qualitative study that was found including self-efficacy and directing attention to an educational program was conducted by Baltes, Hoffman-Kipp, Lynn, Weltzer-Ward (2010). The authors aimed to understand factors in doctoral students' first core research course experience that enhance students' skill development and self-efficacy. Since the authors had problems with the first design, this study was turned into a case study being the only participant a 55-year-old woman. Training on basic research design and information on qualitative research seemed to be good for the student's skill development. It also appeared that the information in the course and text books for planning a qualitative research was useful since she reported confidence in planning such a study. Personal factors also played roles in her self-efficacy development, these were her own expectations for her learning and her stressors related to time limitations.

Overall, this first set of studies focused on the doctoral level shows that some variables have been included in different contexts and produced different results. In addition, one scale used for measuring research self-efficacy has been validated and adopted by most authors. However, just a few of these studies have been carried out in the educational field.

Master's and undergraduate level studies

Lev, Kolassa, and Bakken (2009) carried out a study to compare undergraduate and graduate students' perceptions of their research self-efficacy to that of their mentors' perceptions about students' research self-efficacy. This study was conducted within a nursing program. Data were collected through dyad, on-line surveys and the Clinical Research Appraisal Inventory which had a Cronbach's alpha ranging from .89 to .97. Mentors in this study perceived their students to be much more self-confident in their ability to conduct research than the student's self-perceptions of their abilities. It was discussed that this could lead to less favorable mentoring experiences and incorrect feedback for the students which in turn might not let them make the necessary adjustments. The authors concluded that the relationship between mentee and mentor is vital and that it may encourage students to undertake research careers. This study supports the notion that the relation with the supervisors is highly valued for students so more attention should be paid on mentoring within academic programs as suggested by Shivy et al. (2003) and Love et al. (2007).

The Clinical Research Appraisal Inventory (CRAI) is an 88-item scale that assess research self-efficacy in the clinical field developed by Mulliking, Bakken and Betz in 2007. The instrument has an 11-point rating scale and contains eight subscales and its items were adapted from previous research self-efficacy scale instruments: Philip and Russell's SERM and Holden's RSES. Although the median alpha across the scales was .96 the samples for the test-retest were small limiting the reliability of the instrument. Despite this and that the target audience for which the instrument was constructed are clinical students, the inclusion of two more studies that use the CRAI is important because of their results.

Bakken et al. (2010) carried out a quasi-experimental study to determine if an intervention workshop and a course could increase research self-efficacy. The intervention was a self-efficacy workshop which consisted of 60-minute sessions dedicated to promote the four sources of self-efficacy. The Short Course in Clinical Research, on the other hand, was focused on topics like research methods, statistics and scientific research. Fifty-eight graduate biomedical students from two American universities participated in the study. They were given the Clinical Research Appraisal Inventory. The average of the four measures of the CRAI resulted in a Cronbach's

alpha of .88. The main results were that both the intervention and the course promoted research self-efficacy and that the role models from the intervention promoted vicarious experience. It was proposed that educational interventions targeting the sources of self-efficacy can increase research self-efficacy. However, the authors added that it is not the only way to promote it; they also suggested member mentoring teams and organizational support.

Bierer, Prayson, and Dannefer (2015) conducted a study to verify whether or not their institution goals regarding research were accomplished. A total number of 239 undergraduate and graduate students from a college of medicine participated in the study responding a short version of the CRAI and other measures. Data were collected at the beginning and completion of their studies. First of all, it was found that women's research self-efficacy was equal to that of their male counterparts and it remained at the same level as men at graduation, so the authors concluded that their program was inclusive. Additionally, graduate students scored higher in research self-efficacy than undergraduates which meant that the more exposure to research students had the higher their level of research self-efficacy was as it has been demonstrated before (Bieschke et al, 1996; Lambie, 2013).

Brongo and Thomson (2011) wanted to compare influences on research decisions and expectations of undergraduate science researchers who are planning to go to medical school and those who are not. The authors used a mixed approach by administering a questionnaire to 135 premed and non-premed students, conducting interviews to five premed and six non pre-med of them and making observations in a case study of one of the participants. The constructs included in the questionnaire and in the interviews were beliefs, attitudes, social influences intrinsic motivation, extrinsic motivation, self-efficacy, and accessibility. Among the results, it was found that research self-efficacy did not vary across both groups of students. Moreover, it was found in all the students that were interviewed that they felt intimidation and hesitancy when speaking with research faculty. The low self-efficacy about participation in science research that those students showed led the authors to suggest that it is not surprising that self-efficacy could have a significant impact on the number of students participating in undergraduate research in science. Even though triangulation was done with the data from the interviews and the questionnaires, this last data collection instrument's Cronbach's alpha was .60 which could be considered as unreliable.

One study that broadens the horizon of the field of study by including subjects from math and engineering was conducted by Adedokun, Bessenbacher, Parker, Kirkham, and Burgess (2013). They wanted to explore the relationships among three key outcomes of undergraduate research experiences (UREs): research skills, research self-efficacy and aspiration for research careers. To fulfill this objective, the authors administered a survey to 156 undergraduate students from the science, technology, engineering, and mathematics fields that participated in an URE program. The results showed that both the direct effect and indirect effect of research skills on aspirations were statistically significant, which led the authors to suggest that research self-efficacy partially mediates the relationship between research skills and student aspirations for research careers. Overall, the findings showed that research skills and research self-efficacy beliefs are important predictors of participants' aspirations for research careers. The authors finally discussed that in line with previous research students' perceptions of their abilities and confidence in conducting research is a critical link between their acquisition of research skills and knowledge.

Lane, Devonport, and Horrell (2004) conducted a mixed method study. The aim of the quantitative study was to examine the relationship between self-esteem, self-efficacy and academic grades in a research method module. The aim of the qualitative one was to explore students' perceptions of such modules. A self-esteem scale and focus group interviews were administered to undergraduate and postgraduate sport students. Additionally, a self-efficacy scale previously developed by one of the authors was administered three times across a research module. Findings from the quantitative design support the notion that performance accomplishments influence self-efficacy and that low self-esteem students are seriously affected by poor performance. Collectively, both studies showed that developing confidence in the ability to perform key research skills is important for success. It was discussed that lecturers should be encouraged to design research methods modules which enable all students to master research skills. Besides, students should be encouraged to apply research skills across modules, to reinforce and strengthen their knowledge, which should enhance self-efficacy.

Unrau and Beck (2004) investigated how practice and research courses within professional academic programs contribute to students' research self-efficacy. The Research Self-Efficacy Scale (RSE) and a pre-test post-test comparison group design were administered to 60 social work and 75 speech pathology language students. The authors found that educational programs

can expect an improvement in the confidence to do research over the semester when students take research courses and that using the RSE can help to detect students who struggle with research. Unexpectedly, students from both programs did not seem to have problem with performing electronic literature searchers, using technology for research and writing literature reviews. Responses from an open-ended question added at a second administration of the RSE showed that the experience from which SPL students gained more confidence in research was completing an assignment of their research course in which they had to write a proposal, originate a research question, review the literature related, design the methodology for the assignment and include ethical considerations. The authors proposed activities such as conducting reviews of literature, analyzing published research, and writing research papers to enhance confidence early in an educational program.

One year later, Unrau along with Grinnel (2005) carried out a study with three objectives: To measure social work students' levels of research self-efficacy across a 16-week-long research course; to determine whether or not there were differences between students taking the course and students not enrolled in it; and to explore the gains in research self-efficacy made at the end of the course by students with low levels at the beginning of the course as compared to their classmates with higher levels at the beginning of the course. The Research Self-Efficacy Scale was administered to a sample of 145 undergraduate and graduate social work students from a public-funded university in the USA. In order to fulfill the first objective, the scale was administered to the students taking a social work research course, which was part of the program, during the 1st, 6th and 16th week of the course. The results showed, unsurprisingly and in concordance with the previous study, that students' research self-efficacy increased by the end of the course. Regarding the second objective, students who were taking a research course at the time of the study obtained higher scores; however, those scores did not increase once that they completed the courses. The authors proposed more research courses not only to maintain the levels of confidence in research up to graduation but to promote research activities in their professional practice. With regard to the last objective of the study, students with low self-efficacy at the beginning of the course surpassed the gains in self-efficacy made by their counterparts with high levels of self-efficacy at the beginning of the course. It was then discussed that this could either be the result of overconfidence or that students were not challenged enough to extend their research skills after a certain level. The authors finally suggested that assessment

instruments like the RSE could be very helpful for faculty to know which techniques give best results in a research course.

In this case, both studies made use of the Research Self-Efficacy Scale for social science students developed by Holden, Barker, Meenaghan and Rosenberg in 1999. In order to assess their scale, the authors administered a pre-test and a post-test scale to 71 undergraduate and graduate social work students from a university in New York. Their research self-efficacy scale exhibited high internal consistency with Cronbach's alphas of .94 and the data provided preliminary evidence supporting its construct validity.

One instrument that was later based on the study of Unrau and Grinnel (2005) was elaborated by Rezaei and Zamani-Miandashti (2013). These two authors investigated the relationship between student's research self-efficacy and their personal and professional characteristics, research anxiety, and attitude toward research. To do this, they administered a questionnaire with a research self-efficacy section to 210 agricultural students from an Iranian university, which were chosen with a stratified sampling technique. This new instrument was assessed by experts of agricultural education to prove its content validity and, regarding reliability, the Cronbach's alpha obtained was of .93. Students' age and their scores on research self-efficacy were positively significantly correlated. It was found that older students are more confident in their ability to conduct research than younger ones. In addition, doctoral students obtained higher scores than graduate students. This last finding could be related to previous results in which seniority predicts research self-efficacy because those students are likely to have experienced more research tasks (Bieschke, Bishop & García, 1996; Lambie et al, 2013; Odaci, 2013). However, age cannot go hand in hand with seniority and is not always a predictor of higher research self-efficacy as demonstrated by Deemer (2010) and Lambie and Vaccaro (2011). Finally, there was a positive and significant relationship between students' attitudes toward research and their research self-efficacy and a negative relationship between students' research self-efficacy and their research anxiety.

Helm and Bailey (2013) investigated undergraduate psychology students' perceptions of their participation in a professional conference and the relationship between those perceptions and presentation of undergraduate research. The authors administered a questionnaire via on-line to 55 students that had attended or presented a research project at a conference as a requirement in their undergraduate programs. The instrument included a section of questions about perceived

increases in self-efficacy. As part of the results, the respondents reported an increase confidence in their abilities to do research and that attending conferences helped them to understand research better. The authors suggested that presenting research at the conference was part of students' self-efficacy development and that such students had the possibility to access Bandura's sources of self-efficacy. Finally, they recommended that professional socialization can be fostered through undergraduate research like the inclusion of more undergraduate students' presentations at professional conferences.

Another study that included a sample of psychology students was carried out by Carot, Carranza, Oláz and Ponce, (2012), but this was done in an Argentinian university, in fact, the only Latin American country in which a study was found. These authors assessed research self-efficacy in a psychology undergraduate program and compared the results across years of study and with students from a biology program. They adapted Greeley's RSES and administered their new instrument to 355 students. Their scale obtained a Cronbach's alpha of .96. Biology students obtained higher scores, which was expected because research methodology had a greater emphasis in the formation of these students. In addition, their research training environment offered more facilities and supervisors for their students, and these supervisors possessed the necessary expertise. On the other hand, it was found that psychology professors did not tend to carry out research and this was the model that they provided to their students. Regarding the year differences, it was only observed that freshmen obtained higher results than senior students but it was assumed that they were overconfident as they had not gone through research experiences or met their supervisors.

It is important to mention that only three studies focused on undergraduate students from educational programs were found. The first one was conducted by Tuncer (2012). He investigated the relation among computer self-efficacy, scientific research and information literacy in prospective teachers. Three instruments were used, one per each construct: the Computer Self-Efficacy Scale and the Information Literacy Scale adapted to Turkish and the Scientific Research Self-Efficacy Scale. One hundred and ninety-seven students enrolled in educational programs in a Turkish university completed the three instruments. It was found that computer self-efficacy had a positive effect on information literacy self-efficacy and scientific research self-efficacy. Furthermore, information literacy self-efficacy positively affected scientific research self-efficacy. In light of these findings, the author suggested that computer information literacy and

scientific research self-efficacy should be handled collectively in learning processes. Also, he added that information literacy should be a prerequisite of scientific research skills. Based on other studies, the author also argued that information literacy skills of learners should be further developed and consequently high learner-readiness level, which is essential for scientific research skills, should be fulfilled in certain levels. Regarding the Scientific Research Self-Efficacy scale, this 12-item instrument was developed by Tuncer and Ozeren (2012). To determine the validity of the scale, an explanatory factor analysis (EFA) was conducted determining that total explained variance was 65.528%. Additionally, Cronbach's alpha coefficient of the whole scale was calculated as .846.

Another study with Turkish prospective teachers was conducted by Saral and Reyhanlioğlu (2015). The objective of this study was to analyze the research self-efficacy of university students in educational programs according to four variables: gender, field of study, university and enrollment in a research course. The sample was composed of 532 students from two Turkish universities. The instrument was a survey, a 43-item scale with a reliability coefficient of .89. Students' research self-efficacy differed in terms of their field of study and enrollment in a research course but not in their gender of institution. However, the results of the institutions comparison cannot be generalized because of the similarities in the research facilities. The differences according to the field of study, on the other hand, are supported by other authors like Odaci (2013). One last finding was that undertaking research courses enhances research self-efficacy, which is also supported by other authors (Unrau & Beck, 2004; Unrau & Grinnel, 2005).

Finally, Shaw, Holbrook, Scevak and Bourke (2008) carried out a study to investigate how pre-service teachers reacted to a mandatory research project, the impact of that experience on their perception on the usefulness of research, their engagement with professional academic communities, and their intention to continue with postgraduate studies. The authors administered a questionnaire to 159 fourth year pre-service teachers. The questionnaire contained areas focused on learning motivation, research environment and research self-efficacy which were adapted from existing scales. They found that the students with higher research self-efficacy and a closer relationship with their supervisors were the ones that might end undertaking postgraduate studies; the choice of topic was one of the most difficult parts of their projects; and that students got frustrated due to the limited time to develop the first stages of a research proposal. Overall,

the effect of their research program caused a negative impact on the students. The authors concluded that more emphasis should be put in order to improve the mandatory research project and since most new teachers showed no interest in doing research there should be more attention on finding and supporting those undergraduate students who do want to do research.

These last three studies, although focused on pre-service teachers, were carried out in Turkey and Australia respectively. Context is then one of the gaps in research that the present study aims to fill. The majority of the studies have been carried out in American universities and some in England, Canada, and New Zealand, but none could be found in Mexico and only one was found in another Latin American country. Moreover, studies regarding research self-efficacy in academic programs have been carried out within a variety of disciplines but none in English language teaching to the best of my knowledge. The majority has focused on psychology programs and the fact that sport, math, agriculture and nursing programs have been studied as well gives an idea of the acceptance of this construct. One of the most important reasons could be its practical implications; for example, the assessment of this construct can help identify students who struggle in order to assist them (Unrau and Beck, 2004) and faculty can find out which techniques give best results in a research course (Unrau and Grinnel, 2005).

