

COLECCIÓN  
INNOVACIONES  
PEDAGÓGICAS

UNIVERSIDAD CASA GRANDE

*The Use of Portfolios to  
Introduce Constructivist  
Teaching Practices in Primary  
English as a Foreign Language  
Classrooms*

Nº 03

AUTOR

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GUÍA DE TESIS

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Trabajo Final para la obtención del Título de  
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formación de profesores de inglés

Guayaquil, diciembre 2009

The purpose of this action research was to describe the effect of a five month professional development innovation using portfolios to learn about teaching with constructivist principles. Participants were ten primary English teachers from a Catholic girls' school in Guayaquil, Ecuador. The portfolios represented cycles of action, reflection and goal setting.

Both quantitative and qualitative data were collected and analyzed to report change in the use of constructivist practices in the classroom and to determine how the portfolio process contributed to that learning. Greer's Constructivist Teaching Inventory (CTI) was used to analyze field notes, videos and photographs of classroom observations. Portfolio documents, ongoing field notes and transcripts of audio recordings of portfolio presentations were analyzed to determine what was learned and the quality of the program. A structured interview at the end of the program was used to know the participants' perspective on learning with portfolios.

Results indicate a moderate effect size of 0.55 or a 22 percentile gain in the overall CTI with the greatest change taking place in the sub-scale of Curriculum and Assessment. Qualitative results confirm that self assessment using rubrics transferred into the classroom as did connecting activities to "big ideas." Implications are discussed in terms of what was learned and how learning took place as well as recommendations for future professional development and research.

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**PRESI**

**H**ace ya una década, al poco tiempo de haber inaugurado su Facultad de Ecología Humana, las autoridades de la Universidad Casa Grande consideraron imperativo ofrecer a la comunidad educativa de Guayaquil y su región, la oportunidad de actualizar conocimientos en el ámbito de la Educación Superior, con énfasis en sus visiones contemporáneas, sus métodos de investigación y las tendencias de su devenir.

El esfuerzo cumplido por quienes decidieron tomar el desafío culminó con la elaboración de muy serios y profesionales trabajos que vale la pena compartir y hoy se presentan a la consideración de la comunidad educativa nacional, en una primera entrega que acumula algunos de ellos.

En un entorno globalizado, basado en la comunicación y el conocimiento, donde la variabilidad tecnológica, política y social es una constante, el rol de las instituciones de educación superior es estratégico para mantener el desarrollo sostenible de los países y el de sus profesionales.

Es imperativo que estos últimos posean las competencias necesarias para insertarse exitosamente en un contexto laboral determinado, y también la suficiente flexibilidad y capacidad de adaptación a varios sistemas diferentes y diversos por su cultura, idioma, condiciones geográficas y otros aspectos.

Lograrlo requiere contar con docentes de un excelente nivel académico, experticia en el área de especialización que enseñan y capacidad de creación de entornos reales o simulados que faciliten experiencias significativas y pertinentes.

# ENTACCIÓN

A esos requerimientos respondió exitosamente la Maestría en Educación Superior, que formó docentes innovadores, con destrezas en estrategias de aprendizaje activo e investigación, orientados a mejorar la calidad de la docencia universitaria.

La Maestría en Educación Superior fue aprobada por el CONESUP mediante resolución RCP.So4.NºIII.04. e inició su primera promoción en el año 2004. El requisito para obtener el título de Magíster fue la aprobación de todas las materias y un trabajo de tesis, equivalente a 60 créditos.

Por lo señalado, la Universidad Casa Grande se complace en presentar la Colección “Innovaciones Pedagógicas”, obra que aporta a la renovación de las prácticas educativas habituales, investigándolas, debatiéndolas honestamente y proponiendo enfoques y didácticas de vanguardia para abordar, de manera pertinente, el proceso de enseñanza-aprendizaje. El presente es un esfuerzo por compartir y divulgar reflexiones sobre experiencias docentes que dan cuenta de la ruptura necesaria y urgente que debe hacerse en relación a las concepciones tradicionales de la educación.

Tener como objeto de estudio los ambientes de aprendizaje en que éste ocurre, implica atravesar una experiencia de transformación docente, que solo puede ser comprendida y compartida por los propios sujetos que enseñan y aprenden; es decir, a partir de la reflexión en acción, después de la acción, como bien señala Schön. Eso han logrado los autores de esta Colección, con temas como el uso del portafolio para introducir prácticas constructivistas, la aplicación de desempeños auténticos de comprensión, el juego de roles y análisis de Casos de aprendizaje, el aprendizaje basado en problemas, la aplicación del método

Casos (simulación pedagógica), el uso de métodos mixtos para el aprendizaje del inglés, por citar algunos.

La UCG decidió iniciar la publicación de estas tesis como una colección abierta a nacientes contribuciones en el campo de la educación superior, cuando logró sumar suficientes títulos para hacerla consistente. A su vez, por motivos personales y profesionales de los Tesistas o por compromiso con la confidencialidad de algunos temas explorados, no se publican todos los trabajos de titulación.

Marcia Gilbert de Babra  
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*The illiterate of the twenty-first century will not be those who cannot read and write, but those who cannot learn, unlearn, and relearn.*

*- Alvin Toffler*

## I. INTRODUCTION

Today educators are challenged by the need to prepare current and future generations for a future that is hard to imagine. One thing is certain, globalization and the rapid expansion of the knowledge base due to technology have made the transmission model of education obsolete. Today's students need to become lifelong learners who know how to learn autonomously (Wagner, et al., 2006). Though reform is underway, change in classrooms will be superficial unless there is extensive professional development of in-service teachers (Kohonen, 2001). Today, teachers in classrooms are viewed as change agents and professional development should be designed to help teachers learn from their practice (Darling-Hammond & Baratz-Snowden, 2005). The emerging concept of teacher professionalism involves learner autonomy and teachers need to commit to their own professional growth as well as to the learning of others. Teachers can learn by observing and listening to students and by analyzing their work thoughtfully (Rogers, 2002). They can learn on the job by studying, reflecting, and sharing their experiences with other teachers. By learning about how their students learn, they can gain insights into their own ways of learning and they can connect their learning to their teaching practice and support it by ongoing theory building (Freeman & Johnson, , 1998; Johnson, 2006).

The question today is how to help teachers learn from their practice. Teacher education has changed over the last 40 years from conceiving the role of teachers as transmitters of information to today's view of teachers as facilitators of knowledge construction. The work of Vygotsky has led to wide acceptance of a socio-cultural theory of learning which is now supported by a large body of research into what is called teacher cognition or teachers' ways of learning and understanding their work throughout their lives in a variety of social contexts (Johnson, 2006). Though research has uncovered the complexities of teacher learning in social contexts, ESL/EFL (English as a Second or Foreign Language) teacher education has continued to focus on the nature of language and Second Language Acquisition (SLA) theories.

In Ecuador, the educational context is similar to many places around the world, including the United States (Johnson, 2006), where educational authorities are working hard to incorporate social constructivist practices in schools. The 1992 Ecuadorian Curriculum Reform based on social constructivist practices still represents a challenge for teachers and schools. That same year Ecuador initiated the CRADLE Project (Curriculum Reform Aimed at the Development of Learning English in Ecuador) with the support of the British Council. The CRADLE project provides professional development for public school teachers aimed at teaching English communicatively since today communication is emphasized rather than the linguistic analysis of the past (Brown, 2001; Richards, 2001). In 2006 the reform efforts of the Ministry of Education and the CRADLE Project received an important boost when the Plan Decenal 2006-2015 was passed. One of the eight policies focuses on ongoing teacher development, which is indispensable for educational reform to take place.

### *Challenges for Teacher Education Today*

**Challenge #1** Connecting theory to practice via teacher education - According to Johnson (2006) the gap between theories of how teachers learn and what teachers are taught presents several challenges. First, there is the problem of Theory/Practice versus Praxis. On one side of the debate are those who believe that EFL teachers need to first know about language and SLA theories and then apply them in classrooms and on the other side of the debate there are those who argue in favor of praxis, which is the application of theory in practice. The praxis argument states that practice can be transformed by theoretical knowledge. They believe that praxis captures best how theory and practice can interact and change during the process of learning and teaching. If we take both arguments into consideration, we see that pre-service teacher education needs to find ways to incorporate experience and in-service professional development needs to find ways to incorporate theory into practice.

A review of second language teacher education programs here in Ecuador in 2008 revealed a gap between the national English program focused on Communicative Language Teaching and teacher education programs emphasizing linguistics, grammar and phonetics. The CRADLE Project has the task of bridging the teacher education gap for public school teachers

so they can learn to teach English for communicative purposes. Another challenge in the Ecuadorian context is that the demand for English teachers in Ecuador has led private schools to prioritize knowledge of English over knowledge of pedagogy when hiring teachers. Thus the majority of English teachers working in public and private schools would benefit from a praxis view of professional development where experienced teachers transform their practice with theory.

**Challenge #2** Supporting Theory Building by Classroom Teachers - A second challenge according to Johnson (2006) is related not only to accepting practitioner knowledge as legitimate, but to providing opportunities for connecting experiential knowledge to theory. Practitioner knowledge is the kind of knowledge that emerges as a result of reflective practice or action research (Johnson, 2006). Teacher education needs to accept that there are multiple ways for teachers to learn and schools need to encourage and provide opportunities for teachers to carry out reflective practice and action research so what teachers know about their classrooms can be reflected on and improved in the light of current theory.

In Ecuador, professional development for in-service teachers consists mainly of workshops outside of a context of known institutional goals or reform. Without a common vision of change, workshop learning is rarely integrated into the classroom for the benefit of the students. Becoming a reflective practitioner or carrying out action research requires an acceptance of alternative ways of learning as well as ongoing support (Johnson, 2006; Moon, 2004; Kohonen, 2001).

**Challenge #3** Redrawing the boundaries of teacher education – For Johnson, a third challenge for teacher education comes with the need to redraw the boundaries of professional development if we accept the idea that teachers learn from their practice in socially situated contexts. Top-down models of professional development, which impose educational innovations without thinking about how they can be integrated into practice, need to give way to alternative methods that incorporate collaboration, learner autonomy and technology within institutional contexts. This means that professional development is an ongoing process that does not end when the university program or workshop is over. The big challenge for research is to systematically explore the impact of these alternative methods on teacher

and student learning.

**Challenge #4** Helping Teachers Adapt to Changing Contexts - The fourth challenge is related to recognizing that teacher education is situated in changing contexts. The uniformity of teacher education raises questions particularly for English teachers as English becomes a world language – a language of many cultures. This is especially pertinent in second language teacher education here in Ecuador where external or top-down methods are regularly considered as the best or only course of action. In our context English teachers are challenged not only by the need to teach differently than they were taught, but also to adapt international change to local contexts. The changing uses for English include the rapid changes in technology. Are Western methods the best and only methods? How can teacher education prepare teachers for different contexts as well as for changing contexts?

### *The Context of the Study*

The current support for educational reform in Ecuador provides an opportunity to work on the challenges posed by Johnson (2006). Teacher education is important and difficult (Darling-Hammond, 2006). How can teacher educators help teachers take advantage of the learning opportunities right in their own classrooms? How can professional development programs provide opportunities to collaborate with other teachers in their own schools? How can we help teachers become autonomous learners and help them connect theory to their classrooms as well as contribute by building practitioner theory of what works in Ecuador?