The majority of the studies presented have a quantitative approach. The most recurrent designs were the exploratory and the correlational. In fact, there is a considerable amount of variables that have been correlated to the research self-efficacy construct. Among them, the most mentioned were interest in research, research training environment and previous research experiences. Precisely, this study offers the sources of self-efficacy as variables to be correlated, variables that any of the studies in this literature review included and that could contribute to research self-efficacy like Bishop, Bieschke and García (1996) have proposed.

The correlation of several variables to that of research self-efficacy also indicates that the theoretical framework used in the literature reviewed is connected to this construct. As a matter of fact, Bandura's social cognitive theory underpins all the studies in the literature except from three of them (Brongo & Thomson, 2011; Helm & Bailey, 2013; Shivy et al, 2003) which had a greater focus on other variables.

Another variable that will be included in the present study but that was only found in one study is the subjects' year in the program. Lambie et al. (2013) correlated this variable to the interest in research and the research knowledge. The closest variable to that of year in the

program that was found was age, correlated by Deemer (2010); however these two variables are completely different. In addition, these two studies were carried out in doctoral programs and not at the bachelor level as this study intends. The academic level as well as the larger amount of time of the English language program (5 years) compared to that of those doctoral programs (3 years) highlights the novelty of this study.

Regarding the instruments used to measure the research self-efficacy construct, some studies presented showed that there is a scale that has been mostly adopted: the Research Self-Efficacy Scale developed by Greeley. In order to demonstrate the validity of this and other two instruments, Forester et al. (2004) performed an exploratory factor analysis for structural validity of them. The authors that developed their own scales also demonstrated the validity of their instruments. The scale developed by Greeley, for instance, had a Cronbach's alpha of .96 and the SERM had Cronbach's alphas ranging from .83 to .96.

Having obtained measures over 0.7, the previous instruments can be considered as internally consistent as recommended by Muijs (2006); however, a measure of .96 can also be a proof of redundancy in the items. In addition, these instruments are focused on a global assessment of research self-efficacy, and their items are related to the developmental stages of a research project. Once again, the sources of self-efficacy that Bandura hypothesized have not been included.

Continuing with the methodology, the sample sizes do not seem to be a limitation of these studies. Except from the exploratory study of Shivy et al. (2003) and the case study conducted by Baltes et al. (2010) all of them had sample sizes ranging from 55 to 532 subjects. Nonetheless, only four studies made use of a random sampling method (Bieschke et al, 1996; Lev et al, 2009; Rezaei & Zamani-Miandashti, 2013; Wright & Holttum, 2012). The rest of them either did not specified it or else used a convenience sample.

In conclusion, the literature review shows us that despite research self-efficacy has been investigated in all levels of higher education (undergraduate, graduate, and doctoral level), there are still many possibilities to conduct research regarding the field of study; English language teaching is one of them. Additionally, the sources of self-efficacy have been overlooked as variables when assessing research self-efficacy. Thus, this study could contribute to the literature by measuring research self-efficacy in English language pre-service teachers and by incorporating the sources of self-efficacy as components of a scale.

CHAPTER III: METHOD

A quantitative design was chosen to carry out the present study due to its objectives. In this chapter, a description of this research design is given. After that, the precise methodology to make it possible is explained, including steps such as the construction of the instrument and the data collection process.

Research design

Aliaga and Gunderson (as cited in Muijs, 2006) define quantitative research as the explanation of a phenomenon done through the collection of numerical data and its analysis using mathematically based methods. According to Creswell (2003), the development of knowledge in the quantitative design is done through cause and effect thinking, reduction to specific variables, hypotheses and questions, the use of measurement and observation, and the test of theories. Among the characteristics of this design there is the high control of the variables, the objectivity, the large samples, and the difficultness in the elaboration of the instruments; these are harder to create than the qualitative ones but to some extent easier to be analyzed.

Quantitative research can be classified into non-experimental, quasi-experimental and experimental. Among the non-experimental type, there are different approaches: historical, descriptive and correlational. The approach chosen for this study is the correlational one. A correlational study is the ideal when the objective of the researcher is to determine the relationship between variables (Reyes-Cruz, Hernández & Yeladaqui, 2011); in this case, the relationship between research self-efficacy and the sources of self-efficacy. As proposed by Creswell (2003), there are also different strategies of inquiry within the quantitative approach like the experiments and the surveys. The strategy selected for this study was the survey, which also was cross-sectional, meaning that the data were collected at one point in time.

Context

The study was carried out in the Chetumal campus of the University of Quintana Roo (UQRoo). The UQRoo is the most important public university in the state of Quintana Roo. The first and main campus is located in Chetumal, capital city of the state of Quintana Roo, and was founded in May 1991(Identidad Universitaria, 2014). Nowadays, there are campuses in Chetumal, Cozumel and Playa del Carmen. The Chetumal campus is divided in four academic divisions which offer the total of 16 bachelor's degrees, eight master's degrees and two doctorate degrees as can be seen in Table 1.

Table 1. Educational offering at UQRoo

Bachelor's degrees	Master's degrees	Doctorate degrees
-Government and Public Management	-Teaching of Mathematics	-Geography
-Social Anthropology	-Economics of Public Sector	-Sustainable Development
-English Language	-Social Sciences Applied to Regional Studies	
-Foreign Affairs	-Planning	
-Economics and Finance	-Applied Anthropology	
-Natural Resources	-Education: Specializations in: English teaching and educational technology	
-Commercial Systems	-Environmental Education	
-Humanities	-Sustainable Tourism Management	
-Public Security		
-Energy Systems Engineering		
-Environmental Engineering		
-Network Engineering		
-Law		
-Surgery		
-Pharmacy		
-Nursery		

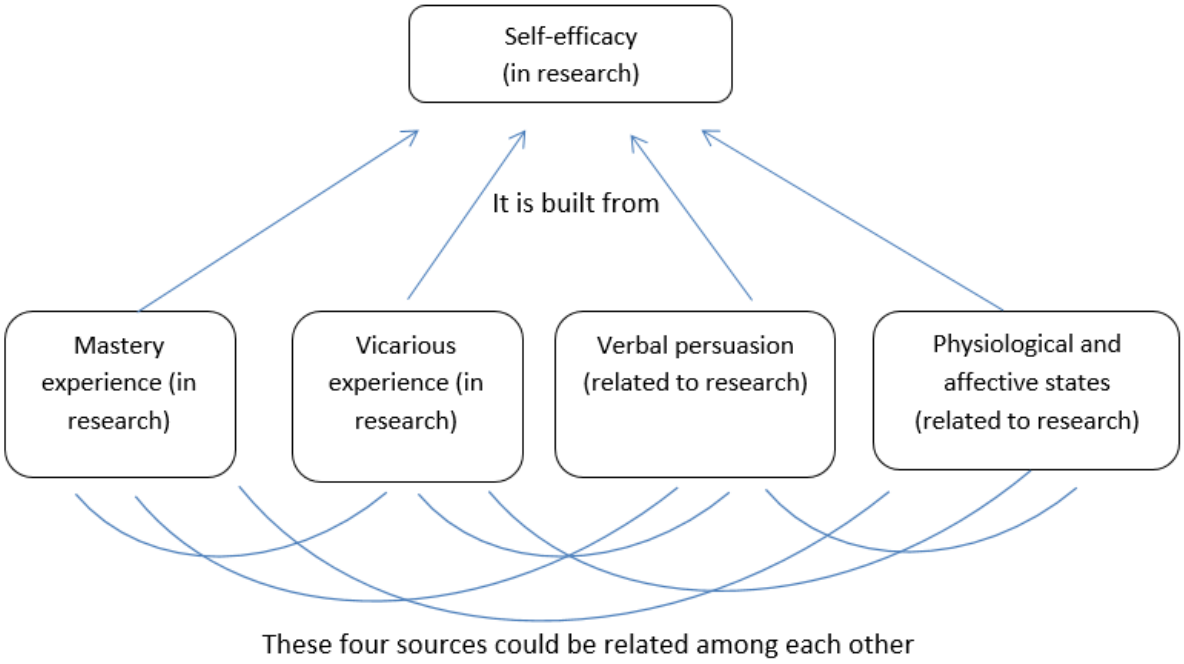
Source: UQRoo web page

As part of the educational offering of the Chetumal campus, there is the BA in English language. This bachelor's degree program is designed to be completed in 10 semesters, and is focused on training professionals capable of planning and giving classes of this language, and also on introducing its students to research (Licenciatura en Lengua Inglesa, 1995). One of its objectives is that undergraduate students acquire knowledge about educational, methodological and linguistic research in order to improve their teaching experience.

Definition of the variables

The variables that are measured and correlated in this study are the construct of research self-efficacy and the sources of information of self-efficacy hypothesized by Bandura (1997). The definitions of these variables as well as the graphical model of the study are presented below.

Figure 1. Graphical model of the study



- Research self-efficacy: It is defined by Forester, Kahn and Hesson-McInnis (2004) as one's confidence in successfully performing tasks associated with conducting research (e.g., performing a literature review or analyzing data).
- Enactive mastery experience: It is the actual experience (whether a success or a failure) that an individual goes through (Bandura, 1997).
- Vicarious experience: The comparison of one's abilities in relation to a model's performance and outcomes (Bandura, 1997; Zimmerman, 2000).
- Verbal persuasion: The encouragement, positive critic and points of view about one's abilities that an individual receives from others (Bandura, 1997).

- Physiological and affective states: The interpretation that an individual gives to the body states and reactions experienced when performing a given task (Bandura, 1997; Zimmerman, 2000).

Participants

The sample consisted of 101 English language students, 59 female and 42 male. The way in which participants were chosen was by a purposeful sampling (Creswell, 2007); they represented the entire population of English language students from the second, sixth and tenth semesters of the program at the time of the administration in the spring of 2015. Forty-four students ranged in age from eighteen to twenty years old, 31 ranged in age from twenty-one to twenty-three and 19 from twenty-four to twenty-six, the other seven were twenty-seven or more. No other demographic data were collected.

Instrument

According to Reyes-Cruz, Hernández and Yeladaqui (2011), the key element in a quantitative design is the data collection instrument because the phenomenon to be investigated is not always found in a quantitative form. Since the objectives of this study are to measure research self-efficacy and to correlate it to the sources of self-efficacy described by Bandura the ideal strategy of inquiry to fulfill them was a survey. Among the advantages of a survey proposed by Muijs (2006), they make it possible to study the relationship between variables which is part of the objectives of this study; they are efficient to gather large amounts of data at reasonable low cost; and they guarantee subjects' anonymity, which can help increase the response rate. Surveys can be classified into questionnaires and scales. To be more specific, the instrument used in this study is a scale. A scale is described by Levi and Varela (2005) as an instrument composed of items that measure an attribute and in which there are not right or wrong answers.

Different scales have been found measuring research self-efficacy, for example the Research Self-Efficacy Scale developed by Greeley in 1989 and the Research Self-Efficacy Scale

developed by Holden in 1999. However, due to the objectives of the present study a new instrument had to be constructed. The previous scales assess global research self-efficacy and their items are focused on the developmental stages of a research project (finding an idea, conducting the research, presenting the results, etc.). In this new instrument, a section about the sources of self-efficacy (enactive mastery experience, vicarious experience, verbal persuasion and physiological and affective states) was included. The construction of the instrument as well as its validation and reliability process are detailed below.

Construction of the instrument

The Research Self-Efficacy Scale for English Language Students consists of a research self-efficacy section, a self-efficacy sources section and a demographic section. The first section was made of items developed from the theory and items adapted from the two aforementioned scales; they were either literally translated into Spanish or modified to fit the English language bachelor's context. As a matter of fact, the instrument was written in Spanish to guarantee that the respondents do not have trouble understanding it even though they major in English language. A preliminary scale contained 24 research self-efficacy items: Six taken from Greeley (1989) and one taken from Holden (1999) as shown in Table 2; the other 17 were created based on the theoretical framework.

Table 2. Adapted research self-efficacy items

Items taken from Greeley (1989) How confident are you in your overall ability to…	English language students version
43. Synthesize results with regard to current literature.	Discutir los resultados obtenidos con base en la revisión de la literatura.
02. Follow ethical principles of research.	Respetar las normas éticas que implica la investigación.
50. Orally present results at a regional/national meeting.	Presentar oralmente los resultados de mi proyecto de investigación.
22. Choose an appropriate research design.	Escoger un diseño de investigación apropiado.
44. Identify and report limitations of study.	Reconocer las limitaciones de mi proyecto de investigación.
45. Identify implications for future research.	Identificar las implicaciones para futuros estudios.

Item taken from Holden (1999) How confident are you that you can…	English language students version
4. Formulate a clear research question or testable hypothesis?	Formular preguntas de investigación claras o hipótesis comprobables.

The sources of self-efficacy section consisted of 35 self-efficacy sources items: 7 assessing mastery experience, 9 assessing vicarious experience, 9 assessing verbal persuasion and 10 assessing physiological states. Nine of the items in this preliminary instrument were adapted from the Sources of Middle School Mathematics Self-Efficacy Scale developed by Usher and Pajares (2009), the rest of them were created based on a thorough analysis of the self-efficacy theory.

Table 3. Adapted sources of self-efficacy items

Items taken from Usher and Pajares (2009)	English language students version
24. My whole body becomes tense when I have to do math.	Mi cuerpo se pone tenso cuando tengo que realizar un trabajo de investigación.
08. When I see how my math teacher solves a problem, I can picture myself solving the problem in the same way.	Al ver las estrategias de mis compañeros para realizar investigación trato de adoptarlas cuando realizo mis propios trabajos de investigación.
23. I get depressed when I think about learning math.	El solo pensar en realizar un trabajo de investigación me deprime.
06. I do well on even the most difficult math assignments.	Me ha ido bien incluso en los trabajos de investigación más difíciles
19. Just being in math class makes feel stressed and nervous.	El solo pensar en realizar un trabajo de investigación me hace sentir nervios.
18. My classmates like to work with me in math because they think I'm good at it.	A mis compañeros les gusta trabajar conmigo cuando se trata de una tarea relacionada con la investigación porque piensan que soy bueno en eso.
13. My math teachers have told that I am good at learning math.	Mis profesores me han dicho que soy bueno para realizar tareas de investigación.
01. I make excellent grades on math tests.	He tenido buenas calificaciones en mis trabajos de investigación.
16. I have been praised for my ability in math.	He recibido halagos debido a mis habilidades en la investigación.

The response format of the instrument was made of a rating scale (Muijs, 2006). In the research self-efficacy section the subjects had the option to choose among five categories in which they rated their degree of confidence carrying out research tasks:

1 = Incapaz	2 = Poco capaz	3 = Capacidad promedio	4 = Capaz	5 = Muy capaz

In the sources of self-efficacy section, the students, on the other hand, showed the frequency in which they had experienced activities related to the four sources.

1 = Nunca	2 = Algunas veces	3 = No me puedo decidir	4 = Casi siempre	5 = Siempre

With relation to the demographic information, besides the year in the program that had been considered as a variable, age, gender and the research courses they took were included in this last section. Additional demographic information was not included to reassure students about their anonymity and thus contribute to increase the response rate as well as the veracity of their answers. As this was a preliminary version, it had to be validated.

Validity

Validity refers to the degree in which an instrument measures the variables that it is designed to measure (Hernández, Fernández & Baptista, 2006). There are different types of validation, for example: criterion validity, content validity and construct validity.

This instrument was validated through content validity; it was submitted to a panel of three judges who were given the operational definitions of research self-efficacy and the definitions of the four sources of self-efficacy and later asked to rank the relevance of all the items on a scale from one to three. Then, they were asked to classify the self-efficacy sources items into the four sources. These items had been previously shuffled using the web page www.randomizer.org. The ranking and comments from the judges were used as a criterion to remove or modify items. As a result, two sources of self-efficacy items were rejected leaving the instrument with 56 items. The next step was to evaluate the reliability of the instrument.

Reliability

Reliability refers to the degree in which an instrument produces similar results when administered to the same subject on repeated occasions (Hernández, Fernández & Baptista, 2006). This was estimated by using the Cronbach's Alpha, which was calculated in the Statistical Package for the Social Sciences® (SPSS) software program.

In order to calculate the Cronbach's Alpha, the preliminary 56-item instrument was piloted. It was administered to 45 English language students from the fourth and eighth semesters, which were not included in the sample. They were also asked to make any comments about the items and the instructions while responding the survey; these notes were used to improve item quality and clarity. Alpha reliability for this version of the instrument was .853.

As recommended by Muijs (2006), this measure should be over 0.7 to consider the instrument as internally consistent. Additionally, a measure over 0.9 could have been deemed redundant so the instrument proved to be reliable. The individual Cronbach's alpha measures of all the items from the piloting are presented in Table 4.

Table 4. Cronbach's alpha measures from the piloting

Research self-efficacy section	Cronbach's alpha if item deleted
1. Determinar las secciones que debe llevar un trabajo de investigación.	.847
2. Realizar la recolección de datos para mi trabajo de investigación.	.844
3. Redactar el informe final de mi trabajo de investigación.	.846
4. Discutir los resultados obtenidos con base en la revisión de la literatura.	.847
5. Respetar las normas éticas que implica la investigación.	.845
6. Usar programas de cómputo para realizar el análisis de datos.	.848
7. Adaptar un instrumento previamente diseñado para mi trabajo de investigación.	.843
8. Presentar oralmente los resultados de mi trabajo de investigación.	.846
9. Elaborar un trabajo de investigación.	.844
10. Escoger un diseño de investigación apropiado.	.844
11. Utilizar el lenguaje académico (tipos de palabras y expresiones, registro alto de lengua) propio de la investigación.	.845
12. Definir el tema de mi trabajo de investigación.	.843
13. Formular preguntas de investigación claras o hipótesis comprobables.	.847
14. Elegir la estrategia de análisis de datos más apropiada para mi trabajo de investigación.	.843
15. Discutir los resultados obtenidos con base en el marco teórico.	.848
16. Reconocer las limitaciones de mi trabajo de investigación.	.846
17. Identificar las implicaciones que los resultados de mi investigación tienen para futuros estudios.	.844

18. Escribir una revisión de la literatura balanceada, crítica y completa sobre el tema de mi trabajo de investigación.	.844
19. Determinar el tipo de muestra más adecuada para mi trabajo de investigación.	.846
20. Crear un instrumento propio para mi trabajo de investigación.	.846
Sources of research self-efficacy section	
21. Los trabajos de investigación que he hecho me han estresado.	.853
22. Mi cuerpo se pone tenso cuando tengo que realizar un trabajo de investigación.	.865
23. Al ver las estrategias de mis compañeros para realizar investigación trato de adoptarlas cuando realizo mis propios trabajos de investigación.	.857
24. He visto ponentes/conferencistas cuyos trabajos de investigación me parecen inspiradores.	.854
25. El ver que algún compañero supere adversidades durante el desarrollo de un trabajo de investigación me anima a intentarlo a pesar de estas dificultades.	.854
26. El solo pensar en realizar un trabajo de investigación me deprime.	.864
27. Me ha ido bien incluso en los trabajos de investigación más difíciles.	.853
28. Durante la carrera he realizado trabajos de investigación como parte de mis materias.	.847
29. Los trabajos de investigación me han angustiado tanto hasta el punto de hacerme llorar.	.855
30. He llevado a cabo un trabajo de investigación porque alguien me animó aunque al principio no estaba seguro de poder hacerlo.	.851
31. El solo pensar en realizar un trabajo de investigación me hace sentir nervios.	.862
32. He tenido éxito en las materias de investigación que he cursado.	.849
33. Las calificaciones que obtengo en mis trabajos de investigación son indicadores de que tan bueno soy.	.850
34. El estrés que me causan los trabajos de investigación es mayor que el que me causa el resto de las actividades escolares.	.861
35. A mis compañeros les gusta trabajar conmigo cuando se trata de una tarea relacionada con la investigación porque piensan que soy bueno en eso.	.846
36. Mis profesores me han dicho que soy bueno para realizar tareas de investigación.	.849
37. He descubierto que tengo habilidades que no conocía para realizar investigación gracias al aliento de alguien más.	.847
38. Durante la carrera he tenido profesores que para mí son un modelo a seguir en cuanto a la investigación.	.843
39. La experiencia positiva en investigación de amigos o compañeros me ha motivado a investigar.	.849
40. Durante la carrera he presentado los resultados de mis trabajos de investigación en foros o congresos.	.853
41. Durante la carrera he participado como asistente de investigación de los profesores investigadores de la institución.	.852
42. Me he identificado con alguno de mis compañeros o profesores que realizan investigación.	.851
43. He tenido buenas calificaciones en mis trabajos de investigación.	.850
44. He recibido halagos debido a mis habilidades en la investigación.	Item added after piloting

Factor analyses were additionally carried out; three rotation techniques (Varimax, Quartimax and Oblimix) were used and even though not all the items loaded on their specific factors, two dimensions were confirmed: Twenty out of 24 research self-efficacy items loaded on their corresponding factor and nine out of 10 physiological and affective states items loaded on their corresponding factor with the Varimax rotation as it can be seen in Table 5.

Table 5. Factor analysis results

Items that loaded in their corresponding factor
Items that do not belong to that factor

Rotated Component Matrix[a]

	Component				
	1	2	3	4	5
Research self-efficacy factor					
15. Elegir la estrategia de análisis de datos más apropiada para mi trabajo de investigación.	.820	.102	-.088	.117	.254
20. Identificar las implicaciones que los resultados de mi investigación tienen para futuros estudios.	.799	.110	.124	-.051	-.006
21. Escribir una revisión de la literatura balanceada, crítica y completa sobre el tema de mi trabajo de investigación.	.790	.051	.120	.056	-.015
10. Escoger un diseño de investigación apropiado.	.777	-.188	.097	-.081	.008
9. Elaborar un trabajo de investigación para titularme.	.775	-.146	.044	-.229	.098
13. Definir el tema de mi trabajo de investigación.	.768	-.110	.329	.123	.074
7. Adaptar un instrumento previamente diseñado para mi trabajo de investigación.	.766	-.280	-.057	.137	.097
22. Determinar el tipo de muestra más adecuada para mi trabajo de investigación.	.755	.007	-.282	.187	-.066
19. Reconocer las limitaciones de mi trabajo de investigación.	.754	-.186	.039	.028	.012
2. Realizar la recolección de datos para mi trabajo de investigación.	.739	-.197	.255	-.084	.093
5. Respetar las normas éticas que implica la investigación.	.697	-.030	.210	-.336	-.130
1. Determinar las secciones que debe llevar un trabajo de investigación.	.682	.126	.257	-.162	-.275
23. Completar todos los rubros incluidos en los formatos para participar en congresos.	.661	-.141	-.234	.304	.214
11. Utilizar el lenguaje académico (tipos de palabras y expresiones, registro alto de lengua) propio de la investigación.	.656	-.022	.252	.291	-.025
4. Discutir los resultados obtenidos con base en la revisión de la literatura.	.644	-.322	.175	.107	-.183
24. Crear un instrumento propio para mi trabajo de investigación.	.643	-.228	-.130	.019	.201
48. Durante la carrera he tenido profesores que para mí son un modelo a seguir en cuanto a la investigación.	.603	-.288	.086	-.144	.396
6. Usar programas de cómputo para realizar el análisis de datos.	.590	-.190	.096	.076	-.171
18. Discutir los resultados obtenidos con base en el marco teórico.	.590	-.276	-.260	-.134	-.036
3. Redactar el informe final de mi trabajo de investigación.	.584	-.046	.242	-.023	-.066
14. Formular preguntas de investigación claras o hipótesis comprobables.	.571	-.152	.258	.319	-.032
34. Durante la carrera he realizado trabajos de investigación como parte de mis materias.	.512	-.228	.102	.129	.183
8. Presentar oralmente los resultados de mi trabajo de investigación.	.487	-.312	.161	-.005	.305
Physiological and affective states factor					
42. El estrés que me causan los trabajos de investigación es mayor que el que me causa el resto de las actividades escolares.	-.270	.842	-.096	-.121	.052
31. El solo pensar en realizar un trabajo de investigación me deprime.	-.366	.821	-.227	.040	-.190
37. El solo pensar en realizar un trabajo de investigación me hace sentir nervios.	-.355	.795	-.116	-.073	.054
35. Los trabajos de investigación me han angustiado tanto hasta el punto de hacerme llorar.	-.008	.760	.006	.086	.016
39. Los trabajos de investigación que he hecho me han dejado fatigado.	-.196	.753	.314	-.047	.001
33. El tener muchos puntos a corregir cuando alguien revisa mis trabajos de investigación me estresa mucho.	.078	.683	-.054	.283	-.067

25. Los trabajos de investigación que he hecho me han dado dolor de cabeza.	-.140	.669	-.472	-.221	-.001
26. Los trabajos de investigación que he hecho me han estresado.	.091	.604	-.239	-.356	.178
28. Al ver las estrategias de mis compañeros para realizar investigación trato de adoptarlas cuando realizo mis propios trabajos de investigación.	-.075	.571	-.017	.246	-.089
27. Mi cuerpo se pone tenso cuando tengo que realizar un trabajo de investigación.	-.264	.536	-.508	-.282	-.076
56. Durante la carrera he leído publicaciones (artículos, memorias, libros) que me han parecido buenos ejemplos de investigación.	.118	-.516	.421	.320	.434
55. He tenido buenas calificaciones en mis trabajos de investigación.	.383	-.399	.321	-.222	.173
The rest of the factors could not be confirmed					
46. Mis profesores me han dicho que soy bueno para realizar tareas de investigación.	.395	-.123	.645	.108	-.218
32. Me ha ido bien incluso en los trabajos de investigación más difíciles.	.122	.014	.641	-.462	.091
16. Encontrar información acerca de congresos donde pueda difundir los resultados de mi investigación.	.425	.168	-.611	.131	.175
41. He recibido comentarios positivos de mis trabajos de investigación en los congresos donde me he presentado.	.315	-.327	-.596	.129	-.002
52. Las calificaciones que obtengo en mis trabajos de investigación son indicadores de que tan bueno soy.	.171	-.123	.594	-.116	.207
44. A mis compañeros les gusta trabajar conmigo cuando se trata de una tarea relacionada con la investigación porque piensan que soy bueno en eso.	.479	-.009	.480	-.094	.039
43. Durante la carrera he tenido la oportunidad de conocer el trabajo que debe realizar un profesor investigador.	.138	-.269	.450	.250	-.005
45. Realizaría más trabajos de investigación en el futuro siempre y cuando no tenga que sufrir por ello.	.103	-.036	.422	.177	-.070
47. He descubierto que tengo habilidades que no conocía para realizar investigación gracias al aliento de alguien más.	.415	-.375	.417	.268	.291
54. Me he identificado con alguno de mis compañeros o profesores que realizan investigación.	.224	-.154	.371	.184	.033
50. Durante la carrera he presentado los resultados de mis trabajos de investigación en foros o congresos.	-.041	.167	.014	.747	-.043
51. He sido invitado a presentar los resultados de algunos de mis trabajos de investigación debido a su calidad.	-.114	.210	-.014	.679	.081
12. Utilizar exitosamente bases de datos electrónicas para buscar literatura sobre el tema de mi proyecto.	.444	-.119	.028	.610	.157
53. Durante la carrera he participado como asistente de investigación de los profesores investigadores de la institución.	.117	-.267	.245	.609	-.181
49. La experiencia positiva en investigación de amigos o compañeros me ha motivado a investigar.	.128	-.176	.039	.366	.760
36. He llevado a cabo un trabajo de investigación porque alguien me animó aunque al principio no estaba seguro de poder hacerlo.	.186	.126	-.248	.076	.634
30. El ver que algún compañero supere adversidades durante el desarrollo de un trabajo de investigación me anima a intentarlo a pesar de estas dificultades.	-.091	.045	.253	-.254	.538
29. He visto ponentes/conferencistas cuyos trabajos de investigación me parecen inspiradores.	-.093	-.014	-.115	.416	.506
40. La opinión de las demás personas sobre mis trabajos de investigación es importante.	-.192	.218	-.150	-.067	.468
17. Elaborar una breve investigación para una materia.	-.012	-.300	.075	-.149	.435
38. He tenido éxito en las materias de investigación que he cursado.	.270	-.111	.244	-.115	.434

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 12 iterations.

The results from the Cronbach's alpha, the comments from the judges and the results from the factor analysis were used as a criterion to remove, retain or modify the items for the final version of the instrument. The final version of the Research Self-Efficacy Scale for English Language Students comprised 44 items: Twenty items assessing research self-efficacy and six items per each source of self-efficacy. The alpha reliability of the instrument when administered to the students from the 2nd, 6th and 10th semesters was .889, resulting in a higher score than the alpha from the piloting but without surpassing the 0.9 measurement.

Factor analyses were also carried out after the data collection and in addition to the two previous factors, two more could be confirmed. Due to the reduction of items for the final version, this time 19 out of 20 research self-efficacy items loaded on their corresponding factor, the six physiological and affective states items loaded on their corresponding factor, five out six verbal persuasion loaded on their corresponding factor and four out of six vicarious experience items loaded on their corresponding factor. Again, only the Varimax rotation technique produced these outcomes. The results from this analysis are displayed in Table 6.