Some of the current alternatives for professional development include reflective teaching journals or learning logs, micro-teaching and portfolios. Teaching journals enable teachers to document and reflect on their practice and frequently the process of writing triggers insights into teaching (Richards & Ferrell, 2005). The journals might be shared with the facilitator or colleagues; however, personal experience using reflective writing with non-native English teachers indicates that some teachers feel uncomfortable writing in a foreign language. Micro-teaching involves planning micro-lessons for peers in order to receive feedback and reflect (Wallace, 1991). Micro-teaching is useful for connecting theory to practice in a university

setting because pre-service teachers have an opportunity to practice in a risk free environment. Perhaps one of the most promising alternatives for professional development programs within a school setting with non-native EFL teachers is a learning portfolio because it can be adapted to different learning needs and interests, it is accessible to every teacher and it is low cost. Not a product portfolio for showing best work, but a process portfolio for learning purposes – for connecting theory to practice. “Portfolios can provide opportunities for teachers to examine and analyze the process and outcomes of teaching and learning closely.” (Darling-Hammond & Baratz-Snowden, 2005, p. 125)

The portfolio is especially useful for English teachers since portfolios are starting to be used successfully to develop learner autonomy in the European Union via the European Language Portfolio (ELP). The ELP was piloted between 1998 and 2000 in 15 member countries and three non-governmental organizations (NGO'S) for the purpose of designing and evaluating ELP models and to explore the impact of the ELP on the quality of the learning and teaching process as well as on the learners and teachers. “A widely diverse group of 300,000 students and 1800 teachers participated” (Scharer, 2000, p. 7). According to Scharer the results of the study indicate that the ELP is a “valid pedagogical tool, but care needs to be taken in generalizing since variables have not been controlled and feedback relates to specific circumstances” (p. 6). Therefore, a learning portfolio is a promising alternative for professional development of in-service English teachers in Ecuador and if the effect is studied the results might contribute to a growing body of research into the effectiveness of alternative methods for supporting teacher learning in the classroom.

This study takes place in a private Catholic girls' school where the author has facilitated professional development aimed at incorporating learner-centered processes into the English classrooms over the last eight years. Even though there is an awareness of the need to teach English for communicative purposes and even though students sometimes sit together in groups in the classrooms, most classrooms are predominately traditional. This refers to text dominated, teacher centered classrooms where most of the week is spent studying and testing grammar and vocabulary. Even though teachers have received professional development focusing on the learning process, traditional practices persist. Teachers' guides introduce activities based on

the constructivist principles of connecting vocabulary to prior knowledge, using graphic organizers and developing student awareness of what they know and want to know, but the prior experiences of teachers in traditional classrooms still frame the way they teach. A different kind of support is needed to help teachers learn.

The current study began in August 2008 when ten primary English teachers at this school decided to use portfolios with students. In order to do this successfully, the teachers needed to understand the constructivist principles, such as learner autonomy, that a portfolio is based on. They agreed to wait until 2009 to introduce student portfolios and to focus professional development in 2008 on making their own portfolios.

The purpose of this action research was to describe the effect of the five-month portfolio based professional development program on the learning of constructivist principles. It was assumed that portfolios containing planning based on constructivist principles and samples of student work would facilitate self-assessment, reflection and goal setting necessary for connecting theory to practice. The portfolio is an authentic task that provides flexibility for goal setting and learner autonomy within a social constructivist framework. The study used both quantitative and qualitative methods to answer the following questions: (1) Did constructivist teaching practices in the classroom increase as a result of using portfolios?, and (2) How did the portfolio process contribute to learning to use constructivist principles?

Action research has certain limitations since the researcher is a participant in the process. In action research, the results cannot be generalized to a wider population; however, the results are useful to the institution where the study takes place and can be implemented immediately, which is not usually the case with controlled experimental research. Action research also has a problem of bias, so care has been taken to improve reliability in the use of the instruments and data analyzed. This kind of research is context sensitive and perhaps the best form of research to study how teachers learn in the classroom.

## II. LITERATURE REVIEW

Teacher education today is challenged by the need to facilitate as well as model the paradigm shift from traditional to constructivist ways of learning. Professional development facilitators are being called on to help teachers understand experience – to help them connect theory to practice; however, few programs have been successful (Freeman D. , 2002). Constructivism requires a shift from understanding learning as transmitting and accumulating knowledge to using knowledge, from knowing to doing. Though we have a better understanding of how people learn, facilitating change in the classroom is difficult and that becomes the focus of this study – to identify what works and what might help bring about lasting change.

### *What is constructivism?*

How is the constructivist view of learning different from the traditional, transmission view of learning and what would be the implications for teaching? Jennifer Moon (2004) contrasts the two using the following metaphors. She says that the traditional view is like building a wall and the constructivist view is like creating connections and networks. In the wall building metaphor, new knowledge is not transformed by the learner - it is accumulated. Whereas in the constructivist view of learning, new knowledge is transformed by the learner through an individual process of connecting new knowledge and experiences to previous knowledge in order to make sense of the real world.

The importance of prior knowledge, meaningful experiences and the role of others in learning. Moon's metaphors are based on the works of cognitive psychologists like Piaget, Ausubel and Vygotsky. An important contribution of Piaget relates to the way we learn to understand and adapt to the real world via the biological processes of assimilation and accommodation that take place within the cognitive structure (Piaget, 2001). Moon defines cognitive structure as "what is already known by the learner (1999, p. 137)". New understanding of the world is the result of an intellectual equilibrium between new knowledge and new experiences and what is already known and understood about the world. It is an individual process. Ausubel adds to Piaget's work by explaining that accommodation of new learning into the cognitive structure will take place

if the new material of learning is meaningful. For an idea to be meaningful, the learner must be predisposed to learn and have pertinent ideas already existing in the cognitive structure to connect new ideas to (Ausubel, 2002). To understand how Piaget and Ausubel explain the accommodation of new knowledge into the cognitive structure, EFL teachers of beginning level students would need to plan activities to discover what their students know about their first language (L1) before introducing the new language (L2). They should also be familiar with what experiences are meaningful to the students. For example, do the students already know the parts of speech? If so, then the EFL teacher can begin to connect new English vocabulary to understanding that the students already have about language. Also the new language will be used to communicate familiar topics that are already meaningful to the students. Learners of the new language are engaged when communication is meaningful and connected to real life (Brown, 2001). By using constructivist principles to review their teacher's manuals, planning and the resulting student work at the beginning of the portfolio process, the teacher can connect to prior knowledge and beliefs about learning with the idea of figuring out ways to facilitate learning better. A portfolio process would be meaningful since it is connected to their daily lives as teachers and could help them discover what they already know and understand about teaching with constructivist principles.

The work of Lev Vygotsky (1978) is especially useful for understanding the role of the teacher and others in learning to teach as well as in learning a new language. His emphasis on the role of the social environment in shaping new learning is key to teacher as well as student learning. The facilitating role of others in the classroom is emphasized: the teacher who provides meaningful input on a level just beyond what the students know and peers who provide opportunities to use the new language through pair work and group work. Vygotsky calls the ideal level of instruction the Zone of Proximal Development (ZPD) or the zone just beyond what the student can do on his own. Vygotsky also emphasizes that learning is mediated externally at first. Portfolios can mediate learning as teachers use them for connecting constructivist principles to teaching practice through planning. They can also serve as a starting point for interaction with the facilitator since they could help generate questions and offer multiple opportunities for useful interaction between the teacher and the teacher educator as well as with colleagues. Student portfolios could have the same benefits for becoming aware of progress in learning English and setting personal goals for learning.

*Experiential learning and the role of reflection.*

Experiential learning and the role of reflection in learning are also relevant aspects of constructivist thinking that are particularly important in learning to teach as well as in learning English. Dewey (1938) was one of the first to point out that all study should begin with ordinary life experiences and that the next step would be to understand those experiences in a more organized way through the application of subject matter knowledge. Students reflect on experience using disciplinary methods. Moon (1999) points out that David Kolb also emphasized the importance of experience and reflective observation on that experience before being able to conceptualize abstractly. Moon, describing Kolb's work, indicates that learning perpetuates itself through a cycle of experience, reflective observation and experimentation. These phases are incorporated into both teacher and student portfolios as teachers and students act and self assess using a framework of new knowledge and act again.

Reflection was first defined by John Dewey as "Active, persistent, and careful consideration of any belief or supposed form of knowledge in the light of the grounds that support it... (1910, p. 6)." But perhaps it is the work of Donald Schön that has most influenced the idea of reflection for professional development (Richards & Lockhart, 1996). Schön (1992), writing in the 1980's, observed that higher education would benefit from practices like those of the schools of Architecture and Medicine where students observed and worked carefully under the guidance of an experienced professional. He said that other disciplines would benefit by adding practical experiences in which students could interact with professionals in order to form a professional image, and then self assess using that image and develop strategies for becoming a productive member of a professional community. Learning would take place through a process of reflection in action and reflection on action. Though his ideas on reflection have been criticized for not being easily investigated, they have inspired considerable thought on the use of reflection in professional development and learning. Moon (2004), who is concerned with the use of reflection to improve learning, provides a definition of reflection that can be used for professional development. Her definition, based on ideas of Dewey, Schon and Kolb, states that: "Reflection is a form of mental processing...that we use to fulfill a purpose... It is applied to relatively complicated, ill-structured ideas for which there is not an obvious solution... (Moon, 2004, pp. 82-83)" She adds that "Reflective learning or reflective writing in an academic context...is likely to involve a stated

purpose with an outcome specified in terms of learning.” In this study, teachers will use constructivist principles (theory) to reflect in writing on their teaching practices and set goals. Portfolios produce reflective thinking as teachers use new knowledge to set goals to improve teaching.

### *What does learning look like?*

According to David Perkins (1998), learning should be thought of in terms of understanding. Understanding is characterized by flexible performances that are evidence of learning. The fact that understanding should be observable and flexible means that students will be able to use knowledge in a variety of tasks and contexts. Boix-Mancilla and Gardner (1998) expand on this idea by identifying four dimensions of understanding that can be understood on four levels. The four dimensions are knowledge, methods, purposes and genre. The levels of understanding for each dimension are naïve, beginning, apprentice and master. The naïve level is represented by intuitive knowledge. Students are unaware of the relationship between disciplinary knowledge and the real world. A beginning level performance is typical of a lot of school work. Students communicate new knowledge in a mechanical, perhaps memorized way. An apprentice level performance can be described as beginning to connect new knowledge to real life purposes, but with help. Finally a master level represents a level of flexible performance in a variety of contexts. Knowledge has been transformed. At this level students see knowledge as complex and interconnected.

Moon (1999) also determines incremental stages of learning and indicates how reflection can help students upgrade their level of understanding. She discusses how understanding can be represented on different levels in terms of what students can do. Table 1 applies Moon’s Stages of Learning to teachers learning to use constructivist principles. The five stages are divided into surface learning and deep learning. During the surface or superficial stages of learning, learning is not yet integrated into daily life, whereas, in the deep stages learning is well integrated and the teacher is actively connecting new knowledge to daily life through reflection. The stages are based on Piaget’s concepts of assimilation and accommodation and Vygotsky’s theory that learning is first mediated externally before being internalized. At Stage 3 learning is mediated externally and at Stage 4 learning is mediated internally.

Table 1 Moon's Incremental Stages of Learning Applied to Learning about Constructivism

Stage		Description	Representation of learning in this study
1. Noticing	Surface Learning	Teacher begins to notice or frame observations with new knowledge.	Memorized concepts. Teacher may begin to notice the use of constructivist discourse in teacher's guide.
2. Making Sense		Can classify, relate or organize new knowledge.	Teacher can classify assessment instruments as traditional or constructivist.
3. Making meaning	Deep Learning	Can connect new knowledge to prior knowledge. Ideas are meaningful because they are beginning to be connected to own experiences. Learning is mediated externally.	Can talk/write about own learning experiences using constructivist concepts. Beginning to integrate concepts to own life. The portfolio artifacts, readings, peers and facilitator mediate learning. May go to <a href="http://www.rubistar.com">www.rubistar.com</a> for guidance or use a rubric from the teacher's guide or text.
4. Working with meaning		Begins to intentionally use concepts to plan, implement and assess own teaching. Meaningful and reflective. Concepts have been assimilated into the cognitive structure. Mediation is internal.	Decides to use rubrics to give feedback and assess. Rubric has been adapted to objectives.
5. Transformative learning		Creative use of new understanding. Stage is meaningful, reflective and concepts have been transformed or adapted to new situations in a flexible manner.	Teacher can create own rubrics for assessment and use them in a variety of ways to benefit her students.