Table 6. Factor analysis results from the final version of the instrument

Items that loaded in their corresponding factor
Items that do not belong to that factor

Rotated Component Matrix[a]

	Component				
	1	2	3	4	5
Research self-efficacy factor					
18. Escribir una revisión de la literatura balanceada, crítica y completa sobre el tema de mi trabajo de investigación.	.773	.073	.104	-.090	.091
16. Reconocer las limitaciones de mi trabajo de investigación.	.760	-.081	.100	-.031	.023
15. Discutir los resultados obtenidos con base en el marco teórico.	.758	.053	.060	.122	.085
14. Elegir la estrategia de análisis de datos más apropiada para mi trabajo de investigación.	.731	-.072	.101	.017	.117
19. Determinar el tipo de muestra más adecuada para mi trabajo de investigación.	.726	-.139	.100	-.059	.103
10. Escoger un diseño de investigación apropiado.	.713	-.173	.029	.067	-.017
4. Discutir los resultados obtenidos con base en la revisión de la literatura.	.686	-.046	.245	-.103	.161
12. Definir el tema de mi trabajo de investigación.	.677	-.084	.172	.113	.021
11. Utilizar el lenguaje académico (tipos de palabras y expresiones, registro alto de lengua) propio de la investigación.	.659	-.257	.168	-.062	.005

17. Identificar las implicaciones que los resultados de mi investigación tienen para futuros estudios.	.624	.011	.188	.190	.039
13. Formular preguntas de investigación claras o hipótesis comprobables.	.598	-.201	.299	.143	-.014
9. Elaborar un trabajo de investigación.	.574	-.157	.375	.120	-.005
3. Redactar el informe final de mi trabajo de investigación.	.563	-.119	.337	-.073	.051
20. Crear un instrumento propio para mi trabajo de investigación.	.541	-.260	-.048	.067	.045
5. Respetar las normas éticas que implica la investigación.	.524	.166	.272	.168	-.123
7. Adaptar un instrumento previamente diseñado para mi trabajo de investigación.	.504	-.037	.095	.407	.007
6. Usar programas de cómputo para realizar el análisis de datos.	.444	.035	-.194	.351	-.327
2. Realizar la recolección de datos para mi trabajo de investigación.	.429	-.201	.404	.060	-.115
8. Presentar oralmente los resultados de mi trabajo de investigación.	.412	.065	.255	-.073	.070
Physiological and affective states factor					
31. El solo pensar en realizar un trabajo de investigación me hace sentir nervios.	-.097	.851	-.035	.050	-.036
22. Mi cuerpo se pone tenso cuando tengo que realizar un trabajo de investigación.	-.172	.833	.061	.134	.053
34. El estrés que me causan los trabajos de investigación es mayor que el que me causa el resto de las actividades escolares.	-.048	.811	.115	.091	-.044
21. Los trabajos de investigación que he hecho me han estresado.	-.157	.770	-.018	.116	-.054
29. Los trabajos de investigación me han angustiado tanto hasta el punto de hacerme llorar.	-.031	.742	.090	-.212	.097
26. El solo pensar en realizar un trabajo de investigación me deprime.	-.290	.699	-.134	-.208	-.081
23. Al ver las estrategias de mis compañeros para realizar investigación trato de adoptarlas cuando realizo mis propios trabajos de investigación.	-.063	.501	-.106	.333	.268
30. He llevado a cabo un trabajo de investigación porque alguien me animó aunque al principio no estaba seguro de poder hacerlo.	.114	.386	.189	.284	.265
Verbal persuasion factor					
43. He tenido buenas calificaciones en mis trabajos de investigación.	.194	.017	.724	.064	.171
32. He tenido éxito en las materias de investigación que he cursado.	.299	.020	.626	.168	-.012
35. A mis compañeros les gusta trabajar conmigo cuando se trata de una tarea relacionada con la investigación porque piensan que soy bueno en eso.	.127	-.030	.624	.226	.206
27. Me ha ido bien incluso en los trabajos de investigación más difíciles.	.271	.013	.610	-.054	.035
33. Las calificaciones que obtengo en mis trabajos de investigación son indicadores de que tan bueno soy.	.030	.087	.604	.047	-.007
36. Mis profesores me han dicho que soy bueno para realizar tareas de investigación.	.134	-.060	.560	.157	.478
44. He recibido halagos debido a mis habilidades en la investigación.	.289	-.029	.552	.069	.475
28. Durante la carrera he realizado trabajos de investigación como parte de mis materias.	.326	.235	.490	.378	-.055
37. He descubierto que tengo habilidades que no conocía para realizar investigación gracias al aliento de alguien más.	.159	.238	.469	.358	.462
1. Determinar las secciones que debe llevar un trabajo de investigación.	.402	.006	.458	-.012	-.079

Vicarious experience factor					
25. El ver que algún compañero supere adversidades durante el desarrollo de un trabajo de investigación me anima a intentarlo a pesar de estas dificultades.	.119	.015	.002	.758	-.033
24. He visto ponentes/conferencistas cuyos trabajos de investigación me parecen inspiradores.	-.072	.183	.065	.717	.165
38. Durante la carrera he tenido profesores que para mí son un modelo a seguir en cuanto a la investigación.	-.110	-.064	.377	.693	.092
39. La experiencia positiva en investigación de amigos o compañeros me ha motivado a investigar.	.103	-.006	.211	.682	.276
The last factor only included three items					
42. Me he identificado con alguno de mis compañeros o profesores que realizan investigación.	.098	.025	.092	.184	.813
40. Durante la carrera he presentado los resultados de mis trabajos de investigación en foros o congresos.	.118	.016	-.028	.038	.776
41. Durante la carrera he participado como asistente de investigación de los profesores investigadores de la institución.	-.050	.026	.092	.052	.773
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.					

a. Rotation converged in 6 iterations.

Procedure

After the pilot survey was carried out and the final version of the instrument was finished, the survey was administered to the English language students four weeks before the end of the semester. Teachers were sent e-mails asking for permission to administer the survey either at the beginning or at the end of their classes depending on their disposition. The survey instruments were administered mostly at the end of the classes and they took approximately 15 minutes to be completed. Student participation was entirely voluntary and they did not receive rewards or incentives but they were reminded their anonymity to encourage them to respond the instrument.

Data analysis

Once that the data were collected, the analysis was performed using the 20th version of the SPSS® computer software. To fulfill the objectives of the study, various techniques were used. For the first question, a frequency distribution was conducted and then some means from the outcomes were computed. To measure the relation among the variables (second and third questions), a Spearman's rho correlation coefficient was performed. As Muijs (2006) indicates, the Spearman's rho coefficient is used to correlate ordinal variables. It gives us the direction of the relation (positive or negative) and the strength, which is stronger as long as it is closer to the 1 value.

The hypotheses were directed to (a) an examination of whether the sources were predictors of research self-efficacy and (b) to a possible difference in research self-efficacy depending on the participants' year in the program. In order to confirm or disprove them, a multiple linear regression and a Kruskal-Wallis test were performed respectively. The multiple linear regression is used to find out correlations and the Kruskal-Wallis is used to test group differences when we have more than two groups and the data are not normally distributed. To verify the normality of the data a Kolmogorov-Smirnov test had to be used beforehand (Larson-Hall, 2009).

CHAPTER IV: RESULTS

In this chapter, the results from the analysis conducted in the SPSS software program are presented. In order to answer the research questions, descriptive data about subjects' responses and the outcomes from the analyses are showed. Then, the hypotheses are either confirmed or disproved. Tables and figures are added for a more detailed explanation and as a way of providing evidence.

Research self-efficacy assessment

The first research question was: What is the nature of English language students' perceived research self-efficacy? In order to respond it, a frequency distribution was conducted. From all the output that the SPSS software produces, only the percentages were taken into account. The percentages of the responses regarding research self-efficacy (items 1-20) were rearranged into Table 7.

One of the first findings is that the participants possess an average level of confidence when carrying out research tasks; this response obtained higher percentages in 12 out of the 20 items. The greatest difference between being averagely confidence and the second highest response, in this case, being confident, can be seen in items one and 18.

The second most frequent response was that they feel confident when carrying out research tasks. Actually, item nine, which encompasses the preparation of a research project, obtained the highest percentage in this response. The only cases in which being very confident obtained slightly higher values were items six and item 12, but they never surpassed the percentages obtained in the averagely confident response. In fact, item six obtained the most equally distributed percentages.

Being a little confident did not obtain high percentages, the items which were most frequently chosen were item 18 and item 20. In contrast, these items obtained some of the lowest

percentages regarding being very confident. Finally, not being confident obtained very low percentages. Again, item six obtained the higher percentage in this response.

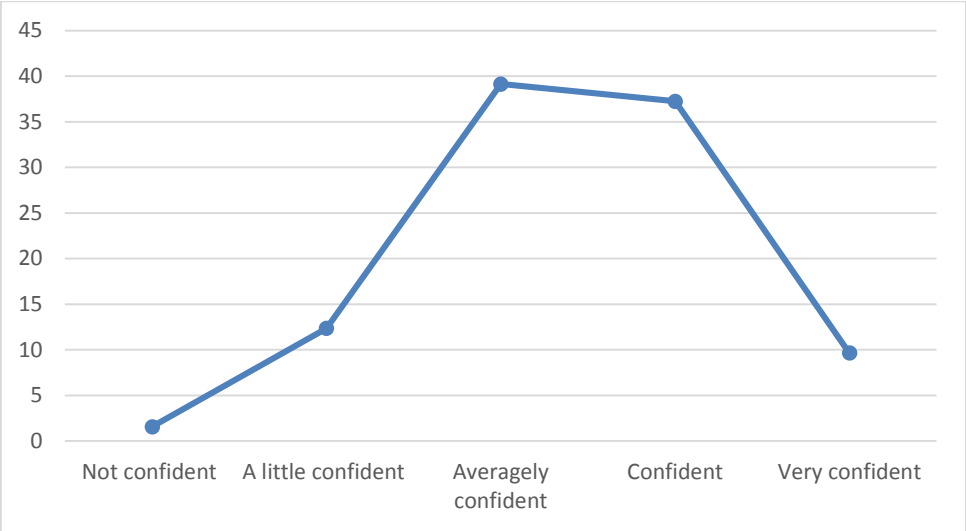
Table 7. Percentages from the research self-efficacy section

Items	Not confident	A Little confident	Averagely confident	Confident	Very confident
1. Determine the sections included in a research project.	0	10	54	33	3
2. Collect the data for my research project.	0	7	34	45	14
3. Write a final report for my research project.	1	11	40	38	10
4. Discuss my results with regard to the current literature.	1	13	40	38	8
5. Follow ethical principles of research.	2	8	32	44	14
6. Use computer software for data analysis.	6	17	31	26	20
7. Modify a previous instrument to be used in my research project.	1	14	47	28	10
8. Orally present my results.	2	12	31	41	14
9. Elaborate a research project.	0	6	32	50	11
10. Choose an appropriate research design.	2	11	35	42	10
11. Write in an academic tone and style.	1	13	29	44	13
12. Choose a topic for my research project.	0	10	32	41	17
13. Formulate clear research questions or testable hypotheses.	2	9	49	32	8
14. Choose appropriate data analysis techniques.	0	17	46	30	7
15. Discuss my results with regard to the theoretical framework.	1	13	48	33	5
16. Identify the limitations of my research project.	2	12	40	36	10
17. Identify implications for future research.	1	9	34	48	8
18. Write a balanced and comprehensive literature review about my research topic.	4	19	47	27	3
19. Identify the most appropriate sampling strategy for my research project.	4	15	43	33	5
20. Construct an appropriate instrument for my research project.	1	21	39	36	3

Overall, the majority of the students responded that they possess an average level of confidence to conduct research tasks. The difference between the responses can be better seen in

Figure 1 in which the mean of the five response options were computed. It can be observed that the mean of students with a high research self-efficacy is almost equal to the mean of low self-efficacious students.

Figure 2. Research self-efficacy mean scores



Sources of self-efficacy assessment

To continue with the descriptive data, the percentages of the responses of the sources of self-efficacy are now presented. It is important to report these results due to the contribution of the sources to build self-efficacy. They are presented first individually and then in a figure illustrating the mean scores.

To begin with mastery experiences, one of the first findings that can be highlighted is that participants have not undertaken research activities that require more involvement in research other than classroom tasks and projects. A very few of them have participated in conferences or been research assistants. In addition, percentages from items 27, 28, and 43 are pretty similar in their responses in which “never” and “always” are between two and 16, “sometimes” and “very often” are between 31 and 39 and “cannot decide” between 10 and 18. All of this indicates that they have had the research related experiences, but these experiences do not occur regularly. The

only item with not so similar percentages is item 32 which got the highest value in the "always" response. Table 8 contains the percentages of this source.

Two more items concerning mastery experiences were included at the end of the questionnaire. The first one is about the two research courses English language students are supposed to take. A frequency distribution showed that 72 percent of the sample had taken the Research Methodology course from the first semester and 25 percent had taken both the previous course and the Research Seminar, from the ninth semester. Any student responded to have taken only the second course or any of them. The second item asked students if they had taken any other course apart from those from the English language program. The courses they mentioned were Research Methodology in Social Sciences (N = 2), Didactics (N = 1), Regional Problems Seminar (N = 2), English for Business (N = 1) and Sociolinguistics (N = 1).

Table 8. Percentage from the mastery experience source

Mastery experience	Never	Sometimes	I cannot decide	Very often	Always
27. I have done well on even the most difficult research tasks.	3	34	18	39	6
28. I have undertaken research tasks as part of my college courses.	5	38	10	31	16
32. I have been successful in the research courses I have taken.	4	15	15	35	31
40. I have presented the results of my research projects in congresses and/or conferences.	76	12	3	8	1
41. I have been awarded a research assistantship to work for a faculty professor from this university.	84	8	4	2	2
43. I have made excellent grades on my research projects.	2	36	13	36	13

Following the order in which they are presented in theory, the next source is the vicarious experience. Results are displayed, again, at the end of this description in Table 9. Percentages from the "sometimes" and "very often" responses are to some extent consistent except from items 25 and 38 in "sometimes", and item 42 in the "very often" column. The rest of them range from 27 to 38 percent. In addition, the "always" column obtained the highest percentages from all the sources. This indicates that students have gone through research-related vicarious experiences more than with any other source. It can also be pointed out that the highest value in this source is

in item 42 in the "never" response. On the contrary, item 25 obtained the highest value in the "always" response, which contrasts the facts that they have been inspired by classmates but have not identified with them.

Table 9. Percentages from the vicarious experience source

Vicarious experience	Never	Sometimes	I cannot decide	Very often	Always
23. When I see how my classmates conduct research, I can picture myself carrying out research tasks in the same way.	16	38	14	27	5
24. I have seen speakers whose research projects are inspiring.	5	28	11	33	23
25. Seeing my classmates overcome adversities when conducting research pushes me to give it a try.	2	17	13	30	38
38. Some of my professors have been a role model when it comes to research.	9	22	10	29	30
39. The positive experience of my classmates when conducting research has inspired me to try it.	14	34	17	27	8
42. I identify myself with some of my classmates or professors that carry out research.	43	35	11	8	3

As for the verbal persuasion source, the "cannot decide" responses obtained the highest values from all the four sources, which indicates that some students were not sure how to assess this source. The students that did evaluate the regularity in which it was experienced concentrated their responses in the "never" and "sometimes" columns, except from items 33 and 35. In fact, the highest value from this table can be seen in the "sometimes" response in item 30 as it can be seen in Table 10. In addition, the item with the highest percentages in the "very often" and "always" columns is item 33; however, the percentage obtained in the "always" response is not as high as the percentages from the other three sources, and this item refers to students' encouragement through a mark, and not to the actual verbal comments they receive. All this could be an indicator that verbal persuasion was the least experienced source of self-efficacy by students.

Table 10. Percentages from the verbal persuasion source

Verbal persuasion	Never	Sometimes	I cannot decide	Very often	Always
30. I have carried out a research task because someone encouraged me even though I did not want to do it at the beginning.	33	39	13	10	5
33. The grades I get indicate how good I am in research.	0	27	24	35	14
35. My classmates like to work with me when carrying out research tasks because they think I'm good at it	6	29	33	26	6
36. My teachers have told me that I am good at conducting research.	24	27	27	18	4
37. I have discovered I have research skills due to someone else's encouragement.	22	34	17	21	6
44. I have been praised for my ability in research.	25	31	21	14	9

Regarding the last source of self-efficacy, the highest value from this table can be seen in item 29 in the "never" response. Students might not cry due to their research projects, but those indeed cause them nervousness and stress as the "sometimes" and "always" columns corroborate. Depression, on the other hand, is also experienced but at a lower level as it can be seen in item 26. In fact, the percentages from the "sometimes" responses obtained the highest means of the sources along with the verbal persuasion source. As usual, the evidence is presented next in Table 11.