Moon states that good in-service development programs will work at Stage 3 Making Meaning and above. Reflection should be used to upgrade learning to a higher level of performance. Moon suggests that reflection is key to upgrading learning in the last three stages and that instruction should make use of reflection as soon as possible in in-service professional development programs. Portfolios offer opportunities for reflection from the beginning as teachers begin to use constructivist principles to think about teaching.

According to Boix-Mancilla and Gardner (1998); and Moon (1999) Perkins (1998); learning is represented by different stages of understanding that can be

observed. The highest level of understanding would be a flexible or creative performance in a variety of situations. Constructivist principles would be transformed or adapted to the needs of the classroom. However, change in teaching practice usually takes place along a continuum from a focus on self to a focus on learners as teachers gain confidence using new knowledge (Hatton & Smith, 1994; Richards J. C., 1998; Darling-Hammond & Baratz-Snowden, 2005). The use of portfolios as material for reflective learning will help the teacher connect constructivist principles to the classroom and make the transition from self to learner sooner. Though the Boix-Mancilla/Gardner dimensions of understanding help comprehend the different aspects of learning, Moon's Stages of Learning were used to design the study and measure progress since the stages explicitly articulate reflection and practice for the purpose of learning and are useful for an in-service professional development context.

### *Constructivist principles in the classroom*

Though most educators have accepted that learning is a process of meaning construction, learning to design and implement constructivist learning environments has proven to be a difficult and slow process in general. Learning to facilitate the implementation of social constructivist learning environments is the problem that this action research addresses. According to Perkins (1998), learning will take place (1) if there is a reflective commitment to learning, (2) if new knowledge is connected to prior knowledge, (3) if teachers carry out a series of tasks of increasing difficulty and (4) occasional conflicts occur between old and new knowledge.

According to Claudia Lucia Ordoñez (2006), a Colombian teacher educator, a pedagogy based on constructivist principles of learning should consider the following for the design of learning environments:

*“(1) Learning is an individual process. (Piaget)*

*(2) We learn through experiences or tasks that demonstrate what we understand in an observable way. (Piaget and Perkins)*

*(3) The process is different for each individual due to prior knowledge and experiences. (Piaget and Ausubel)*

*(4) Learning occurs when we interact with others using our current level of understanding (Vygotsky)*

*(5) Learning happens best when based on real life, authentic tasks... (pp. 16-17)"*

Savery and Duffy (2001) indicate that the following instructional principles can be derived from constructivism:

*"...(1) Anchor all learning activities to a larger task or problem...(2) Support the learner in developing ownership for the overall problem or task...(3) Design an authentic task...(4) Design the task and the learning environment to reflect the complexity of the environment they should be able to function in at the end of learning...(5) Give the ownership of the process used to develop a solution...(6) Design the learning environment to support and challenge the learner's thinking...(7) Encourage testing ideas against alternative views and alternative contexts...(8) Provide opportunity for and support reflection on both the content learned and the learning process. (pp. 3-6)"*

The instructional principles recommended by Perkins, Ordoñez and Savery and Duffy clearly overlap and many were explicitly used in the in-service professional development program of this study. The portfolio process itself is an authentic task for which the teachers have ownership from the beginning because they decided to carry it out. The implementation is in the complex environment of the classroom that is definitely challenging and is connected to the problem of motivating student interaction in the English classroom.

One debate over the pedagogy of constructivism relates to whether constructivist learning should be guided or unguided. According to Kirschner et al. (2006), some advocates of constructivism such as Jerome Bruner believe that people learn best through a process of discovery rather than being presented with essential information on concepts or procedures. On the other hand, Kirschner and colleagues believe that all new learning should be guided. Examples of guidance for new learning could be models and procedures for tasks. Their justification is based on numerous studies that prove that minimal guidance in solving new, authentic problems causes an overload on what he calls the working or short term memory and that learning of new concepts is not as efficient as when those concepts can be connected to prior knowledge within the cognitive structure. They claim that the aim of all instruction is to change long-term memory. They call working memory the place where conscious processes occur. The working memory has limited capacity. However, when the working memory can interact with the long term memory, the limitations disappear. Thus when dealing with new learning the learning should be guided. That means when

introducing teachers to constructivist principles, the learning should be of a guided nature rather than discovery even though the tasks may be authentic. The work of Vygotsky also emphasizes the role of the teacher to discover what the student knows and to guide the student to the next level of understanding (1978). Learning constructivist principles would represent new learning for the teachers in this study. Any knowledge of the principles would be tacit since previous professional development has modeled, but not explicitly focused on constructivism or used constructivist discourse. The portfolio would certainly facilitate a process of working with new concepts, if the process is supported by the facilitator, colleagues and activities that are structured but increasingly challenging. As experience and reflection accommodate new learning into the long term memory, teachers can become more autonomous and the guidance can be withdrawn little by little. Learning will have become internalized and require only limited external mediation.

### *How do teachers learn?*

*As members of professional communities.* Today's rapidly changing world has made traditional, transmission models of professional development obsolete and teacher education programs are exploring new pedagogies. It is generally accepted today that all institutions, whether business or academic, must build in responses to change. Schools need to be institutions of learning as well as teaching. Professional communities of practice are one way schools can do that. These communities of practice are usually based on the social constructivist views of professional development where participation supports knowledge construction (Boix-Mancilla & Gardner, 1998). The school where this study takes place has many of Richard DuFour and Robert Eaker's (1998) characteristics of a professional learning community. There is a shared mission, vision and values that permeate the institution. There is a spirit of collaboration and team work and a "persistent discomfort" with the status quo that leads to dedication to continuous improvement. Therefore, this study takes place within a context focused on change and will take advantage of the existing collaborative environment and try to make it sustainable.

In a social constructivist model, learning is understood to be socially mediated externally before being internalized and transformed for specific contexts. A social constructivist approach is seen as being more suited to classroom learning than more individualistic constructivist approaches. These culturally situated,

learner centered approaches are referred to as bottom-up approaches as opposed to top-down, transmission approaches. Little by little professional development programs are beginning to use self directed, collaborative, inquiry-based practices that are relevant to the teachers' classrooms here in Ecuador as well as around the world (Burns, 1999; Richards & Ferrell, 2005). The teacher's role is to help learners use knowledge and develop skills for life-long learning and teacher education programs should model this (Freeman & Johnson, 1998; Freeman D. , 1996; Johnson, 2006).

Teachers' professional learning cannot be understood apart from socio-cultural environments and research is currently being done on how these communities affect learning. Social activities and the language used to regulate them help teachers become members of professional communities. Language is both social and professional. Donald Freeman (1996) studied how in-service teachers-in-training move from using new professional discourse – renaming their experience – to thinking and acting in different ways. Since much of teacher decision making is tacit or unconscious and therefore difficult to explain, the new concepts begin to help teachers frame and talk about professional experiences. He uses the terms local language that is dictated by the context and professional language that represents new concepts that help teachers reconceptualize their practice. However, it is difficult to prove the relationship between new language and changes of practice. This study will analyze how new concepts are incorporated into the teachers' vocabulary using Moon's stages of learning (1999). Moon's stages of learning help determine whether teachers are just noticing/naming new things or whether they are actually working with new meaning to intentionally change their practice.

Boud and Walker (1998) also discuss the importance of discourse in professional communities but warn about professional development that imposes meaning rather than letting teachers make their own meaning. A prescriptive program may result in negative behaviors and attitudes. Since the aim of teacher education is to understand practice, professional development programs should help institutions become communities of practice by developing skills of reflectivity as well as by providing the discourse to reframe their practice. There are advantages in supporting new relationships between new and experienced teachers within an environment of respect. Because of the diverse backgrounds of teachers, in-service programs need to present a variety of opportunities that connect to the diverse needs and interests of teachers, so they will be able to find

their own meanings through the program, rather than have meaning imposed (Biggs, 1998; Freeman D. , 2002; Kohonen, 2001).

***By understanding the impact of their pre-conceptions.*** One of the first challenges for teacher educators is helping teachers confront initial beliefs and misconceptions resulting from what Darling-Hammond (2006) calls the “Apprenticeship of Observation”. Having been students for 18 years or more, teachers believe they already know a lot about teaching, however, this apprenticeship in a traditional school environment leads to an erroneous as well as a superficial view of teaching without an understanding of the complexity behind the teaching process. Since the apprenticeship has taken place in traditional classrooms, professional development must help teachers confront misconceptions as well as provide experiences that reflect the new paradigm. Many believe that if teachers know their subject, they know how to teach, but study after study has proved that teachers are more effective if they understand how students learn (Darling-Hammond, 2006). Teachers’ prior experiences can no longer be ignored in teacher training – they must be the starting point for any professional development program (Johnson, 2006).

***By reflecting on experience.*** Most professional development programs are based on Schön’s idea of the reflective practitioner that connects theory to practice via reflective activities (Moon, 1999). Reflective teachers use reflection to become better at facilitating learning as they become more aware of their learners’ interests and intentions, the complexity of the classroom, the context and the assumptions they bring to the classroom. Reflection requires teachers to slow down in order to observe carefully and describe learning in detail (Zeichner & Liston, 1996; Rogers, 2002). One type of activity leading to reflection is self-monitoring whereby the teacher systematically collects information about teaching to use as a basis of reflecting and making decisions (Richards & Farrell, 2005). There have also been studies that indicate that if teachers collect lesson plans and notice changes that take place they can make better decisions (Ho, 1995). Thus if the goal is to help teachers connect new ideas to the classroom, reflection is key and a professional development portfolio that includes plans and student work can help teachers slow down and reflect on their own classrooms and personal learning process.

By making professional development portfolios. Portfolios as collections of best work have been used for many years by fashion designers, artists and architects

for presenting themselves professionally. In the academic world, portfolios have been used for assessment purposes as well as professional presentations since the 1990's and only recently are being used as a learning/teaching tool. Today many educators believe that the best assessment is self assessment and portfolios help teachers do that (Bailey, Curtis, & Nunan, 2001). Initially portfolios were collections of best work for summative assessment and today many teacher education programs make best work portfolios a pre-requisite for graduation. However, their value as a pedagogical tool is currently being widely studied and this represents a conceptual shift from the idea of an assessment portfolio.

As pedagogical tools, portfolios can be used to demonstrate and reflect on learning with respect to standards of performance and they can be used to integrate learning experiences. The process of making the portfolio is as important for learning as are the contents. The process of selecting and discussing artifacts with colleagues as well as the facilitator helps the teacher internalize new concepts and standards. Teachers have the opportunity to analyze the process and outcomes of learning and it can become a tool of continuous learning if goal setting is incorporated. By setting goals and reflecting, the portfolio becomes developmental in nature and leads to teacher growth. Portfolios can also promote collaboration with other teachers (Brown, 2001; Bailey, Curtis, & Nunan, 2001; Richards & Farrell, 2005; Darling-Hammond, 2006; Darling-Hammond & Baratz-Snowden, 2005; Wray, 2008; Bailey, Curtis, & Nunan, 2001).

Portfolios support diverse learners through personal goal setting. A study was made in Hong Kong in 1996 with 82 primary/secondary teachers using assessment portfolios and reflection to measure progress in connecting theory to practice (Biggs, 1998). The teachers were asked to provide evidence of learning in their portfolios for the purpose of summative assessment. Though the facilitator initially decided the general objectives and activities, the teachers set personal goals according to their own objectives. The learning outcomes were different for the different teachers, but the learning was still relevant to the professional development objective. The study concluded that 40% were able to discuss and/or change their teaching practices and 22% provided evidence of understanding the new concepts. The Hong Kong study supports the idea of letting in-service teachers set personal goals relevant to the objectives of the program.