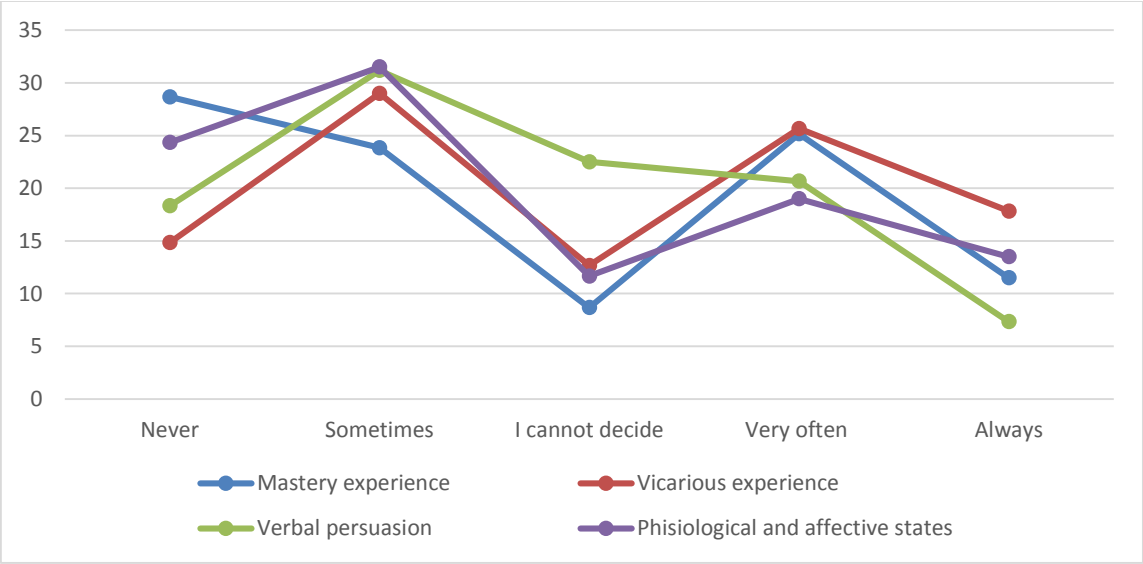
Table 11. Percentages from the physiological and affective states source

Physiological and affective states	Never	Sometimes	I cannot decide	Very often	Always
21. My research projects have stressed me out.	4	38	6	32	20
22. My whole body becomes tense when I have to carry out a research task.	13	35	10	25	17
26. I get depressed when I think about elaborating a research project.	30	28	20	14	8
29. Research projects have caused me anguish to such an extreme point that I break down in tears.	62	25	5	4	4

31. Just thinking about a research project makes feel nervous.	21	34	14	17	14
34. The stress caused by research tasks is greater than the stress caused by the rest of the school tasks.	16	29	15	22	18

In conclusion, in most of the cases the "sometimes" column was similar to the "very often" one. This is confirmed in Figure 2 when the sources mostly go up in these two responses and then go down with the rest of them. It can also be seen that vicarious experience was the most experienced source because it obtained the highest means in the "very often" and "always" response and the lowest mean in the "never" response. Furthermore, the highest percentages from the four tables summarize the facts that: students have carried out research projects but they have not presented them in conferences and they have not been research assistants; they have not cried because of those projects but have experienced stress and nervousness; verbal persuasion was not very common and their classmates and professors have inspired the subjects but they have not identify themselves with them.

Figure 3. Sources of self-efficacy means



Correlation between research self-efficacy and the sources of self-efficacy

The second research question was: How do research self-efficacy relate to the sources of self-efficacy in EL students from UQRoo? In order to identify any relationship between these variables, they had to be correlated so a Spearman's rho method was performed in SPSS. As Table 12 indicates, the strongest correlation occurred between research self-efficacy and mastery experience, followed by research self-efficacy and verbal persuasion. In addition, these correlations were significant at the 0.05 level (Muijs, 2006). On the other hand, vicarious experience did not have a strong correlation and physiological and affective states correlated negatively to research self-efficacy. This last relationship is logical because it indicates that if students experience negative emotions like stress and depression their sense of self-efficacy will be low. Nevertheless, it was not as highly significant the other two sources.

Table 12. Correlation of self-efficacy to the four sources

		Mastery experience	Vicarious experience	Verbal persuasion	Physiological and affective states
Self-efficacy	Correlation Coefficient	.523**	.132	.446**	-.246*
	Sig. (2-tailed)	.000	.211	.000	.021
	N	89	91	90	88

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

Correlation among the four sources of self-efficacy

A similar analysis was performed to respond the third question: How do research self-efficacy sources relate to each other in EL students from the UQRoo? Results pertaining to the correlation of the four sources among themselves appear in Table 13. The strongest correlation was between mastery experience and verbal persuasion. Vicarious experience also correlated to mastery experience and verbal persuasion, but the relations can be considered as moderate according to Muijs (2006). These three correlations obtained a p-value of 0.01 which means that

they are highly significant. There was also a modest correlation between vicarious experience and physiological and affective states, but it was not as significant as the previous correlations. Overall, vicarious experience obtained significant correlations to the other three sources whereas physiological and affective states obtained only one.

Table 13. Correlation of the sources of self-efficacy

		Mastery experience	Vicarious experience	Verbal persuasion	Physiological and affective states
Mastery experience	Correlation Coefficient	–	.423**	.679**	.057
	Sig. (2-tailed)		.000	.000	.583
	N	98	96	96	95
Vicarious experience	Correlation Coefficient	.423**	–	.506**	.208*
	Sig. (2-tailed)	.000		.000	.043
	N	96	99	97	95
Verbal persuasion	Correlation Coefficient	.679**	.506**	–	.104
	Sig. (2-tailed)	.000	.000		.315
	N	96	97	99	96
Physiological affective states	Correlation Coefficient	.057	.208*	.104	–
	Sig. (2-tailed)	.583	.043	.315	
	N	95	95	96	97

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Sources as predictors of research self-efficacy

The next step is to confirm or reject the hypotheses written for this study. The first one was directed to an examination of whether the sources were predictors of research self-efficacy. In order to do this, a multiple linear regression was performed. As it can be seen in Table 14, mastery experiences and affective and psychological states emerged as significant predictors of research self-efficacy. Having obtained the greatest significance, mastery experiences ($p = .003$) can be considered as the strongest predictor of research self-efficacy, which confirms the second

hypothesis. On the other hand, vicarious experience and verbal persuasion were not found to be predictors of research self-efficacy.

Table 14. Multiple linear regression outcome

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	55.135	5.229		10.543	.000
	Mastery experience	1.181	.384	.427	3.071	.003
	Vicarious experience	-.181	.243	-.081	-.746	.458
	Verbal persuasion	.334	.329	.148	1.017	.312
	Physiological affective states	-.475	.163	-.272	-2.905	.005

a. Dependent Variable: Self-efficacy

A multiple linear regression analysis also tells us how good our model is. In other words, that our predictors, together, are able to predict research self-efficacy in this case. The output model summary is presented in Table 15. The value obtained in the column adjusted R square indicates that the model can be considered as modest fit (Muijs, 2006).

Table 15. Model summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.571[a]	.327	.293	9.22544

a. Predictors: (Constant), Phisiologicalaffectivestates, Masteryexperience, Vicariousexperience, Verbalpersuasion

Differences according to seniority

The last hypothesis referred to differences in students' research self-efficacy according to their year in the program (second, sixth or tenth semester). Before these group differences were analyzed, the data were tested for normality in order to decide which test was the most appropriate. Results of the Kolmogorov-Smirnov test in Table 16 indicate that the data were not normally distributed.

Table 16. Test for normality

		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Semestre	Estadístico	gl	Sig.	Estadístico	gl	Sig.
1. Determinar las secciones que debe llevar un trabajo de investigación.	segundo	.302	37	.000	.784	37	.000
	sexto	.308	24	.000	.832	24	.001
	décimo	.260	23	.000	.845	23	.002
2. Realizar la recolección de datos para mi trabajo de investigación.	segundo	.238	37	.000	.870	37	.000
	sexto	.292	24	.000	.835	24	.001
	décimo	.288	23	.000	.852	23	.003
3. Redactar el informe final de mi trabajo de investigación.	segundo	.256	37	.000	.832	37	.000
	sexto	.207	24	.009	.881	24	.009
	décimo	.237	23	.002	.876	23	.008
4. Discutir los resultados obtenidos con base en la revisión de la literatura.	segundo	.237	37	.000	.867	37	.000
	sexto	.313	24	.000	.815	24	.001
	décimo	.253	23	.001	.874	23	.008
5. Respetar las normas éticas que implica la investigación.	segundo	.314	37	.000	.823	37	.000
	sexto	.209	24	.008	.845	24	.002
	décimo	.236	23	.002	.865	23	.005
6. Usar programas de cómputo para realizar el análisis de datos.	segundo	.192	37	.001	.877	37	.001
	sexto	.218	24	.005	.892	24	.014
	décimo	.190	23	.031	.895	23	.020
7. Adaptar un instrumento previamente diseñado para mi trabajo de investigación.	segundo	.330	37	.000	.811	37	.000
	sexto	.213	24	.006	.905	24	.027
	décimo	.325	23	.000	.746	23	.000
8. Presentar oralmente los resultados de mi trabajo de investigación.	segundo	.197	37	.001	.908	37	.005
	sexto	.222	24	.003	.885	24	.010
	décimo	.308	23	.000	.840	23	.002
9. Elaborar un trabajo de investigación.	segundo	.318	37	.000	.797	37	.000
	sexto	.336	24	.000	.820	24	.001
	décimo	.213	23	.008	.868	23	.006
10. Escoger un diseño de investigación apropiado.	segundo	.265	37	.000	.870	37	.000
	sexto	.241	24	.001	.875	24	.007
	décimo	.275	23	.000	.862	23	.004
11. Utilizar el lenguaje académico (tipos de palabras y expresiones, registro alto de lengua) propio de la investigación.	segundo	.284	37	.000	.853	37	.000
	sexto	.316	24	.000	.812	24	.000
	décimo	.227	23	.003	.879	23	.009
12. Definir el tema de mi trabajo de investigación.	segundo	.237	37	.000	.865	37	.000
	sexto	.265	24	.000	.874	24	.006

	décimo	.232	23	.002	.863	23	.005
13. Formular preguntas de investigación claras o hipótesis comprobables.	segundo	.259	37	.000	.863	37	.000
	sexto	.288	24	.000	.792	24	.000
	décimo	.279	23	.000	.863	23	.005
14. Elegir la estrategia de análisis de datos más apropiada para mi trabajo de investigación.	segundo	.265	37	.000	.870	37	.000
	sexto	.253	24	.000	.856	24	.003
	décimo	.263	23	.000	.859	23	.004
15. Discutir los resultados obtenidos con base en el marco teórico.	segundo	.253	37	.000	.864	37	.000
	sexto	.305	24	.000	.768	24	.000
	décimo	.253	23	.001	.874	23	.008
16. Reconocer las limitaciones de mi trabajo de investigación.	segundo	.249	37	.000	.862	37	.000
	sexto	.220	24	.004	.886	24	.011
	décimo	.185	23	.039	.882	23	.011
17. Identificar las implicaciones que los resultados de mi investigación tienen para futuros estudios.	segundo	.225	37	.000	.885	37	.001
	sexto	.395	24	.000	.728	24	.000
	décimo	.279	23	.000	.792	23	.000
18. Escribir una revisión de la literatura balanceada, crítica y completa sobre el tema de mi trabajo de investigación.	segundo	.270	37	.000	.870	37	.000
	sexto	.226	24	.003	.881	24	.009
	décimo	.226	23	.003	.903	23	.030
19. Determinar el tipo de muestra más adecuada para mi trabajo de investigación.	segundo	.233	37	.000	.855	37	.000
	sexto	.261	24	.000	.872	24	.006
	décimo	.247	23	.001	.876	23	.008
20. Crear un instrumento propio para mi trabajo de investigación.	segundo	.265	37	.000	.835	37	.000
	sexto	.251	24	.000	.869	24	.005
	décimo	.225	23	.004	.801	23	.000
21. Los trabajos de investigación que he hecho me han estresado.	segundo	.300	37	.000	.846	37	.000
	sexto	.278	24	.000	.823	24	.001
	décimo	.252	23	.001	.779	23	.000
22. Mi cuerpo se pone tenso cuando tengo que realizar un trabajo de investigación.	segundo	.314	37	.000	.846	37	.000
	sexto	.210	24	.008	.892	24	.015
	décimo	.281	23	.000	.805	23	.000
23. Al ver las estrategias de mis compañeros para realizar investigación trato de adoptarlas cuando realizo mis propios trabajos de investigación.	segundo	.313	37	.000	.829	37	.000
	sexto	.255	24	.000	.875	24	.007
	décimo	.301	23	.000	.836	23	.002
24. He visto ponentes/conferencistas cuyos trabajos de investigación me parecen inspiradores.	segundo	.268	37	.000	.859	37	.000
	sexto	.223	24	.003	.867	24	.005
	décimo	.288	23	.000	.817	23	.001
	segundo	.251	37	.000	.836	37	.000

25. El ver que algún compañero supere adversidades durante el desarrollo de un trabajo de investigación me anima a intentarlo a pesar de estas dificultades.	sexto	.213	24	.006	.897	24	.019
	décimo	.295	23	.000	.729	23	.000
26. El solo pensar en realizar un trabajo de investigación me deprime.	segundo	.238	37	.000	.802	37	.000
	sexto	.205	24	.010	.863	24	.004
	décimo	.201	23	.017	.864	23	.005
27. Me ha ido bien incluso en los trabajos de investigación más difíciles.	segundo	.356	37	.000	.772	37	.000
	sexto	.355	24	.000	.771	24	.000
	décimo	.225	23	.004	.886	23	.013
28. Durante la carrera he realizado trabajos de investigación como parte de mis materias.	segundo	.356	37	.000	.802	37	.000
	sexto	.226	24	.003	.851	24	.002
	décimo	.300	23	.000	.801	23	.000
29. Los trabajos de investigación me han angustiado tanto hasta el punto de hacerme llorar.	segundo	.363	37	.000	.556	37	.000
	sexto	.431	24	.000	.637	24	.000
	décimo	.326	23	.000	.733	23	.000
30. He llevado a cabo un trabajo de investigación porque alguien me animó aunque al principio no estaba seguro de poder hacerlo.	segundo	.248	37	.000	.793	37	.000
	sexto	.228	24	.002	.860	24	.003
	décimo	.311	23	.000	.822	23	.001
31. El solo pensar en realizar un trabajo de investigación me hace sentir nervios.	segundo	.333	37	.000	.791	37	.000
	sexto	.170	24	.071	.890	24	.013
	décimo	.263	23	.000	.878	23	.009
32. He tenido éxito en las materias de investigación que he cursado.	segundo	.217	37	.000	.860	37	.000
	sexto	.264	24	.000	.863	24	.004
	décimo	.259	23	.000	.818	23	.001
33. Las calificaciones que obtengo en mis trabajos de investigación son indicadores de que tan bueno soy.	segundo	.239	37	.000	.859	37	.000
	sexto	.198	24	.016	.879	24	.008
	décimo	.280	23	.000	.815	23	.001
34. El estrés que me causan los trabajos de investigación es mayor que el que me causa el resto de las actividades escolares.	segundo	.232	37	.000	.882	37	.001
	sexto	.201	24	.014	.850	24	.002
	décimo	.229	23	.003	.844	23	.002
35. A mis compañeros les gusta trabajar conmigo cuando se trata de una tarea relacionada con la investigación porque piensan que soy bueno en eso.	segundo	.224	37	.000	.901	37	.003
	sexto	.240	24	.001	.894	24	.016
	décimo	.212	23	.009	.867	23	.006
36. Mis profesores me han dicho que soy bueno para realizar tareas de investigación.	segundo	.204	37	.000	.885	37	.001
	sexto	.211	24	.007	.881	24	.009
	décimo	.226	23	.003	.885	23	.012