Portfolio based professional development programs should balance guidance and autonomy. A recent, 18 month study in California (Gearhart & Osmundson,

2008), used professional development portfolios to introduce new methods of assessment in science to 19 experienced teachers from grades 1-9. The portfolio based program applied constructivist practices of collaboration, reflection and a balance between guidance and autonomy. Findings indicate that portfolios led to changes over time in the 10 portfolios included in the final analysis. Also self-reported learning in surveys and focus groups indicated change though growth was uneven. Teachers were able to assess for understanding and then use the results to guide instruction.

Perhaps the most compelling reason to use professional development portfolios with EFL teachers is the widespread use of portfolios in Europe for teaching foreign languages. The European Language Portfolio (ELP) is currently being used to teach English and the effect is being thoroughly investigated. In 2001 the Council of Europe published a restructured edition of the Common European Framework (CEF) of Languages. This is the latest stage in a process that began in 1971 for the purpose of unifying discourse about languages in Europe and facilitating the transfer of students between schools and countries. The CEF divides language learning into 6 levels and describes the levels using "Can Do" statements for listening, speaking, interaction, reading and writing. The CEF facilitates self assessment as well as formal assessment of language proficiency. Texts and tests in Europe are being aligned with the CEF. This includes the well known Cambridge testing program and the International Baccalaureate that is in the process of correlating its language programs with the CEF levels of proficiency.

The ELP is a personal document aimed at promoting among other things life-long language and inter-cultural learning as well as learner responsibility and autonomy. The current version consists of three sections: the Biography, the Dossier and the Passport. The Biography is a personal reflection on critical moments of language learning. The Dossier supports the Biography with evidence of learning and the Passport is self assessment of what one Can Do in the languages one knows. In the pilot study of the English Language portfolio between 1998 and 2000 reported on by Scharer (2000), the most valued elements were: learner self assessment, the development of self-directed learning and learner autonomy which help bring about the shift towards learner responsibility.

The pedagogical functions of the ELP have been studied and reported in detail by the coordinator of the Finnish ELP pilot study, Viljo Kohonen of the

University of Tampere, Finland. Kohonen refers to two kinds of portfolios: process-oriented working portfolios and product-oriented show-case portfolios. He considers portfolio assessment authentic and reflecting the twin goals of language learning: (1) learning to communicate and (2) developing a critical awareness of language learning. His experience training teachers indicates that the idea of learner autonomy requires time and a professional commitment to helping teachers and students acquire the skills for self directed learning such as justifying independence as a valid goal, helping them develop explicit learning strategies and convincing them they are capable of assuming more responsibility for their own learning. An advantage of the portfolio is that it makes language learning visible and goals become more concrete (Kohonen, 2001).

Kohonen initially carried out action research between 1994 and 1998 on the ELP as a tool for reflective learning and self-assessment and again for the ELP pilot project between 1998 and 2000 during which he explored the role of the teacher and the Dossier section for guiding student learning in the teacher education program at the University of Tampere. He explored using the Dossier section as an ongoing pedagogical tool rather than as a collection of best work or evidence of learning. His project lasted 2 years and included 22 monthly workshops. An important aspect was negotiating with the pre-service teachers the process and implementation (Kohonen, 2001).

Kohonen's report on teacher learning also points out difficulties. He indicates that teachers should not be left alone with portfolio work. Support and in-service education are indispensable for teachers and schools. He believes that portfolio work should ideally have a school wide approach and that teachers should carry out their own language portfolios before working with students in order to view the possibilities and problems when working with self directed learning. Working from teacher directed to learner directed environments requires taking risks with which teachers as well as students need support. Change processes bring anxiety, uncertainty and threat to emotional security as teachers begin to realize their teaching skills are obsolete. If schools want to reform, they need to focus on teachers as learners in collaboration with other teachers. Results in the classroom will only be superficial without extensive professional development of teachers and a commitment to personal learning and the learning of their students (Kohonen, 2001). He further recommends developing a collegial community in order to foster individual growth of its members. He believes that transformative learning includes the following properties: "(1) ...professional

interaction... (2) ...an open, critical stance to professional work... (3) ...a reflective attitude... (4) ...self understanding... (5) ...reflecting on critical events... (6) ...conscious risk taking... and (7) ...ambiguity tolerance” (Kohonen, 2001, p. 29). He concludes that the best teacher learning takes place when it is linked with actual teaching and supported by collaborative, ongoing theory-building which will eventually result in transformation in the classroom.

### III. PROFESSIONAL DEVELOPMENT INNOVATION

The professional development innovation was carried out over five months between August 26, 2008 and January 29, 2009. The innovation consists in the use of an alternative method for the professional development of in-service English as a Foreign Language (EFL) teachers. The literature review indicates that though portfolios have been used for summative purposes in teacher education, their use as a pedagogical tool is new and no studies were found using reflective, learning portfolios to intentionally introduce constructivist teaching practices. The facilitator visited the school once a week for four hours except during pre-post classroom observations when classes were observed five hours a day for two consecutive weeks.

#### *Program design*

According to the literature review, the following guidelines should be used for the design and implementation of in-service professional development for teachers.

(1) In-service programs should help develop a professional community of learners where teachers can interact in an ongoing process of learning and teaching (DuFour & Eaker, 1998; Freeman & Johnson, 2004). Though the school already has elements of a professional community of learners, the program offered and took advantage of opportunities to learn together and strengthen current collaborative activities.

(2) The program should model the constructivist principles being taught (Freeman D. , 2002). The in-service program is based on authentic tasks such as planning and implementing real classroom activities. In recognition of the individualized nature of learning, teachers set their own goals within the general objectives of the program and did their own planning, but with the support of others.

(3) Teachers need to become conscious of their own beliefs and misconceptions about how students learn English if teaching practices are to change (Richards J. C., 1998; Darling-Hammond, 2006; Richards & Lockhart,

1996). Workshops provided opportunities to explore beliefs about learning. Classroom observation feedback and teaching videos provided individual opportunities to reflect on and discuss teaching practices, and the reflective process of the portfolio helped them become aware of their own prior knowledge and learning process.

(3) There should be a balance of guidance and autonomy. The introduction of new concepts requires guidance and support until concepts are internalized into the cognitive structure and support can be gradually withdrawn (Moon, 1999; Kirschner, Sweller, & Clark, 2006; Gearhart & Osmundson, 2008; Kohonen, 2001). The reflective process was guided throughout the program by protocols and rubrics as well as facilitator support. However, facilitator support followed a continuum from active in the initial planning stage when teachers set learning goals and incorporated them into their planning to moderate or limited support during the implementation and assessment stages depending on the needs and experience of each teacher.

(4) Teachers should have choices within the overall objectives in order to meet the diverse interests and needs of teachers (Freeman D. , 2002; Kohonen, 2001). Personal goal setting gives teachers choices. This allows for the different interests of new and experienced teachers.

(5) Meaning should be constructed rather than prescribed (Freeman D. , 2002; Johnson, 2006). The personal goal setting, planning and the portfolio process help teachers construct their own meaning.

(6) Reflection should be used to help teachers connect theory to practice for the purpose of improving it (Schon, 1992; Moon, 2004). The portfolio has the purpose of supporting reflection on practice. The personal nature of reflecting on strengths and identifying areas to improve requires an environment of trust that hopefully, the facilitator's ongoing relationship with the school will support.

### *Objectives*

The following general objectives were set to prepare teachers for implementing student portfolios in 2009. The success of using portfolios to help students self assess and set goals requires an understanding of how

to use constructivist principles of learning. Therefore by the end of the program, by making their own portfolios, the teachers should be able to...

(1) ...facilitate learning by applying constructivist principles in their classrooms

(2) ...reflect on own process of learning. (See Appendix 1)

*Reflective process based on Maddie's portfolio.*

Maddie's portfolio arrived to Guayaquil in May 2008. Maddie was a fourth Grade student in Houston, Texas, at the time, and her teacher had commented enthusiastically that her students had presented their portfolios to their parents during Student Parent Conferences rather than Parent Teacher Conferences. The experience generated interest and enthusiasm on the part of the parents in what their children were learning. Of particular interest was the learner centered aspect of the conference. The portfolio was selected because the Guayaquil school's English coordinator visited the Houston school and represented Maddie's mother in the Student Parent conference; so it was Maddie's portfolio that was copied and brought to Guayaquil. It was shared with the teachers at the school where this study took place. Because Maddie's portfolio was and continues to be an inspiration for all involved, and because it represented a point to connect new knowledge to, the process of self assessment, reflection and goal setting found in her portfolio was adapted for the professional development program introducing constructivist principles. Because new concepts were being introduced, the self-assessment and reflection process was guided by protocols decided on together. The process of decision making and the aspects of Maddie's portfolio that were adapted follow.

Goal setting – Personal goal setting using constructivist principles was the central focus of the professional development program. Of the 19 possible principles of constructivist learning presented in the two readings and workshops, six were selected by the teachers as important for learning English during the first workshop on August 26, 2008. The bibliography used follows. (See Appendix 1)

*Brooks, J. G. and M. G. Brooks (1999). Ch. 9 Becoming a Constructivist Teacher. In Search*

*of Understanding: The Case for Constructivist Classrooms. Alexandria, VA, Association of Supervision and Curriculum Development.*

Brooks, J. G. and M. G. Brooks... (1999). Ch. 2 *Considering the Possibilities In Search of Understanding: The Case for Constructivist Classrooms. Alexandria, VA, Association for supervision and Curriculum Development: p. 17.*

Ordoñez, C. L. (2006). "Pensar pedagógicamente, de nuevo, desde el Constructivismo." *Revista de Ciencias de la Salud 4 (Octubre Especial): 14-23.*

The principles selected from the readings were (1) use Big Ideas to connect activities to real life and make them meaningful, (2) encourage learner autonomy through goal setting, (3) ask challenging open ended questions of increasing complexity, (4) plan time for learning processes, (5) provide opportunities for students to work in groups and (6) assess what learners CAN DO using rubrics. These six principles were used as performance indicators in the Constructivist Planning Rubric. The planning rubric was used for self assessment and feedback during the program (Appendix 3). Most of the goal setting focused on the rubric and Self Assessment work sheet (Appendix 4) though teachers could use readings or any other source for goal setting. Teachers usually set more than one personal learning goal and a few teachers changed or added goals during the process as understanding evolved. Two new teachers set goals related to classroom management as well as constructivist principles. Table 2 indicates the goals the teachers focused on during all or part of the process. Goals #5 and #6 interacted during the process. The use of rubrics for self assessment during the program led to using them in the classroom for facilitating learner autonomy through self and peer assessment.

Table 2 Goal Setting based on Constructivist Planning Rubric

	Constructivist Principles Used in Planning Rubric Indicators	# of teachers selecting goal
1	Big ideas to connect activities and give meaning	8
2	Challenging questions of increasing complexity	1
3	Plan time for learning processes	4
4	Use group work to support learning	6
5	Facilitate learner autonomy	9
6	Carry out Formative and Summative Assessment	9

*Self Assessment worksheet* – Maddie’s assessment of her own progress in learning to read and write was adapted for teachers learning to use constructivist principles (Appendix 4). The constructivist principles in the protocol are those selected by the teachers from material presented in the first workshop because they facilitate learning English. At the end of the self assessment, the teachers had to select or confirm learning goals.

*Written reflection* was based on the Self Assessment Protocol and led to goal setting. The reflection not only represents learning, but is learning because the teacher must use theory to assess practice for the purpose of improving it. Learning is supported by examples from teaching.

*Student-Parent Conferences* became Teacher Led Conferences (TLC) with the facilitator. During the conference the teacher used a pre-set Agenda to report progress on reaching goals to the Parent or Coordinator. The Teacher Led Conference Agenda (See Appendix 5) was adapted to teachers’ activities during each cycle. For example, the first conference focused on planning together using constructivist principles, learning by observing a personal teaching video, and self assessment using the portfolio artifacts. Finally teachers read their reflections based on self assessment and discussed with the facilitator strategies for reaching goals. The conference leads to meta-cognition related to own learning as well as provides an opportunity to talk about teaching practices using the new concepts. It is personal and individualized. Tacit, unconscious decision making can become conscious.