37. He descubierto que tengo habilidades que no conocía para realizar investigación gracias al aliento de alguien más.	segundo	.263	37	.000	.857	37	.000
	sexto	.166	24	.086	.917	24	.050
	décimo	.279	23	.000	.874	23	.008
38. Durante la carrera he tenido profesores que para mí son un modelo a seguir en cuanto a la investigación.	segundo	.213	37	.000	.876	37	.001
	sexto	.279	24	.000	.796	24	.000
	décimo	.282	23	.000	.791	23	.000
39. La experiencia positiva en investigación de amigos o compañeros me ha motivado a investigar.	segundo	.252	37	.000	.886	37	.001
	sexto	.186	24	.030	.898	24	.019
	décimo	.344	23	.000	.821	23	.001
40. Durante la carrera he presentado los resultados de mis trabajos de investigación en foros o congresos.	segundo	.423	37	.000	.552	37	.000
	sexto	.533	24	.000	.316	24	.000
	décimo	.424	23	.000	.564	23	.000
41. Durante la carrera he participado como asistente de investigación de los profesores investigadores de la institución.	segundo	.499	37	.000	.400	37	.000
	sexto	.478	24	.000	.433	24	.000
	décimo	.480	23	.000	.467	23	.000
42. Me he identificado con alguno de mis compañeros o profesores que realizan investigación.	segundo	.308	37	.000	.702	37	.000
	sexto	.250	24	.000	.783	24	.000
	décimo	.237	23	.002	.885	23	.013
43. He tenido buenas calificaciones en mis trabajos de investigación.	segundo	.291	37	.000	.834	37	.000
	sexto	.239	24	.001	.875	24	.006
	décimo	.322	23	.000	.821	23	.001
44. He recibido halagos debido a mis habilidades en la investigación.	segundo	.235	37	.000	.876	37	.001
	sexto	.171	24	.066	.878	24	.008
	décimo	.271	23	.000	.873	23	.007

a. Corrección de significación de Lilliefors

Thus, it was necessary to use the Kruskal-Wallis non-parametric test (Cunningham & Aldrich, 2012). Table 17 shows that the null hypotheses have to be retained in research self-efficacy but rejected in three sources of self-efficacy; there are differences in mastery experience, vicarious experience and physiological and affective states according to the semester.

Table 17. Kruskal-Wallis test for semester

	Null hypothesis	Test	Sig.	Decision
1	The distribution of self-efficacy is the same across categories of semester.	Independent Samples Kruskal-Wallis Test	.651	Retain the null hypothesis.
2	The distribution of mastery experience is the same across categories of semester.	Independent Samples Kruskal-Wallis Test	.002	Reject the null hypothesis.

3	The distribution of vicarious experience is the same across categories of semester.	Independent Samples Kruskal-Wallis Test	.000	Reject the null hypothesis.
4	The distribution of verbal persuasion is the same across categories of semester.	Independent Samples Kruskal-Wallis Test	.072	Retain the null hypothesis.
5	The distribution of physiological and affective states is the same across categories of semester.	Independent Samples Kruskal-Wallis Test	.003	Reject the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

Gender and age differences

In addition to the year in the program, other two group differences were analyzed: gender and age. Although these two variables were not part of the objectives, they were included to try to provide a more comprehensive analysis, and to compare the results with the literature reviewed. A t-test analysis demonstrated that there is a statistically significant difference between male and females' research self-efficacy ($p = .046$). Effect size was calculated and the output was a Cohen's d of 0.99, which can be considered as strong (Muijs, 2006). As for the group differences according to age, it was taken into consideration that the data were not normally distributed, and these group differences were analyzed with a Kruskal-Wallis test. Results in Table 18 indicate no significant differences related to age.

Table 18. Kruskal-Wallis test for age

	Null hypothesis	Test	Sig.	Decision
1	The distribution of self-efficacy is the same across categories of age.	Independent Samples Kruskal-Wallis Test	.386	Retain the null hypothesis.
2	The distribution of mastery experience is the same across categories of age.	Independent Samples Kruskal-Wallis Test	.067	Retain the null hypothesis.
3	The distribution of vicarious experience is the same across categories of age.	Independent Samples Kruskal-Wallis Test	.096	Retain the null hypothesis.
4	The distribution of verbal persuasion is the same across categories of age.	Independent Samples Kruskal-Wallis Test	.259	Retain the null hypothesis.
5	The distribution of physiological and affective states is the same across categories of age.	Independent Samples Kruskal-Wallis Test	.718	Retain the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

This section can be summarized as followed:

- English language students possess an average level of confidence to carry out research activities. Their responses also indicate that vicarious experience was the most experienced source whereas verbal persuasion was the least experienced source.
- Mastery experience obtained the strongest correlation to research self-efficacy, followed by verbal persuasion. Physiological and affective states correlated negatively to research self-efficacy. These three correlations were significant. On the contrary, vicarious experience did not correlate to research self-efficacy.
- Vicarious experience correlated significantly to the other three sources whereas physiological and affective states only correlated significantly to the previous one.
- Mastery experience and affective and physiological states are significant predictors of research self-efficacy. Mastery experience proved to be the strongest predictor. In addition, our model (the four sources together as predictors) yielded a modest fit.
- There were not differences in research self-efficacy according to students' year in the program
- There were differences in three sources of self-efficacy beliefs (mastery experience, vicarious experience and affective and physiological states) according to students' year in the program.
- There were differences in research self-efficacy according to students' gender.

CHAPTER V: DISCUSSION

This chapter provides a detailed analysis of key research findings presented in chapter 4. The results are discussed in relation to Bandura's (1997) research self-efficacy theory and the results from the studies included in the literature review. In addition, the significance of the findings for practical implications is added as well as some recommendations for further research. This discussion presents four points: Research self-efficacy beliefs in the EL program; the relation between research self-efficacy beliefs and the sources of self-efficacy; the relation among the sources of self-efficacy; and group differences. This chapter ends with a brief summary.

Research self-efficacy beliefs in the EL program

The first research question asked what the nature of EL students' research self-efficacy beliefs was. Frequency distributions of their responses indicated that a few students are a little confident to conduct research tasks (12.35 %), and that a similar number of students are very confident (9.65 %). In addition, only a small percentage of students consider themselves as not confident (1.55 %). On the contrary, the majority of the students are averagely confident to conduct research tasks (39.15%), and a similar number of students are just confident (37.25%). The discussion of the first question begins with an analysis of the two highest percentages, for which it is important to take into account two elements: the educational level in which the students are and the characteristics of the program.

First of all, it was expected that undergraduate students possess a small level of confidence to carry out research tasks because training researchers is not a specific objective of this educational level (Aldana & Joya, 2011). Thus, they would not be required to develop high levels of actual research efficacy that would reflect high research self-efficacy beliefs. Training researchers is a task usually performed by the postgraduate level. In fact, even the master's level might not provide enough preparation to train researchers. Master's students who had previously

majored in the EL program from UQRoo commented that they would need more experience and training to consider themselves as researchers (Reyes & Gutiérrez, 2015). Hence, the response that they are confident to carry out research tasks does not seem to be in tune with the function of the undergraduate level. Possible reasons for this mismatch are discussed below.

Regarding the EL program, its main objective is to train English teachers. The conduction of research is included in the objectives of the curriculum and in the graduate profile, but not in the description of the professional activity. What is stated in the objectives of the programs is that its students will acquire research knowledge and will be able to carry out research in order to improve their teaching experience (Licenciatura en Lengua Inglesa, 1995). Two research courses contribute to the achievement of this objective: Research Methodology and Research Seminar. This might not be enough to support a correspondence between the finding that students are confident and the reality, which becomes even less plausible considering that several problems have previously been observed in these two courses. Reyes and Rueda de León (in press) commented that Research Methodology is taught by professors not in the EL field, contrary to Research Seminar, and it seems unlikely that teachers from other backgrounds help students acquire the research knowledge that will improve their profession.

These authors also remarked that the time gap between these courses is too long and that only a few professors include research projects in their courses. Thus, only some students put into practice their research knowledge for about three and a half years. This last statement is supported by a previous study (Picaso, 2014). Students from the EL program reported that they sometimes do research projects in courses like Linguistics, Phonology and Phonetics, Comparative Analysis of English and Spanish, Psycholinguistics and Sociolinguistics, but those are simple projects and only serve as course assessment; they are not rigorous scientific projects. Additionally, participants in Picaso's study believed that Research Seminar only trains them to carry out research to obtain a bachelor's degree. The sources of self-efficacy evaluation in the present study offers more evidence about this issue. The responses in this section indicate that students have carried out research tasks in their courses, but almost none of them have presented their projects in conferences nor been a research assistant. In addition, only a few of them have taken a course where research is included other than Research Methodology and Research Seminar.

All in all, it should not be expected that the EL students develop a strong sense of self-efficacy. The small number of very confident students (9.65 %) could be the few ones that have gone through more experiences like conference presentations and research assistantships. However, the amount of students that were confident (37.25 %) cannot be overlooked. As it has been mentioned, both the educational level and the program can be adequate to promote a small level of confidence. Subsequently, after all the problems encountered, the "confident" response should have probably obtained a lower percentage. Their responses could be caused by faulty self-knowledge (Bandura, 1997). These students might be overconfident in their abilities and then responded in that way. It could also be possible that they are underestimating the tasks. Since the majority of the students in this sample belongs to the first half of the program, where only one research course has been taken, they have not faced the difficulties of the writing of a thesis or research protocol as the senior students and they probably believe that those tasks might be easily carried out.

Perhaps, students do carry out research projects but those are not as rigorous as a scientific project has to be and consequently they believe they are conducting high quality research. Since it was not the focus of this study, we cannot know what kind of projects they are required to write and how demanding they are. Evidence from a previous study about perceptions of research (Picaso, 2014), indicates that EL students feel prepared to carry out a good research project after their training, which, again, can be regarded as overconfidence. In contrast, some students from that same study commented that writing a thesis is difficult, time-consuming and expensive. This evidence, however, is not conclusive, especially because the sample from this previous study only comprises eight students. Therefore, more quantitative studies about the perceptions of research and an exploration of the research projects that EL students conduct could provide the necessary evidence for a more comprehensive analysis.

Detecting a faulty self-knowledge is important because of the consequences that misjudgments can carry for the EL students. An overestimation of the capabilities can make individuals set unrealistic goals, which can increase the likelihood of failure, and consequently decrease their self-efficacy and their willingness to persist in future challenges (Oginga & Randall, 2015). Thus, if the very confident students undertake research tasks that surpass their capabilities once that they enter their future professional practice, they will probably fail and suffer the negative consequences of such overestimation. Self-efficacy doubts may also motivate

these future teachers to learn and improve their teaching skills (Oginga & Randall, 2015) or research skills in this case, but as Bandura (1997) asserts, individuals who overestimate their capabilities hardly ever undertake concrete actions to improve them.

Whether students who responded to be confident have a faulty self-knowledge or the program successfully promotes actual research efficacy that corresponds to high self-efficacy despite the problems encountered, the inclusion of research in the undergraduate level could bring many benefits for these students. Some of the benefits that undergraduate research offers are a development in cognitive and problem solving skills (Kinkead, 2013; Nicholson, 2011), autonomous learning (Kinkead 2003; Spronken-Smith & Walker, 2010) and critical thinking (Levy & Petrulis, 2012). All of these gains are ideal for college students. Additionally, undergraduate research offers advantages beyond college like a better preparation for graduate school (Hunter, 2007) and the development of employability skills (Nicholson, 2011).

Although these previous studies investigated the undergraduate level, they did not analyze any EL program. One study that did include EL students was conducted by Cabaroglu (2014). This author found benefits of undergraduate research like positive effects in students' autonomy, creativity and confidence building. A particular gain was that they acquired the necessary skills to identify, investigate and overcome the teaching challenges they may face in the future. This benefit could specially contribute to achieve the objective of teaching students the research knowledge that will help them to improve their teaching experience (Licenciatura en Lengua Inglesa, 1995). In the context of the EL students from UQRoo, however, it is still unknown if they carry out research after they finish their studies. One way to finally state if the objectives are accomplished is to find out if these students use research as a tool to ease their profession after they graduate. Further investigation in the research engagement of English teachers such as the work of Borg (2006) could be adapted and conducted in our context.

The relation between research self-efficacy and the sources of self-efficacy

Bandura (1997) states that there are four sources of information that construct self-efficacy: mastery experience, vicarious experience, verbal persuasion, and physiological and affective states. The second question investigated the relation between research self-efficacy and

these sources. A Spearman's rho correlational method indicated that there were highly and moderate significant correlations between research self-efficacy and three sources: mastery experience, verbal persuasion, and physiological and affective states.

To begin with mastery experience, Bandura (1997) and other authors (Zimmerman, 2000; Pasupathy & Siwatu, 2013) have suggested that this source is the most influential to build self-efficacy beliefs. The fact that it correlated significantly helps to support this notion. This finding can be better compared with the theory if the results from the multiple linear regression analysis are presented. In addition to the significant correlation to research self-efficacy, mastery experience was found to be the strongest predictor of this variable ($p = .003$), which can confirm Bandura's claim that this is the primary source. Further evidence that points to the strong influence of mastery experience on research self-efficacy could be that, even though mastery experience was not encountered as much as vicarious experience in the EL program, the few experiences like the enrollment in courses and the completion of research tasks were influential enough to obtain the strongest correlation to research self-efficacy.

Studies from the literature review have shown similar results. It has been found that students with more prior research experience score higher in research self-efficacy (Lambie, Hayes, Griffith, Limbert & Mullen, 2013; Lambie & Vaccaro, 2011; Odaci, 2013). Although these authors used the term "prior research experience," this variable can be considered as mastery experience. This source is described as the successes and failures that individuals go through (Bandura, 1997; Pasupathy & Siwatu, 2013; Zimmerman, 2000) and in order to build self-efficacy they have to be experienced beforehand, thus, the relation to "prior research experience."

As previous studies have suggested (Bieschke, Bishop & García, 1996; Lambie et al, 2013), ensuring that students experience research early in the program helps to develop research self-efficacy. This, in turn, can help students to carry out future research tasks with more confidence. The results from this and previous studies then suggest that people in charge of the EL bachelor's program should implement more research experiences in the program. Undergraduate research can offer students benefits like a better preparation for postgraduate studies and the development of attitudes and behaviors typical of a researcher (Hunter, 2007); the motivation to continue on the path of research (Valter & Akerlind, 2010); and real-world research experiences (Tsang, 2010). In the case of EL students, it can increase their teaching self-efficacy

and provide them with the necessary skills to identify, investigate, and overcome the teaching challenges they may face in the future (Cabaroglu, 2014).

With regard to the other self-efficacy sources, our findings do not support Bandura's claim that vicarious experience was the second most influential source of self-efficacy because it neither correlated nor predicted this variable. Conversely, verbal persuasion correlated significantly ($r = .446$ $p = 0.05$) to research self-efficacy, although its correlation was not as strong as the one obtained by mastery experience ($r = .523$). These two correlations are inconsistent with the assessment of the sources in the program because vicarious experience was the most experienced source, whereas verbal persuasion was the least experience source. It would have been expected that a source, which is influential according to the theory, and that obtained high values in the program, would be correlated to research self-efficacy.

One possible explanations to the lack of a correlation between research self-efficacy and vicarious experience could be that students believed that their models were conducting more rigorous research activities. Some professors from this program might not act as models if conducting research is not their main goal. Reyes and Hernandez (2013) have analyzed this program and commented that teachers' publications are modest, and that just a few have published in journals of high academic rigor. Hence, it cannot be expected that the students' models influence research self-efficacy as positively as the other sources.

Another explanation could be similarity to their models. Firstly, professors who do not belong to the EL field like the ones in charge of the Research Methodology courses might not act as role models due to of a lack of similarity (Reyes and Rueda de León, in press); a professor who teach or once taught languages may be a more adequate model to them. Secondly, students responded that in general, they have been inspired by professors and classmates, but they have not identified with them. This could mean that students acknowledge that they are not at the same level of their models, and therefore they do not have the same research efficacy. Thus, there cannot be a correlation between the average levels of research self-efficacy, which was probably caused by their overconfidence, and the acknowledgment of their low levels of actual research efficacy.

The role of the professors gains importance to raise self-efficacy beliefs, especially if the program is failing in giving enough research experiences. They can help students to increase their sense of research self-efficacy by providing both vicarious experience and verbal persuasion.

Previous research has found that research self-efficacy can be fostered by faculty members' encouragement (Bard, Bieschke, Hebert & Eberz, 2000). Other studies have shown more benefits of the role of the professors. Kahn (2000) found that verbal reinforcements and modeling can be effective ways to promote the scientific development of a student; Lev, Kolassa and Bakken (2009) found that the relationship between mentee and mentor may encourage students to undertake research careers; and Shivy et al. (2003) found that faculty advisors can draw students into research and motivate them.

Professors from the EL program could then foster vicarious experience and verbal persuasion among their students. Nonetheless, it is important to take into account that the role of the professors and the degree in which they promote these sources will vary according to the educational level. It is reasonable to believe that EL professors do not provide much encouragement because the undergraduate level is not intended to train researchers (Aldana & Joya, 2011) as the doctoral level does. In fact, only one of the previous studies included samples of undergraduate students (Lev, Kolassa & Baken, 2009) and the EL program only has two research courses. In addition, some professors from this program might not act as models as it has been mentioned before.

Another finding from this study which is in tune with the theory is that physiological and affective states correlated significantly ($r = -.246$ $p = 0.01$) and predicted ($p = .005$) research self-efficacy. As Bandura states, people often read stressful or taxing situations as signs of vulnerability to dysfunction, and high arousal can debilitate performance (1997, p.106). A significant and negative correlation of this source indicates that the more stress and anxiety students experience, the lower their sense of self-efficacy will be. A negative correlation between research self-efficacy and research anxiety has also been supported by previous research (Rezaei & Zamani-Miandashti, 2013). Our finding that this source was also a predictor of research self-efficacy can then confirm that experiencing these negative physiological states causes a decrement in research self-efficacy.

All things considered, the negative effect of physiological states cannot be taken lightly, principally because EL students responded that they have experienced negative emotions like stress and nervousness. Some negative effects that can be expected could be similar to those found in a previous study. Graduate students whose educational background was the EL program shared how they constantly experienced hardship and emotional crises in the completion of their

master's degree and dissertation (Reyes & Gutiérrez, 2015). Again, the role of the professors is to show empathy and flexibility, which can help them to relieve stress and other emotions that complicate research tasks.

In conclusion, the sources of self-efficacy are also important elements in the case of self-efficacy in research. Only vicarious experience was not found to be related to research self-efficacy in this study, but it was attributed to the educational level, the curriculum design of the program, the views that professors in the program hold, and the amount of research they conduct. The theory, along with some authors, suggests that the four sources increase or reduce this construct. One figure that provides and moderates the effects of the sources in any educational program is the professor. They can act as sources of vicarious experience and verbal persuasion, and lessen the effects of negative emotions. For that reason, professors in the EL program must be aware of their influence over students' research self-efficacy. Special attention should be paid to the fact that not all of them are involved in high academic research and that their role as models would not be equal to the role of professors in doctoral programs.

The relation among the sources of self-efficacy

The third research question was: How do research self-efficacy sources relate to each other in EL students from UQRoo? The strongest correlation was between mastery experience and verbal persuasion. This should indicate that the more research experiences students have, the more verbal persuasion they receive or vice versa. This relation could be explained by the feedback that they receive from their professors. It could be implied that the professors in charge of the research courses make comments about the research projects that students conduct. However, this finding has been rejected by other results. Firstly, verbal persuasion was the least experienced source among these students and secondly, students have commented that they do not receive feedback at the end of the courses (Picaso, 2014).

One point in favor of this correlation is that students possibly obtain feedback, but not from the professors in charge of the research courses; they probably referred to their thesis supervisors or research protocol supervisors, in the case of students who do not write theses. Students responded in the sources of self-efficacy section that they have been encouraged and

praised very few times but it was not specified whether professors or supervisors provided this scarce feedback. In addition, evidence that refutes this correlation comes from a qualitative study (Picaso, 2014) that cannot capture all students' experiences and points of view. Since it was not possible to find other studies that correlate the sources of self-efficacy, results cannot be further compared. More research on this issue should be conducted.

Mastery experience also correlated to vicarious experience. There are different ways to interpret these results. One way of interpreting them is that the more research tasks and experiences EL undergraduate students have, the better models they become for their classmates. Other interpretation is that the more models they have in the program (classmates or professors), the more they get involved in the writing of research projects. Results from the sources of self-efficacy section support this correlation because the values obtained by these two sources are relatively similar.

What should be emphasized in this relation is the figure who acts as a model. Students responded that some of their professors have been models when it comes to research, but it has also been remarked that some professors in the EL program cannot serve as research models because they neither conduct research nor consider research important for their profession; therefore, they cannot share this activity with their students (Reyes and Rueda de León, in press). Students also mentioned that their classmates' performance pushes them to conduct research and that some speakers' research projects have been inspiring. One implication of these findings is that people in charge of the EL program can employ strategies to promote vicarious experience and consequently to increase mastery experiences and research self-efficacy. They can organize more events in which students are exposed to research models like the conferences from the *Foro de Estudios en Lenguas Internacional* and continue with the policies that offer better research training to the professors (Reyes & Hernández, 2013) so they become better models.

There was also a significant correlation between vicarious experience and verbal persuasion. In general, the correlation among these three sources (mastery experience, vicarious experience and verbal persuasion) should imply that by fostering any of them, a growth in the other two sources can be expected so there are many strategies that can be implemented in the EL program to increase research self-efficacy. More frequent feedback should contribute to a growth in mastery and vicarious experience. Similarly, better prepared professors for the conduction of research should inspire students to undertake more research tasks and in the end to raise their

sense of research self-efficacy. Nevertheless, since vicarious experience was found to be the most encountered source of self-efficacy in the EL program and verbal persuasion was the least experienced, it cannot be asserted that feedback and inspiration positively affect each other. Again, more literature on the topic is needed to compare these previous findings.

Finally, physiological and affective states only correlated significantly to vicarious experience. As this relation is positive, it could mean that the more stress, depression and/or nervousness students experience, the more they compare to a model. Perhaps, this relation indicates that if students experience emotions like apprehension, they rely on a model's strategies to cope with the tasks that cause such apprehension. It could also mean that the comparison to a model triggers physiological and affective states such as the stress caused by the pressure to be like their research models. This emotion, however, is not always negative, for example, when stress helps students to concentrate on their goals. Although all these scenarios may be possible, it could have also been logical if this correlation had been negative, meaning that their models help to diminish negative emotions by demonstrating that conducting research is feasible instead of an unattainable goal.

Physiological and affective states did not correlate to mastery experience and verbal persuasion. At least, it would have been expected that the elaboration of research tasks provokes stress and depression as it has occurred when EL students undertake graduate studies (Reyes & Gutiérrez, 2015). Students in this sample experienced negative emotions but not in high levels. Probably, they attach less importance to research tasks than to other academic tasks. Thus, the stress caused by research tasks is not as considerable as the stress that normally accompanies college life (Bandura, 1997). The results from all these correlations, however, cannot be compared to more previous research or the theory. The relation of the sources of self-efficacy within a research related program should continue to be investigated.

Group differences

Our hypotheses that sources of self-efficacy are predictors of research self-efficacy and that mastery experiences are better predictors have already been confirmed and discussed. The last hypothesis addressed the difference in students' research self-efficacy according to their year

in the program. A Kruskal-Wallis non parametric test indicated that there were not differences across the semesters in research self-efficacy. This means that research self-efficacy does not change across the semesters even though students from the 10th semester have more relevant experiences like the elaboration of a thesis and first-year students do not.

It would be expected that students' sense of self-efficacy increases after this experience but that was not the case. Another possibility was that 6th semester students' research self-efficacy varies because they probably do not have research practice for two years but, again, this was not found. It appears that the two research courses and the possible projects they write during other courses do not contribute to make a change in their sense of research self-efficacy. This supports the previous finding that research training in the EL program is insufficient and that during the Research Seminar course students are only guided to obtain a bachelor's degree (Picaso, 2014) and not to accomplish actual learning about research.

A change in students' research self-efficacy has been found in higher levels of education. Education graduate students commented that they felt more confident to carry out research tasks after presentations in colloquiums, three research seminar courses and a greater emphasis on research during a two-year master's program (Reyes & Gutiérrez, 2015). Doctoral students also increased their sense of research self-efficacy across the semesters and this variable was also a predictor of research self-efficacy (Bieschke, Bishop & García, 1996). These students, however, belonged to the humanities, biological, social and physical sciences.

Different results were surely obtained in the two previous studies because their participants were graduate and doctoral students; and in their case, the conduction of research was more pronounced across the semesters. Understandably, an increase in research self-efficacy is normal in higher levels of study because there is a greater emphasis on the research training, whereas the formation of researchers is not the primary goal of the undergraduate level (Aldana & Joya, 2011). Although there were not changes in research self-efficacy across the semesters, the Kruskal-Wallis test indicated that there were differences in three sources of self-efficacy: mastery experience, vicarious experience and physiological and affective states.

A change in mastery experience could mean that the research tasks that students carry out in each semester vary. It would be expected that the research projects from Research Methodology in the first semesters do not equal to write a thesis or a research protocol in the last semester. A variation in their sources of mastery experience could also be caused by the fact that

there is not a research course in the 6th semester. This source probably decreases in the midst of their undergraduate studies and increases at the end when they enroll in the Research Seminar course. Since this source is the most influential to build self-efficacy, people in charge of the program should ensure that research projects are conducted in the courses proximate to the 6th semester as it sometimes occurs (Picaso, 2014; Reyes and Rueda de León, in press).

There were also differences in vicarious experience across the semesters. A change in this source may have been caused by the fact that Research Methodology professors do not belong to the EL field whereas professors in charge of the Research Seminar course do. Similarity to one's model plays an important role in vicarious experience (Bandura, 1997). Probably, first-year students did not see their professors as good models because they belonged to other educational backgrounds. Contrarily, Research Seminar professors who teach or once taught English could be more suitable models due to their similar background. In addition, this positive influence might vary according to the importance that these professors attach to the inclusion of research in their professional career.

Finally, there were differences in physiological and affective states across semesters. What participants responded is that they have experienced stress and nervousness but at a low level. This difference may be caused by the fact that college education gets more complex as they advance through the semesters and not exactly because of the research tasks they carry out. On the whole, there are no studies to compare or support the results regarding the differences in the sources of self-efficacy across the semesters. This last situation should be further investigated.

Other group differences were gender and age. Although they were not part of the hypotheses, these group differences were analyzed with our sample so as to compare them with the literature reviewed. Regarding age, a Kruskal-Wallis test demonstrated that there were not significant differences with the EL students. Other authors that did not find differences are Lambie and Vaccaro (2011) and Deemer (2010) but they included samples of doctoral students. Nevertheless, age differences were found by Rezaei and Zamani-Miandashti (2013). In their study, older students were more confident in their in their ability to conduct research than younger ones.

These authors also found that doctoral students possess a higher sense of research self-efficacy than master's students. At the same time, Bierer, Prayson and Dannefer (2015) found that master's students possess a higher sense of research self-efficacy than undergraduate

students. Therefore, it seems that the higher the academic level an individual has, the higher the sense of research self-efficacy. Nonetheless, in their studies the same phenomenon did not occur with the semesters across a program and with age. After all, only one study supports the notion that seniority influences research self-efficacy (Bieschke, Bishop & García, 1996).

Regarding gender, a t-test analysis demonstrated that there is a statistically significant difference between male and females' research self-efficacy ($p = .046$). Some studies demonstrate that there are gender differences in favor of males. Deemer (2010) found that female students possessed lower research self-efficacy and Wright and Holttum (2012) found that masculinity was related to greater research self-efficacy. However, there are more authors that did not find gender differences (Bierer, Prayson, & Dannefer, 2015; Bieschke, Bishop & García, 1996; Brown, Lent, & Ryan, 1996; Rezaei & Zamani-Miandashti, 2013) and their samples included undergraduate, graduate and doctoral students. In the specific case of the undergraduate students, women's research self-efficacy was equal to that of their male counterparts and it remained at the same level as men at graduation (Bierer, Prayson, & Dannefer, 2015).

To sum up, additional group differences other than gender were not found. However, there are more studies that have not confirmed a difference in research self-efficacy according to this variable. Since gender has been studied in all levels of tertiary education, including college, their results can be compared to those obtained with the EL students. The case of age and seniority is different. Those previous studies included samples of doctoral students so an evaluation in the undergraduate level invites further research.

In conclusion, this evaluation of the EL students have showed that there is a disparity between their beliefs of research self-efficacy and their context. It appears that they overestimate their capacities because, as undergraduate students with scarce research experiences, the majority responded to be averagely confident and above. If this is the case and their actual level of research self-efficacy is low, then they might not possess a sufficient amount of training and experience to accomplish the objectives of the EL program–that its students will be able to conduct research to improve their teaching experience (Licenciatura en Lengua Inglesa, 1995). Moreover, they would not be able to face their research projects and theses if they do not possess the resilience and sense of purpose that research requires (Bandura, 1997).

This analysis of the EL students is important to improve the conduction of research and to increase the benefits that students obtain from it. As some authors have mentioned, measuring

research self-efficacy has been found convenient to detect graduate and postgraduate students' weaknesses and difficulties in research and to suggest changes in the programs to promote research learning (Bieschke 2005; Forester, Kahn & Hesson-McInnis, 2004). This analysis serves as evidence that confirms and adds to the previously documented problems in the EL program. Some suggestions were proposed to overcome those difficulties like the continuity of the research policies that prepare professors of the program; the increase of research projects that are conducted in the courses close to the midst of the program; and the display of attributes like empathy and flexibility, which can help students to relieve stress and other emotions that complicate research tasks.