It is a moment for teacher-facilitator interaction based on Vygotsky's ZPD – a moment for the facilitator to guide the teacher into new areas of learning.

*Collaborative Assessment Conferences (CAC)* are based on a protocol developed in 1988 by Harvard's Steve Seidel and colleagues of Project Zero for the purpose of helping teachers focus on what students can do and what students' intentions for learning are. It is a collaborative session focused on describing a piece of student work (Appendix 6).

*The portfolio.* Maddie's Fourth Grade portfolio is based on 6 inquiry units. There are two pieces of work from each unit; one selected by the teacher and one selected by Maddie as well as the guided reflection activities. Teachers worked with their portfolios from the end of August 2008 through the end of January 2009. The portfolio is a collection of teaching artifacts on which the reflections are based. Teachers' portfolios contain three types of evidence assembled by the teacher: (a) Unit and weekly plans based on personal goals and communicative goals for the students, (b) student work and/or photos as evidence of learning and (c) the guided self assessment and reflection activities referred to above. There is also a section of theory that included the two articles on constructivist principles used during the initial workshop and any other material the teacher wanted to include. The portfolios are organized chronologically from present to past by planning cycles and teachers use sticky notes to label evidence of using constructivist principles.

*Planning* is perhaps the most important and most challenging task the teachers were asked to do because it required them to intentionally design activities based on constructivist principles. Most of the professional development focused on implementing constructivist principles via planning. There were two types of planning requested: Unit plans and the weekly plans. During the time of the program, there were three teaching units lasting four to six weeks. The three planning cycles were planning together (September), planning alone (October-November) and planning together or alone (December). Planning alone was necessary so teachers could work on personal goals and learning strategies. Once teachers started individual planning at the end of September, they were asked to make a new type of unit plan in order to connect personal learning goals to the unit activities. The unit plan format included: Teacher learning goals, Student learning goals and a list of activities to be carried out that clearly connected to the

stated goals. The contents of the portfolio were based on the design and implementation of unit plans and reflections were based on the outcome.

### *Historical Description of the Professional Development Program*

The program took place from the end of August 2008 through the end of January 2009 (Appendix 1).

Implementation Stages. The program was implemented in three stages: (1) Planning (2) Implementation and (3) Assessment. The role of the facilitator was to help teachers use their constructivist goals to plan (Table 3).

*I. Planning Stage.* (August 26 - September 30, 2008) During this stage teachers connected constructivist principles to prior knowledge and started their portfolios. Planning during this stage was collaborative to encourage interaction and clarification of the constructivist principles each teacher was working with. Facilitator support was active. Activities that took place during this stage follow.

Table 3 – Professional Development Program using Portfolios August 2008 – January 2009

Portfolio Tasks and Concepts		Sources of Support		Other sources	
Stage	Tasks	Concepts	Portfolio	Facilitator	
Planning (Aug 26-Sept 30)	<p>Plan together as usual but using constructivist principles</p> <p>Reflect on practice using principles and set personal learning goals</p> <p>Organize and present portfolios</p>	<p>Introduction of concepts</p> <p>(l) Constructivist principles:</p> <p>a. Big Ideas, b. Challenging task, c. Time for processes, d. Group work, e. Learner autonomy, f. Formative assessment</p> <p>(ll) Self and peer assessment based on constr. princ.</p> <p>(1) portfolios</p> <p>(2) planning</p> <p>(3) reflection</p>	<p>Workshop material</p> <p>Video of class</p> <p>Planning and feedback</p> <p>2 reflections based on self assessment protocols and rubrics</p>	<p>Active support</p> <p>Workshop (Aug 25) - Planning constructivist environments</p> <p>Observed sequence of 4 classes (end of Aug)</p> <p>2 Coaching opportunities (optional participation)</p> <p>Provided videos of 1 class</p> <p>Teacher Led Conf #1 – Sept 9-10 (self assessment and facilitator feedback)</p> <p>Workshop - Self Assessment</p>	<p>Planning together with colleagues</p> <p>Teacher's manuals</p> <p>Observing colleagues</p> <p>1 CAC session with Area Coordinator</p> <p>Topic: Reflections</p> <p>Internet</p>
Implementation (Oct – Nov)	<p>Plan independently to reach learning goals</p> <p>Implement plans</p> <p>Reflect on progress applying goal</p> <p>Collect evidence of learning and present portfolio</p>	<p>Working with concepts</p> <p>And personal goals</p>	<p>Workshop material</p> <p>Plans</p> <p>Student work</p> <p>Guided Self Assessment and Reflections</p>	<p>Minimum support</p> <p>Teacher Led Conferences #2 (Oct 29-30)</p> <p>2 coaching opportunities</p> <p>Observed sequence of 4 classes (end of Nov)</p>	<p>Teacher's manuals</p> <p>Colleagues and Area Coordinator</p> <p>2 CAC sessions with Area Coordinator</p> <p>Topics Sharing portfolios and rubrics</p> <p>Internet</p>
Assessment (Jan 2009)	<p>Organize portfolios and Self Assess</p> <p>Reflect on learning</p> <p>Plan goals for 2009</p>	<p>Assessment of learning using personal goals</p>	<p>-Workshop material and videos</p> <p>-Plans</p> <p>-Student work</p> <p>- Reflections</p>	<p>Moderate support</p> <p>2 workshops:</p> <p>-Evidence of Learning (1/8)</p> <p>-Planning 2009 (1/22)</p> <p>Teacher Led Conferences #3 / Interview</p>	<p>Colleagues</p> <p>Area coordinator</p>
PD Background	<p>2005 – Writing process – stages (3 workshops and mentoring Area Coordinator in Primary and Secondary)</p> <p>2006 – Writing process – elaboration, assessment and feedback (3 workshops for Primary and Secondary with follow up observations)</p> <p>2007 – PD on "Seeing Learning" based on Carol Rogers article (5 workshops for Primary and Secondary plus journals)</p> <p>2008 – UCC International Ed students on Case Study "Maddie's Portfolio"</p>				

1. **Workshop #1** “Planning for Learning” (August 25, 2008, 9:30-11:30) Teachers identified constructivist principles in their lesson plans and teachers’ manuals and began planning Unit 4. Together the teachers defined the concept of a portfolio as being “a collection of student work that records progress. The student can decide on the content.”
2. **Classroom observations** (August 25, 2008-September 9, 2008) Three to four consecutive classes were observed for each teacher. This served the dual purpose of providing teachers with a video to facilitate reflection on classroom practices and of collecting baseline data for the Constructivist Teaching Inventory (CTI) analysis.
3. **Teacher Led Conference (TLC) #1** (September 9-10, 2008) – Teachers presented their portfolios and reflections to the facilitator individually for the first time using a pre-established Agenda. (See Appendix 5) Feedback on class observations was given and goals were set based on learning to use constructivist principles. Nine 30 minute interviews were audio-taped. The decision to audio-tape was decided upon after the first TLC with T4 so one tape is missing.
4. **Collaborative Assessment Conference (CAC) #1** – (September 16, 2008, 30 min.) The CAC was led by the English Coordinator. The original purpose had been to review the definition of portfolios and to consider the impact of context on teaching practices, however, after Teacher Led Conference #1, it was decided that the concept of reflection and its role in learning needed to be introduced so the CAC focused on one of Maddie’s reflections.
5. **Coaching sessions #’s 1 and 2** (September 18 and 25, 2008) – The 30 minute individual coaching sessions were voluntary and usually focused on helping teachers plan or assemble their portfolios. Teachers signed up for appointments. Eight of the ten teachers took advantage of the opportunity.
6. **Workshop #2 “Planning Constructivist Environments”** (September 30, 2008, 8:00 - 9:00am, 9:00am - 12:00pm) This workshop aimed at helping teachers plan alone to reach professional goals. Teachers were asked to make a new type of unit plan which connected teacher and student goals to activities; however, due to increasing interest by the Spanish Area in the portfolio process, it was decided to have a one hour open session including Spanish

teachers from both Primary and Secondary. This also gave the English teachers an opportunity to talk about their portfolios using professional discourse and to think about how the student work included is evidence of working on goals. A second topic of interest emerged related to contextual challenges that the introduction of constructivist principles presented: (1) the challenge of current assessment practices (2) the challenge of introducing a paradigm shift within the school community and (3) the challenges of becoming an autonomous learner.

The second part of the session introduced the Constructivist Planning Rubric based on the six constructivist principles the teachers had selected and teachers used it to peer assess planning (Appendix 3). Questions were answered about the rubric and the last hour was spent facilitating individual planning for October.

**II. Implementation Stage.** (October-November 2008) During this stage teachers implemented the individual planning focused on personal learning goals. They were asked to plan three two-week blocks of classes alone. Afterwards they could plan together or alone. Facilitator support was minimal. The activities carried out during this stage included:

**1. Coaching Sessions #'s 3 and 4.** (October 16 and October 24, 2008) The facilitator was available for teachers who wanted help. Nine of the ten teachers voluntarily made appointments to discuss new planning and outcomes in their classes.

**2. Teacher Led Conference #2** (October 29-30, 2008). This was the interim portfolio presentation based on planning alone. As with the first TLC sessions, teachers self-assessed, reflected and presented their portfolios individually to the facilitator using a pre-established Agenda (Appendix 5). The interviews were audio taped.

Though the intention was to support planning, the timing of these sessions was poor because they coincided with the grade submission period and it was difficult to collect student work to present as evidence. There were also feelings of frustration and anxiety about being observed again at the end of November. Teachers were given the option of withdrawing from the program at this point, but none of them did.

3. *Collaborative Assessment Conference (CAC) Sessions #’s 3 and 4.* (November 14 and 21, 2008; 30 min. each) These sessions were also carried out by the English Coordinator. The purpose was to share evidence of the changes taking place as well as to deal with anxiety issues. At Session #3 a teacher shared her portfolio and at the next session another teacher shared the self-assessment rubrics her students were beginning to use.

4. *Classroom Observations.* (November 16 – December 1, 2008) For a second time three to four classes were observed for the purpose of giving teachers feedback as well as to collect post intervention data for the CTI analysis. One class of each sequence was videoed and each teacher received a copy. All teachers participated.

*III. Assessment Stage.* (January 2009) The Assessment Stage had the purpose of reflecting on learning with portfolios and planning the implementation of student portfolios in 2009. Facilitator support was moderate and consisted mainly in providing guided opportunities to collaborate as the teachers assembled their final portfolios and prepared for their final TLC session. Activities carried out during this stage included:

1. *Workshop #3 “Organizing Our Portfolios”* (January 8, 2009, 9:00-12:00) The purpose of this workshop was to (1) practice labeling evidence of goal based learning with sticky notes and (2) to get facilitator and peer support while organizing the final portfolios.

2. *Teacher Led Conferences #3* (January 14 and 29, 2009) and *Semi-Structured Interviews* (See Appendix 1). Once more, teachers used a pre-established Agenda to present their portfolios. After the portfolio presentation, the facilitator used a structured interview with each teacher to identify participant perspective of using portfolios for learning. The individual sessions were audio taped.

3. *Workshop #4 “English Program Planning 2009”* (January 22, 2009, 9:00-12:00) The purpose of this workshop was to connect the Student Portfolio Project 2009 to school and English Area goals. The European Language Portfolio was presented as an option for 2009 since Maddie’s portfolio represented content based learning. After this final workshop the teachers were grouped by levels to rewrite annual plans incorporating a Student Portfolio for 2009. They were undecided as to whether they wanted to continue their own portfolios.

## IV. RESEARCH QUESTIONS

According to the objectives for the professional development program using portfolios, by the end of the five month program the teachers would be able to...

*(1) ...facilitate learning by applying constructivist principles in their classrooms*

*(2) ...reflect on own process of learning.*

Based on these learning objectives the following research questions were set.

### ***Research questions:***

***General:*** What was the effect of a portfolio based professional development program on the learning of constructivist teaching principles by the Primary English teachers who participated in the program?

### ***Specific:***

- Did constructivist teaching practices in the classroom increase as a result of using portfolios?
- How did the portfolio process contribute to learning to use constructivist teaching principles?

## V. METHODOLOGY

This action research uses a mixed, quantitative-qualitative, design to explore the effect of a five month professional development innovation. A single group uncontrolled pre-post design is used to provide a qualitative answer to the first research question as to whether constructivist teaching practices increased as a result of the innovation and analyzes qualitative data collected during the process to answer the second research question which aims to describe the contribution of the professional development innovation to learning to use constructivist principles.

Action research is appropriate in ongoing professional development activities within a specific context. In the area of education, action research aims to improve teaching and learning in schools and classrooms. It is usually carried out by teachers or groups of teachers to answer questions of practical as well as of theoretical interest. It is contextual, participatory, small scale and reflective; and has the advantage over other approaches to research that the results are put into practice (Wallace, 1991; Nunan, 1992; Burns, 1999; Wiersma, 2000; Richards & Ferrell, 2005).

There is general agreement that action research promotes reflective practice and professional growth; however there are some investigators that believe that action research can be used to develop an explanatory theory of the relationship between teaching and learning, since action research requires systematic data collection, analysis and interpretation (Nunan, 1992; Burns, 1999; Nuthall, 2004). According to Graham Nuthall, experimental research is limited when it comes to studying the relationships between teaching and learning in a way that can help teachers understand how their actions affect the learning process. Though correlation studies have the advantage of outside interpretation and have helped clarify understanding of classroom behavior, they are not context related and usually assume that learning is based only on teacher behavior or methods rather than a dynamic process of interaction between teachers, students and context. Nuthall believes that the bottom-up approach of action research is the most practical and context sensitive kind of research and that if action research studies can rigorously collect evidence from the classroom and be replicated in different contexts, an explanatory theory of the relationship between teaching and learning could evolve.

*Participant Description*

The participants were 10 female, primary level English teachers from a private Catholic girls' school in Guayaquil, Ecuador. The sample represents the whole universe of primary English teachers. The group was selected because of the facilitators' ongoing professional development activities within the school over the previous seven years. Their ages range from 22 to 60 with the average age being around thirty. All of the teachers have advanced level English according to the results of the Secondary Level English Proficiency test and personal interactions. Eighty percent have four year university degrees, sixty percent have either Teaching English as a Foreign Language (TEFL) certificates or university degrees related to teaching English. Eighty percent have three or more years experience teaching primary English with most of those years taking place at the school. Ninety percent of the teachers have participated in one or more years of the learner centered professional development at the school before the portfolio project began in August 2008. Primary includes Basic Years, Two through Seven (grades one through six). The teachers work together by levels mainly for the purpose of planning. Teachers one, two and three teach Basic Years Two and Three, Teachers four, five and six teach Basic Years Four and Five and Teachers six through 10 teach Basic Years Six and Seven.

***Ethical considerations in Action Research.*** According to Burns (1999) the key ethical principles when conducting Action Research are (1) responsibility, (2) confidentiality and (3) negotiation. Responsibility refers to the professional integrity of the researcher. The research should be viable and use appropriate data collecting techniques and the objectives and purpose of the research explained to the participants. Confidentiality refers to maintaining the identities of all participants confidential. Negotiation relates to the right of the individual to withdraw from the study as well as determine the accessibility of the data collected. Permission should be gained from the participants if the results are to be published and results should be eliminated from the study for anyone who refuses access. This study has considered all of the above. Permission was granted by the principal of the school before the study began based on confidentiality of the names of the participants (Appendix 7). The process of professional development was collaborative, the procedures to collect and analyze data were known from the beginning and teachers had the right to withdraw from the process.

### *Variables*

For the purpose of answering the first research question aimed at determining whether constructivist teaching practices increased as a result of the professional development program using portfolios, the following operational definitions were used.

***Independent variable:*** Professional development program based on learning portfolios. The professional development program used learning portfolios to facilitate cycles of action and reflection for the purpose of introducing constructivist practices in the classroom. The purpose of the portfolio was formative. This is different from a show-case portfolio used for summative assessment purposes. In this study, the learning portfolio guides progress toward a particular goal related to using constructivist principles. The portfolio was a personal collection of teaching artifacts representing the action phase that was used for the reflection phase. The portfolios include planning, student work labeled to indicate the relevant goal, photographs, self assessment and reflections. The portfolio was presented on three separate occasions to the facilitator for the purpose of interacting on progress toward goals (Dewey, 1910; Schon, 1992; Moon, 1999; Richards & Ferrell, 2005).

***Dependent variable:*** teaching practices. Teaching practices are daily activities usually based on a coherent set of principles derived from research and personal beliefs about learning. Activities include the design and management of learning environments (Moon, 1999; Brown, 2001; Ordoñez, 2006; Richards, 1998). This study focuses specifically on teaching practices measured by the Constructivist Teaching Inventory (CTI) (Greer & Hudson, 1999): the community of learners, teaching strategies, learning activities, and curriculum-assessment. The subscale Community of Learners (CL) focuses on verbal interaction during the class between teacher and learners and among learners. The Teaching Strategies (TS) subscale focuses on decisions the teacher makes and her perception of her role in facilitating learning. The Learning Activities (LA) subscale focuses on what the teacher has the students do to learn. Finally, the Curriculum-Assessment (CA) subscale considers curriculum to be content and processes and assessment refers to the means, reasons and use of assessment data.

Intervening variable: context. The context within which the study takes place influences the process as well as the outcome. Though the intervening variable will not be measured, the validity of the results will be discussed in terms of their meaning to the school.

### *Categories*

A qualitative approach will be used to answer the second research question focused on describing how the portfolio process contributed to learning to use constructivist principles. The qualitative results will also be triangulated to help explain the quantitative results. The following categories were set a priori before analyzing the data.

**Category 1** Quality of the Portfolio Process – The portfolio process included making a portfolio, self assessment and reflection, presenting the portfolio and interacting with the facilitator during the Teacher Led Conference (TLC) sessions. According to Moon (1999), a successful professional development program will help participants reach Stages three or four where participants would be working with professional goals to improve teaching practice. The best learning will take place if the portfolios are complete and if the planning, reflections, and interactive TLC sessions have evidence of the teachers working to connect professional goals based on constructivist principles to their classrooms.

**Category 2** Goal Based Learning – The portfolio process has the intention of facilitating learner autonomy. Teachers set personal learning goals based on constructivist principles and then work to reach the goals through planning, teaching, self assessment, reflection and interaction with the facilitator. Working with goals obligates the teacher to connect theory to teaching practice via reflection. Working with goals should help the teachers reach the higher stages of learning identified in Moon's Stages of Learning (Moon, 1999).

**Category 3** Participant perspective of learning with portfolios refers to participant descriptions of making the portfolios, description of learning and the role that the goal based portfolio had in the learning process.

Quantitative data collecting instruments and procedures:

This exploratory study is both quantitative and qualitative in order to triangulate quantitative results and enrich understanding of teacher change processes. To answer the first research question related to whether constructivist teaching practices in the classroom increased, the Constructivist Teaching Inventory (CTI) was used (Greer & Hudson, 1999).

The Constructivist Teaching Inventory (CTI). To learn whether constructivist teaching practices were increasing, the Constructivist Teaching Inventory (CTI) guidelines were used to collect and analyze quantitative data from classroom observations before and after the professional development program (Greer & Hudson, 1999). The CTI was developed by Margaret Greer, Lynn M. Hudson and William Wiersma, a well known author and researcher in the field of education. The instrument has been tested for content validity and reliability. The Cronbach alpha coefficients for the full scale and individual scales were .99 indicating the instrument is highly reliable for measuring constructivist teaching practices in urban primary schools in the U.S. It was also tested across grade levels with alpha coefficients of .94, which indicate that the CTI is as reliable in first grade as in fifth grade. The CTI has also been used in Ecuador for evaluating the effectiveness of a two year professional development program using constructivist principles to introduce information technology in Basic Year 6 public primary school classrooms in the Peninsula de Santa Elena (Chiluiza-Garcia, 2004). Thus, local data for the scale is available as well as the possibility of guidance from an experienced researcher.

The CTI was developed in 1999 for application in primary classrooms to assess the presence and strength of constructivist teaching practices in language and math classes. The items were based on a review of constructivist literature including Brooks and Brooks that was used during the professional development program in this study (Brooks & Brooks, 1999). There are two forms: a self assessment form and an observer form. Based on Greer's recommendations, in this study the self-assessment form was used to introduce the teachers to the research process and the observer form for the investigation. The CTI test items are grouped into four sub-scales representing the community of learners, teaching strategies, learning activities and curriculum and assessment (Greer & Hudson, 1999). (See

Appendix 8 for a detailed description of all the subscale items of the CTI.)

The CTI observation data are analyzed using a seven-point Likert scale ranging from zero to six with scores at the high end indicating frequent use of the identified constructivist practices and the low end indicating an absence of the practice. There are verbal prompts for scores of 1, 3, and 5 along a continuum. Each subscale has 11 items making a total of 44 items with each item having a maximum of 6 possible points. The range for each subscale is 0 to 66 and for whole scale between 0 and 264 (Greer & Hudson, 1999). The guidelines and a discussion of the CTI by Greer can be found at the website of the Educational Resources Information Center (ERIC).

Classroom observations - Using the CTI guidelines, base line data were collected from August 26 through September 10, 2008, and post intervention data collected from November 17 to December 1, 2008. For each teacher, a sequence of three or four 30-40 minute classes was observed and the complete scale of 44 items was completed for each class. Since learning is a process of knowledge construction, observing a sequence of classes is necessary. Thirty-six observations were made between August 25 and September 10, 2008 to collect base-line data. Thirty-nine post intervention observations were made between November 17 and December 1, 2008, for a total of seventy-five 30-40 minute observations. The August-September observations were interrupted by two school events so the last observation of four teachers was cancelled because a new learning sequence had already started. Table 6 indicates the number of observations per teacher.

Table 4. Number of Class Observations per Teacher

Teacher	Pre-innovation 25 Aug – 10 Sept 2008	Post Innovation 17 Nov – 1 Dec 2008
1	4	4
2	4	4
3	4	4
4	4	4
5	3	4
6	4	3
7	3	4
8	4	4
9	3	4
10	3	4
<b>SUB-TOTAL</b>	<b>36</b>	<b>39</b>
<b>TOTAL - 75 Observations</b>		

*Stimulated recall*, based on plans, field notes, videos and photographs, was used to complete the 44 item inventory for each class observed. All observations were carried out by the researcher. Field notes were taken during the classes as well as notes on lesson plans. The notes were written up as soon as possible after the observation. Since the intensive observation schedule did not permit data to be processed immediately, field notes were backed up and enriched by videos and photographs. Only one class of each sequence was videoed since videos can be expensive and require the presence of an extra person if the researcher wants to observe and take notes. Also the presence of an extra person filming distracts and reviewing videos can be time consuming.

All observed classes were photographed. Photographs are a fast, complete and inexpensive way to collect data (Burns, 1999; Bailey, Curtis, & Nunan, 2001). Photographs were made of classroom organization, student work in progress, white boards, bulletin boards and text instructions. By using photographs, the researcher was able to focus on class dynamics rather than taking notes and the photographs provided details that were impossible to include in field notes. Also photographing is less intrusive than videoing. Copies of the videos and photographs were given to each teacher for the purpose of self assessment and feedback. It was hoped that the photographs would help build trust in the process and help the teacher document personal

change; however, there is the possibility that the photographs might also influence the teacher's conclusions about learning since the photographs were based on what the researcher determined to be important.