CHAPTER VI: CONCLUSIONS

This chapter begins with a restatement of the aims of the study and the key features of the methodology. Then, it presents a summary of the key findings of the research, which includes both an evaluation of the study's contributions and recommendations for further research. The chapter concludes with a discussion of the limitations and delimitations of the study.

Summary

The primary objective of this study was to measure research self-efficacy in the English language students from the University of Quintana Roo. Additional objectives were to investigate the relationship between research self-efficacy and the four sources of self-efficacy and the relation among these four sources. This study also aimed to confirm the hypotheses that there were differences in students' research self-efficacy according to their year in the program, and that the sources of self-efficacy were predictors of research self-efficacy.

Based on previous scales and a thorough analysis of the self-efficacy theory, a new instrument was developed: the Research Self-Efficacy Scale for English Language Students. This scale was administered to 101 students from the second, sixth and tenth semesters of the program at the time of the administration in the spring of 2015. Once that the data were collected, the analysis was performed using the 20th version of the SPSS® computer software.

The study results revealed that students possess a moderately high sense of research self-efficacy, but this finding was incompatible with the educational level and the curriculum design of the program. It was argued that the program does not provide a sufficient amount of research training and experiences, and therefore, their responses could be caused by an overestimation of their capacities. Evidence from a previous study shows a disparity between students' views about research. While some students considered that writing a thesis was difficult and time-consuming, others commented that they felt prepared to carry out a good research project after they finished

(Picaso, 2014). A more comprehensive analysis was recommended to investigate what type of research projects they write and how rigorous they are.

The importance of an adequate research training lies in the development of a strong sense of research self-efficacy, that can provide students with the resilience and sense of purpose to undertake research (Bandura, 1997). Additionally, undergraduate research offers many benefits to the students like the development of problem solving skills (Nicholson, 2011), independent learning (Kinkead 2003; Spronken-Smith & Walker, 2010) and critical thinking (Levy & Petrulis, 2012), and it specifically helps pre-service teachers to acquire the necessary skills to identify, investigate, and overcome the teaching challenges they may face in the future (Cabaroglu, 2014).

The results from the present study have confirmed that mastery experience is the most influential source of self-efficacy (Bandura, 1997; Pasupathy & Siwatu, 2013; Zimmerman, 2000). Therefore, it was suggested that people in charge of the EL bachelor degree program should implement more research experiences in the curriculum in order to increase research self-efficacy and have access to the aforementioned benefits. With regard to the other sources, only vicarious experience was not found to be related to research self-efficacy in this study, but it was attributed to the educational level, the curriculum design of the program, and the little research conducted by most professors in the program. The theory, along with some authors (Kahn, 2000; Pasupathy & Siwatu, 2013; Rezaei & Zamani-Miandashti, 2013; Zimmerman, 2000), suggests that the four sources increase or reduce this construct.

It was discussed that the professors of the program play a major role because they can practically provide vicarious experience, verbal persuasion and help to diminish negative physiological and affective states. However, their influence can be limited if they do not conduct research. For this reason, it was suggested that the policies that offer a better research training to the professors (Reyes & Hernández, 2013) should continue to be implemented so they become better models and encouragers.

This study has identified that three sources of self-efficacy relate to each other: mastery experience, vicarious experience, and verbal persuasion. The correlation among these three sources should imply that by fostering any of them, a growth in the other two sources can be expected. In consequence, people in charge of the EL program do not necessarily need to foster all sources. Instead, they can concentrate efforts on the promotion of one single source, which should increase the other two, and in the end will lead to an increase in research self-efficacy.

Nevertheless, a relation among sources was not proposed in the theory, and other studies concerning this issue could not be found. In addition, physiological and affective states did not correlate to the other sources in the way it would have been expected. Further research that would contribute to a fully understanding of the relation among these sources is warranted.

Data indicated that there are not differences across the semesters in research self-efficacy. It was expected that some changes occurred due to the distribution of the research courses in the program. The fact that there is not a progression in students' research self-efficacy supported the notion that students cannot possess moderately high levels of confidence to carry out research tasks because there is no evidence that they become more self-efficacious as they move to the next semesters. Due to the educational level of the subjects, our findings cannot be compared to those obtained in doctoral levels in which differences across the semesters have been confirmed. Further research incorporating these group differences in the undergraduate level would be of value.

It was also discovered that there are changes concerning the sources of self-efficacy and gender across the semesters. Mastery experience, vicarious experience and physiological and affective states were found to vary across the semesters, but this was inconsistent with evidence from previous studies and an analysis of the EL program. In addition, gender differences were not supported by previous studies. Finally, age differences were not confirmed. Gender and age differences and especially the sources of self-efficacy appear to be an area requiring further research.

This assessment of research self-efficacy and analysis of the program have detected and confirmed several areas of opportunity in the research training of the EL students from UQRoo. These shortcomings could not only hinder the conduction of research during their undergraduate studies, but also complicate and discourage its application in their professional practice. Due to the many benefits that they can obtain and the changes that the EL profession has experienced at the international level (Borg, 2006; Xu, 2013) and in our context (Bussieners, Núñez, & Rodríguez, 2010), the relationship between research self-efficacy and EL students deserved careful attention and will continue to require it in the near future.

Limitations

The most obvious limitation in this research was the nature of the subjects, i.e. undergraduate students from the English language field. These two characteristics reduced the number of studies with similarities in their samples. In fact, only one study analyzed the benefits of undergraduate research in EL students and none was found analyzing the research self-efficacy construct in students from this field of study. On the whole, the characteristics of our sample do not allow direct comparison to previous results. Nonetheless, the absence of an analysis of research self-efficacy in an EL program was a gap that this study aimed to fill.

This analysis of research self-efficacy in an EL undergraduate program, however, is just a small contribution to the body of research conducted in the EFL field. One of the recommendations for further research that was put forward in this study was the investigation of the rigor of the research tasks in this program. In addition, it was suggested to assess students' perceptions of research because the results of a previous qualitative study (Picaso, 2014) could not be generalized. These types of further research could be useful to compare our results by demonstrating if there is in fact an overestimation of capabilities, and in that case, to what extent this faulty self-knowledge differs from real efficacy. This could have been done with an assessment of real and perceived self-efficacy, but the omission of real efficacy was part of the delimitations of the present study.

This study was further limited by the implementation of a new instrument. Since one of the objectives was the inclusion of the sources of self-efficacy as variables in the assessment of research self-efficacy, the results might not be completely related to those of previous research that make use of the most commonly adopted research self-efficacy scales. Nevertheless, the novelty of the instrument helps to fill a gap that had been previously noted, and a different context needed a different approach. In addition, validity and reliability were carefully tested to support our results; the scale was submitted to a panel of judges, a pilot study was conducted, and factor analyses and a Cronbach's alpha were performed.

As for the recommendations for further research, it would be particularly important to expand the investigation of the sources of research self-efficacy in an undergraduate program; it could be helpful for the comparison of our results, especially because there were inconsistencies

between the assessment of the sources and the correlation among them. An assessment of the sources of research self-efficacy could not only be carried out in other EL programs but also in subsequent generations of the EL undergraduate program from UQRoo. A longitudinal study could provide evidence about the progression of students' levels of research self-efficacy.

One last limitation to this study was the response to the scale in both senses of the word: the interest and the replies. This scale was administered four weeks before the end of the semester. Teachers were sent e-mails asking for permission to administer it to their students. However, not all students from every classroom attended class on the day of the administration and some teachers forgot about the request. In consequence, a new administration had to be rearranged in some cases, and it may have caused uninterested students to skip classes. As an alternative, some students were sent e-mails but not everyone replied. A more enthusiastic participation could have increased the number of the sample. Concerning the replies to the test, there is a possibility that students obtained moderately high levels of research self-efficacy because, although responses were anonymous, they were concerned about presenting themselves favorably causing them to respond inaccurately.

Delimitations

This study was cross-sectional; in contrast to some of the literature reviewed, this study did not assess research self-efficacy across modules or semesters, which could contribute to a better understanding of the development of research self-efficacy in the students from this program. However, one of the objectives of measuring research self-efficacy in an educational program is that of detecting problems in the research learning and research environment. Assessing this construct at one point in time should have been enough to detect situations that can be improved. Additionally, it was not intended to analyze mediating processes (cognition, motivation, affection and selectiveness) even though it is known that they affect self-efficacy. And finally, the contrast between real and perceived self-efficacy was not taken into consideration even though it could provide interesting results if compared. It was expected that the delimitation of the number of variables would help to focus on some issues and invest more effort in their analysis.

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APPENDIX

Research Self-Efficacy Scale for English Language Students

Esta escala tiene el objetivo de medir los niveles de autoeficacia en la investigación de los estudiantes y su relación con las fuentes de autoeficacia. Le solicitamos su cooperación respondiendo a los ítems que aparecen a continuación. Por favor, no deje preguntas sin contestar, no existen respuestas falsas o verdaderas, correctas o incorrectas. No es necesario que escriba su nombre.

Para cada enunciado encierre en un círculo en la columna de la derecha la respuesta que mejor refleje su autopercepción sobre su capacidad para realizar las siguientes actividades. **1 = Incapaz 2 = Poco capaz 3 = Capacidad promedio 4 = Capaz 5 = Muy capaz**					
1. Determinar las secciones que debe llevar un trabajo de investigación.	1	2	3	4	5
2. Realizar la recolección de datos para mi trabajo de investigación.	1	2	3	4	5
3. Redactar el informe final de mi trabajo de investigación.	1	2	3	4	5
4. Discutir los resultados obtenidos con base en la revisión de la literatura.	1	2	3	4	5
5. Respetar las normas éticas que implica la investigación.	1	2	3	4	5
6. Usar programas de cómputo para realizar el análisis de datos.	1	2	3	4	5
7. Adaptar un instrumento previamente diseñado para mi trabajo de investigación.	1	2	3	4	5
8. Presentar oralmente los resultados de mi trabajo de investigación.	1	2	3	4	5
9. Elaborar un trabajo de investigación.	1	2	3	4	5
10. Escoger un diseño de investigación apropiado.	1	2	3	4	5
11. Utilizar el lenguaje académico (tipos de palabras y expresiones, registro alto de lengua) propio de la investigación.	1	2	3	4	5
12. Definir el tema de mi trabajo de investigación.	1	2	3	4	5
13. Formular preguntas de investigación claras o hipótesis comprobables.	1	2	3	4	5
14. Elegir la estrategia de análisis de datos más apropiada para mi trabajo de investigación.	1	2	3	4	5
15. Discutir los resultados obtenidos con base en el marco teórico.	1	2	3	4	5
16. Reconocer las limitaciones de mi trabajo de investigación.	1	2	3	4	5
17. Identificar las implicaciones que los resultados de mi investigación tienen para futuros estudios.	1	2	3	4	5
18. Escribir una revisión de la literatura balanceada, crítica y completa sobre el tema de mi trabajo de investigación.	1	2	3	4	5
19. Determinar el tipo de muestra más adecuada para mi trabajo de investigación.	1	2	3	4	5
20. Crear un instrumento propio para mi trabajo de investigación.	1	2	3	4	5
Para cada enunciado encierre en un círculo en la columna de la derecha la respuesta que mejor refleje su opinión. **1 = Nunca 2 = Algunas veces 3 = No me puedo decidir 4 = Casi siempre 5 = Siempre**					
21. Los trabajos de investigación que he hecho me han estresado.	1	2	3	4	5
22. Mi cuerpo se pone tenso cuando tengo que realizar un trabajo de investigación.	1	2	3	4	5

23. Al ver las estrategias de mis compañeros para realizar investigación trato de adoptarlas cuando realizo mis propios trabajos de investigación.	1	2	3	4	5
24. He visto ponentes/conferencistas cuyos trabajos de investigación me parecen inspiradores.	1	2	3	4	5
25. El ver que algún compañero supere adversidades durante el desarrollo de un trabajo de investigación me anima a intentarlo a pesar de estas dificultades.	1	2	3	4	5
26. El solo pensar en realizar un trabajo de investigación me deprime.	1	2	3	4	5
27. Me ha ido bien incluso en los trabajos de investigación más difíciles.	1	2	3	4	5
28. Durante la carrera he realizado trabajos de investigación como parte de mis materias.	1	2	3	4	5
29. Los trabajos de investigación me han angustiado tanto hasta el punto de hacerme llorar.	1	2	3	4	5
30. He llevado a cabo un trabajo de investigación porque alguien me animó aunque al principio no estaba seguro de poder hacerlo.	1	2	3	4	5
Para cada enunciado encierre en un círculo en la columna de la derecha la respuesta que mejor refleje su opinión. **1 = Nunca 2 = Algunas veces 3 = No me puedo decidir 4 = Casi siempre 5 = Siempre**					
31. El solo pensar en realizar un trabajo de investigación me hace sentir nervios.	1	2	3	4	5
32. He tenido éxito en las materias de investigación que he cursado.	1	2	3	4	5
33. Las calificaciones que obtengo en mis trabajos de investigación son indicadores de que tan bueno soy.	1	2	3	4	5
34. El estrés que me causan los trabajos de investigación es mayor que el que me causa el resto de las actividades escolares.	1	2	3	4	5
35. A mis compañeros les gusta trabajar conmigo cuando se trata de una tarea relacionada con la investigación porque piensan que soy bueno en eso.	1	2	3	4	5
36. Mis profesores me han dicho que soy bueno para realizar tareas de investigación.	1	2	3	4	5
37. He descubierto que tengo habilidades que no conocía para realizar investigación gracias al aliento de alguien más.	1	2	3	4	5
38. Durante la carrera he tenido profesores que para mí son un modelo a seguir en cuanto a la investigación.	1	2	3	4	5
39. La experiencia positiva en investigación de amigos o compañeros me ha motivado a investigar.	1	2	3	4	5
40. Durante la carrera he presentado los resultados de mis trabajos de investigación en foros o congresos.	1	2	3	4	5
41. Durante la carrera he participado como asistente de investigación de los profesores investigadores de la institución.	1	2	3	4	5
42. Me he identificado con alguno de mis compañeros o profesores que realizan investigación.	1	2	3	4	5
43. He tenido buenas calificaciones en mis trabajos de investigación.	1	2	3	4	5
44. He recibido halagos debido a mis habilidades en la investigación.	1	2	3	4	5

Sección II. Datos demográficos

Mi edad se ubica en los rangos:

a) 18-20 b) 21-23 c) 24-26 d) 27-29 e) 30-32 f) 33-35 g) 36-38 h) 39-41 i) 42 o más

Mi género es: a) masculino b) femenino

Subraye el semestre que cursa: a) segundo b) sexto c) décimo

Subraye la materia o materias que ha tomado (de acuerdo con el programa de licenciatura en Lengua Inglesa)

Metodología de la Investigación Seminario de Titulación

¿Alguna vez ha tomado alguna materia de otra división relacionada con la investigación? De ser así, ¿Cuál o cuáles?

_____

¿Ha presentado ponencias producto de investigación en congresos? Si su respuesta es positiva diga cuáles:

_____

¡Gracias por su colaboración!