**Rater reliability** - According to Wiersma, the CTI is a high inference rating system that requires considerable judgment from the rater (Wiersma, 2000). The reliability of this study would be increased with the use of more than one rater; however, only one rater was used due to time and cost constraints. The use of multiple data sources for triangulation helps strengthen the validity of the results (Burns, 1999).

Two steps were taken to improve rater reliability. One step was to have all rating take place within a limited time period of one month and the other step was to re-rate pre-innovation observations rated in November until ninety percent reliability was achieved before continuing with the rating process. According to Greer who developed the CTI, a second rating would be considered in agreement with the first rating if the item was identical to or one score above or below the first rating. Greer set ninety percent agreement as an acceptable level and the same was used for this study. (Greer, 1997)

The process of improving rater reliability took place between April 4 and 10, 2009, and included concept clarification and practice rating until the goal of ninety percent reliability was achieved. Pre-innovation observation results had been completed for seven of the ten teachers in November 2008. First, three of the seven teachers were selected representing different levels of engagement with the program as well as different grade levels. The re-grading of the Pre-test results for the first teacher was twenty percent higher than the original rating, so detailed definitions of key concepts were developed using Greer's and Chiluiza's theses as well as personal interpretations within the context of foreign language learning when doubt remained (Chiluiza-Garcia, 2004; Greer, 1997). Written records of errors and decision making were kept in order to arrive at precise concept definitions before doing the final rating.

The re-grading of the pre-test observations for the remaining seven teachers took place between April 10 and 15, 2009. Twenty-three classes had been observed and rated for the seven teachers. Using notes, photographs and videos, the class observations for each teacher were rated for a second time. Then the second rating was compared to the first rating and recorded

according to the following possible positions: identical rating; one point above or below the original rating and more than one point above or below the original rating. Any ratings that were more than one point above or below were considered as errors and reviewed using the data and the newly written concepts until the most accurate rating possible was reached. The process of re-grading each teacher was completed before re-grading the next teacher. The process of working with the newly written concepts and the observation data improved the reliability of the second rating and by the end of the re-grading process a level of ninety-five percent reliability had been reached, so the post-innovation observations were rated only once between April 21 and May 3, 2009 (Table 5).

*Reporting Quantitative Results* - Educational research is currently being reported as effect sizes. In 1996 Hattie et al defined effect size as "...the difference between the intervention group and control group or the difference between pretest and posttest group means... (p. 111)" (quoted by Wiersma, 2000, p. 373). Though describing effect sizes is somewhat subjective, an effect size of 0.05 to 0.20 would be considered quite small, 0.25-0.70 would be considered modest, moderate or substantial and above 0.75 indicates a powerful effect. (Wiersma, 2000; Marzano, et al, 2001)

*Constructivist Teaching Inventory* (CTI) results are reported as means, standard deviations, effect size and percentiles for the total scale as well as the sub-scales of Community of Learners (CL), Teaching Strategies (TS), Learning Activities (LA) and Curriculum/Assessment (CA).

Table 5 Rater Reliability: Frequency and Percentage of Agreement of Second Ratings

Relative Position	Pre-test Observation Sequence: Test Cases (April 10-11, 2009)											
	T8						T5					
	O1*	O2	O3	O4	O1	O2	O3	O4	O1	O2	O3	O4
	f	%	f	%	f	%	f	%	f	%	f	%
Agree	21	17	16		21	22	24	22	10	15	20	
+ - 1	18	27	27		21	19	15	21	30	27	21	
Subtotal	39	89	44	100	43	96	42	95	41	93	39	89
Errors + - 2 or more	5	0	1		2	3	5	1	4	2	3	
Total	44	44	44		44	44	44	44	44	44	44	44

\*Key - O = Observation f - frequency

Relative Position	Pre-test Observation Re-rating Sequence (April 13-15, 2009)																													
	T7										T9										T10									
	O1	O2	O3	O4	O1	O2	O3	O4	O1	O2	O3	O4	O1	O2	O3	O4	O1	O2	O3	O4	O1	O2	O3	O4	O1	O2	O3	O4		
	f	%	f	%	f	%	f	%	f	%	f	%	f	%	f	%	f	%	f	%	f	%	f	%	f	%	f	%		
Agree	29	32	18		16	26	16		27	27	24	26	24	28	23	16	16	20	19											
+ - 1	11	10	22		15	15	25	16	19	16	19	16	19	16	19	25	25	21	25											
Subtotal	40	91	42	95	40	91	41	93	41	93	42	95	43	98	42	95	41	93	41	93	41	93	41	93	41	93	44	100		
Errors + - 2 or more	4	2	4		3	3	3		2	1	1	2	2	2	2	3	3	3	0											
Total	44	44	44		44	44	44		44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44		

Average 7 teachers, 23 ratings = 95% reliable (94.57)

*Qualitative data collecting and procedures:*

The qualitative results help explain the quantitative results. Qualitative data collecting was an ongoing, iterative (non linear) process. Portfolio documents and audio transcripts of structured interviews were collected and analyzed qualitatively for evidence of learning to use constructivist principles and to determine whether that learning could be due to the portfolio process. Categories were set a priori before analyzing the data in order to help answer the second research question which aims to connect learning to the portfolio professional development process.

*Documents* - Portfolio documents include the unit and modular (daily) plans, student work labeled to indicate relevant evidence of working with personal goals, self assessment worksheets and reflections. The portfolios also included photos and videos that were occasionally consulted. The portfolios were collected at the last Teacher Led Conference (TLC) session in January 2009. Facilitator/researcher documents include ongoing personal field notes and reflections made during the process. Field notes related to insights during formal and informal interactions with the teachers were transcribed usually within a week.

*Audio Recordings* - The data also includes 27 audio tapes of the Teacher Led Conferences (TLC) in September, October and January (10 teachers, an average of three per teacher - Teacher 5 was on maternity leave in January and was interviewed September 23, 2009). The decision to audio record the TLC sessions was made after the first session with Teacher 4 in September. The session led to an important critical moment of understanding for the teacher and facilitator so from then on the TLC sessions were audio taped and transcribed. Two of the TLC's in October were not taped due to facilitator oversight, however impressions were written up soon after the error was discovered. Also technical problems were encountered during the audio recording of the January interviews so some of that data consist of audio transcripts of videos or only field notes. Transcripts of the portfolio presentations and structured interviews were made by the facilitator between June and September 2009. Table 6 indicates the length of each recording and data source for the interview transcripts.

Table 6. Audio/Video Recording Times and Modes

Teacher	Teacher Led Conference (TLC) Dates			Total minutes
	9-10 Sept 08	30-31 Oct, Nov 2, 08	January 16 and 29, 2009	
1	27:57	44:41	40:02	113
2	18:48	30:44	38:17	88
3	20:43	Notes only	Video 21:14*	42
4	Notes only	41 min	38:06	79
5	28:14	36:05	17:30**	82
6	13:21	33:45	Notes / Video* 12 min	59
7	30:41	30:22	Notes / Video* 18 min	79
8	23:36	Notes only	29:03	53
9	34:05	35:52	15:40*	85
10	18:49	29:37	28:34	78
				758 min 12.6 hours

\*Audio recorder full – part of conference was videoed or recall based on only notes

\*\*Interview Sept 23, 2009. T5 was on maternity leave in January 2009.

Analysis of the qualitative data was completed in the following manner. First, a longitudinal review of the process for each of the ten teachers was done for the purpose of (1) finding evidence of working with goals at Moon's Stages 3 and 4, and (2) identifying change in understanding the constructivist principles the goals are based on. Then categorical analysis was done according to the following categories and procedures.

**Category 1: Quality of the Portfolio Process.** The program focused on using portfolios to learn about the constructivist principles that a portfolio is based on. There were two major aspects of the program; (1) planning, teaching, reflecting and assembling the portfolio and (2) the Teacher Led Conference where the teacher used the portfolio to interact with the facilitator/researcher about progress reaching goals.

**Portfolio Content** – Planning and teaching represent the action stage of the program where the teachers work with constructivist based personal goals. Portfolio artifacts include goal based planning, and samples of student work as evidence of teaching and learning based on the planning. Self assessment and reflection represent the reflective stage. The portfolios are classified as complete, somewhat complete or too incomplete to have influenced learning.

**Complete** – Portfolio contains 6 weeks of planning done independently, 3-5 reflections based on self assessment. Planning and student work is labeled with sticky notes to identify progress working with professional goals or the

reason why the item has been included.

***Somewhat complete*** – Portfolio contains pre-post reflections and self assessment, at least 3-4 weeks of planning independently, some student work labeled so as to indicate progress toward personal goals. Maybe some of student work does not relate to goals or is not labeled correctly.

***Incomplete*** – Portfolio is not complete enough to have influenced learning. Self assessment and reflection is missing for one or more of the three required reflections (Beginning, middle or end). Student work resulting from goal based planning is either not labeled or very incomplete. Portfolio may include less than three weeks of planning.

***Planning quality*** – There are two types of plans: unit and modular (class) plans. Goal based unit planning was introduced as part of the professional development to help focus planning and activities on personal goals and constructivist principles. Planning and self assessment was facilitated by workshops, collaborative sessions and a Constructivist Planning Rubric (Appendix 3). Though modular plans use an institutional format, class objectives and activities could reflect personal goals and other constructivist principles.

***Goal based planning*** - Sustained evidence of intentionally connecting goals to classroom or planning. There are two unit plans clearly based on reaching goals.

***Some goal based activities*** - Mostly text based planning, but there are a few goal based activities. There is one goal based unit plan.

***Text based planning*** – There is little or no evidence of connecting goals to planning.

***Reflection quality*** – Written reflections, based on a self assessment worksheet, represented the reflection phase of the program. The reflections are described by adapting Moon's (2004) operational definitions for reflection and her Stages of Learning.

***Working with Meaning*** - Reflections are evidence of self assessment and working to connect goal or constructivist principles to teaching practice. (Learning Stages 3-4)

***Stage 3 Reflection*** – Descriptive with a hint of reflection. Reflection mainly describes goal based learning without attempting to understand goals better.

***Stage 4 Reflection*** – Truly reflective. Views goal based learning as complex. Discusses questions of learning from different perspectives. Reflection is

learning and at the same time represents learning.

**Not yet Working with Meaning** – Reflections are either too brief or superficial to have contributed to learning. Might mention constructivist principles without connecting them to teaching practice. (Learning Stages 1, 2).

**Teacher Led Conference (TLC) session quality** - The TLC sessions represent learning as well as stimulate learning by interaction with the facilitator. The TLC sessions are classified by adapting Moon's (1999) Stages of Learning.

**Working with meaning** – Evidence of intentionally connecting goals to planning and teaching (Stages 3-5) or

**Not yet working with meaning** – There is little or no evidence of connecting goals to teaching (Stages 1 and 2).

**Category 2: Goal Based Learning** To determine (1) what was learned and (2) the highest stage of learning reached during the intervention, portfolio documents and transcripts of semi structured conference sessions with the facilitator were coded as Personal Goal I (PGI), Personal Goal II (PGII – optional) and Personal Goal III (PGIII – optional) according to the personal learning goals based on constructivist principles that the teachers had selected and Moon's Stages of Learning which describe the role of reflection in the learning process. Only one goal was required, but teachers could select more. Moon's (1999) Stages describe the connections between the cognitive structure, reflection and representation of learning in different stages. Stages 1 and 2 do not involve reflection, are not connected to real life and are described as superficial learning that is not assimilated into the cognitive structure. Stages 3-5 involve reflection and learning is assimilated into the cognitive structure. Though the Literature Review did not find studies using Moon's Stages for research, Moon's definition of reflection is widely cited in professional development literature and Moon has done extensive work to integrate reflection into professional development programs as a learning tool. Her descriptions of the Stages of Learning help describe the learning process during this portfolio study. Table 7 presents the codes.

Table 7 Category 2 Stage of Goal Based Learning

Goals Stage of Learning	Personal Goal I (PGI)	Personal Goal II Optional	Personal Goal III Optional
1 Noticing	PGI-1	PGII-1	PGIII-1
2 Making Sense	PGI-2	PGII-2	PGIII-2
3 Making meaning	PGI-3	PGII-3	PGIII-3
4 Working with meaning	PGI-4	PGII-4	PGIII-4
5 Transformative learning	PGI-5	PGII-5	PGIII-5

After coding goal based learning, changes in understanding of constructivist principles related to goals were identified.

**Category 3:** Participant Perceptions of Learning with Portfolios: The professional development program aimed to help teachers accomplish their group goal of using portfolios to teach English. If successful, the experience of making their own portfolios, of learning by doing, would help them understand that a portfolio can help learners become more autonomous. Structured interviews were made at the end of the program and transcripts analyzed to learn how the participants made their portfolios, what they believe they learned by setting personal learning goals and how the portfolio contributed to that learning.

#### *Reliability and validity of the study*

Though knowledge acquired by a practitioner on the job is different than knowledge acquired in formal academic research, all research should aim for reliability in the methods used to collect and analyze data. However, validity is a problem for action research because of the context specific nature of the research. The action researcher is not looking for external validity since the intention is to describe and explain events in a specific context rather than generalize results. Burns (1999) mentions five validity criteria proposed by Anderson et al in 1994 for transformative action research. The criteria are connected to the changes brought about in educational practices. The five criteria are

- (1) Democratic validity - Related to collaborative nature and multiple voices.
- (2) Outcome validity - Is the problem solved and are there new questions?
- (3) Process validity – Are the participants able to go on learning from the process?
- (4) Catalytic validity – Do results lead to an understanding of social problems and
- (5) Dialogic validity – The results have been peer reviewed (Burns, 1999)

This study is particularly interested in outcome validity. If there is outcome validity, the teachers will have started using constructivist practices in the classroom and will have reframed the portfolio process for use with their students in 2009. Therefore, the validity of the study will be established by determining whether the results are meaningful and sustainable within the context of the study.

## VI. RESULTS

The purpose of this Action Research was to describe the effect of a five month in-service professional development innovation using portfolios to introduce constructivist principles in EFL classrooms prior to using portfolios with the students. The methodology used to study the effect of the program was both quantitative and qualitative within the context of the professional development program. The results of the study follow.

*Research Question #1 Did constructivist teaching practices in the classroom increase as a result of using portfolios?*

To determine whether constructivist practices had increased in the classroom, means and standard deviations were determined for the Total CTI and for each of the subscales at the beginning and end of the program. The means and standard deviations were used to determine the effect size and percentiles. Table 8 presents descriptive statistics for the CTI results.

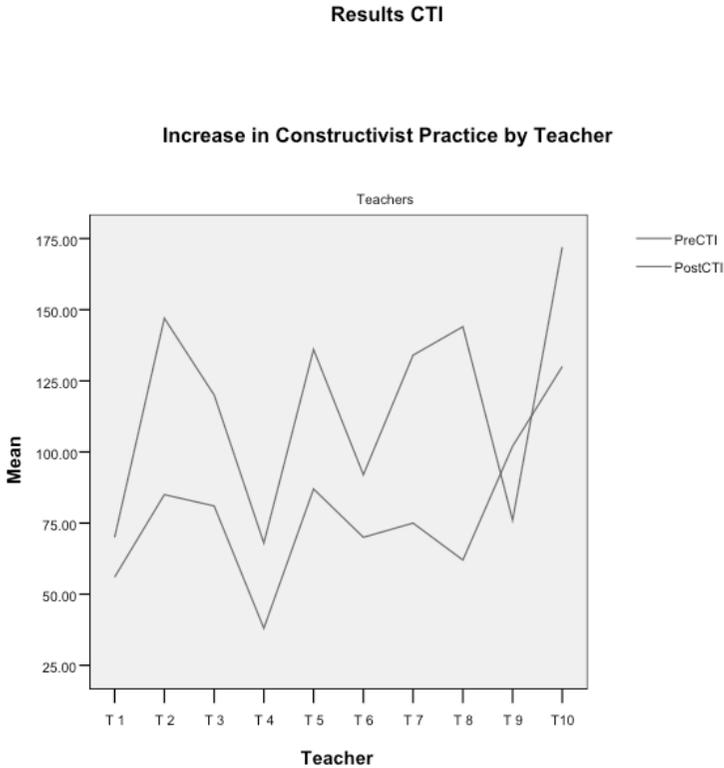
*Table 8 Descriptive Statistics for Total CTI and Subscales*

Dimension	Mean / $\pm$ Standard Deviation		Effect Size	Percentile Gain
	<i>Ago 08</i>	<i>Nov 08</i>		
<b>CTI Total</b>	<b>78,6 <math>\pm</math> 25,45</b>	<b>115,9 <math>\pm</math> 36,84</b>	<b>0.55</b>	<b>21%ile</b>
<i>Sub Scales</i>				
<b>Community of Learners</b>	<b>22,9 <math>\pm</math> 7,80</b>	<b>32,6 <math>\pm</math> 9,69</b>	<b>0.50</b>	<b>19%ile</b>
<b>Teaching Strategies</b>	<b>21,3 <math>\pm</math> 6,86</b>	<b>28,9 <math>\pm</math> 9,86</b>	<b>0.41</b>	<b>16%ile</b>
<b>Learning Activities</b>	<b>19,2 <math>\pm</math> 6,92</b>	<b>29,1 <math>\pm</math> 8,54</b>	<b>0.53</b>	<b>20%ile</b>
<b>Curriculum/ Assessment</b>	<b>15,2 <math>\pm</math> 5,12</b>	<b>25,3 <math>\pm</math> 9,08</b>	<b>0.57</b>	<b>22%ile</b>

According to Wiersma (2000) effect sizes between .25 and .40 are considered modest, .41-.55 are considered moderate, and .56-.70 are considered substantial. In this study the effect sizes range between 0.41 and 0.57 so the effect can be interpreted as moderate to substantial. This indicates that there was a moderate to substantial increase in constructivist teaching practices as a result of the five month professional development program using portfolios. As for the sub-scales, the greatest increase was for the sub-scale Curriculum and Assessment and the smallest increase was for the sub-scale Teaching Strategies.

Figure 1 presents the CTI results to indicate the increase in the use of constructivist practices for each teacher. Teacher 10 was the English Coordinator who helped facilitate the process. Initially Teacher 9 and Teacher 10 planned together.

*Figure 1 Increase in Constructivist Practices by Teacher*



*Research Question #2 How did the portfolio process contribute to learning to use constructivist principles?*

Qualitative data was collected and analyzed to find out how the portfolio process had contributed to learning to use constructivist teaching principles. Three categories were set a priori to answer the research question: Category 1 Quality of the portfolio process, Category 2 Goal based learning and Category 3 Participant perception of the process. During the process of analysis Category 4 Role of Emotion emerged as a pattern of interest. The Category 1 and 2 data collection was an ongoing, iterative (non linear) process that took place between August 2008 and January 2009 and included field notes, the portfolios, and transcripts of the TLC sessions with teachers. Category 3 data were collected in a structured interview of each teacher at the end of the process in January 2009 after the last portfolio presentation.

For Categories 1 and 2, the data were analyzed first by teacher for goal related evidence and then by category to have an overall view of the program. Category 1 Quality of the program is based on whether the portfolio is complete and whether the process represents at least Stage 3 learning according to Moon's Stages of Learning (1999). Aspects of the process analyzed were planning, reflections and Teacher Led Conferences (TLC). Category 2 Goal based learning focused first on the stage of learning reached during the program and then on describing main conceptual changes related to the constructivist principles that the goals were based on.

According to Moon, effective professional development programs should facilitate learning at Stage 3 Making Meaning. An important characteristic of this stage is that learning is externally mediated. The facilitator's role at this stage is to help the teacher integrate new knowledge into the cognitive structure (what is already known) by connecting theory to practice through authentic tasks and coaching. During this stage, the teacher is actively accumulating and accommodating new disciplinary knowledge into the cognitive structure over a period of time. Learning is supported by external influences from the facilitator, peers and materials of learning such as rubrics, models, tasks or readings and involves reflection. This is the kind of learning that took place during the workshops, Collective Assessment Conferences, where student work was discussed, peer interaction, self assessment and the one-on-one TLC sessions where the facilitator and teacher used the

portfolio artifacts to discuss the meaning of constructivist principles and their application in the classroom.

Stage 4 Working with Meaning takes place internally when the teachers manipulate and transform knowledge that is now part of the cognitive structure for a purpose. The teacher is able to learn without referring continually to the materials of learning. The facilitator's task here is to ask questions that lead to reprocessing of known information or to provide tasks and assessment guidelines that require reprocessing of disciplinary knowledge (Moon, 1999). Once teachers have a basic understanding of their constructivist based goals, planning and self assessment can take place on this level. Written reflection is useful at this stage to deepen understanding. Knowledge is no longer tacit and teachers can discuss their practice using disciplinary concepts. Teachers are able to explain their teaching practices and connect them to personal and disciplinary knowledge. In academic settings, reflective essays can represent learning at this level.

Category 1 Quality of portfolio process. The portfolio process consisted in assembling the portfolio to reflect on planning and goal based learning. Portfolios were collected at the final portfolio presentation at the end of January 2009. All reflections, self assessment worksheets and plans were selected for analysis as well as samples of student work and photos labeled with sticky notes as evidence of goal based learning. For the purpose of analysis, teachers were identified as T1 through T10. Teacher 10 was the English Coordinator who also helped facilitate part of the process.

Portfolio content was classified as (1) Complete, (2) Somewhat complete or (3) Too incomplete to have influenced learning. The review of the portfolio content indicates that seven of the portfolios (T2, T3, T4, T7, T8, T9 and T10) were complete. That means that the portfolios contain six weeks or more of goal based planning done independently and 3-5 reflections based on the self assessment worksheet. Evidence of working with goals was identified by using sticky notes to label planning and samples of student work.

Two portfolios were classified as somewhat complete (T1 and T5). This means that the portfolios contained at least one unit plan focused on constructivist goals, three to four weeks of independent planning based on a unit plan and some student work labeled to show evidence of goal based progress. Only

one of the portfolios (T6) was classified as too incomplete to have contributed to learning. It was missing plans and reflections. This teacher did progress toward her goal, but it was due to interaction with the facilitator rather than working with the portfolio.

Planning quality - At the beginning of the program planning was done together by levels. There were three or four teachers on each level. Planning from August 25-29, 2008, before the program started, focused on vocabulary, grammar and the text. There is little evidence of connecting vocabulary and grammar to a communicative purpose. Though the teacher's manual does suggest constructivist activities such as connecting vocabulary to prior knowledge for the purpose of understanding the readings, planning focused on linguistic rather than communicative aspects of learning English. This is evidence of the influence of traditional pre-conceptions about teaching since the constructivist based activities found in the text have been transformed by the teachers' prior experiences as learners. This type of planning represents poor understanding of the importance of underlying principles of learning upon which the activities are based. A synthesis of the objectives and activities for August 25-29 for each level follows.

Basic Years 2 and 3 – Main idea for the week is the story “Frog and Toad”

Monday – Learn new vocabulary, write new words in the notebook, and work on practice book page 48

Tuesday – Community Service / PD Workshop #1

Wednesday – Review vocabulary; compare things and people by going around the school

Thursday – Review vocabulary, read story and in groups draw the story sequence

Friday – Assess vocabulary and write a description of 5 animals they like

Basic Years 4 and 5 Unit title is “Creativity”

Monday – Use prior knowledge to understand what new unit “Creativity” is about

Tuesday – Community Service / PD Workshop #1

Wednesday – Students understand vocabulary. Each student creates a picture card of one vocabulary word. Write definitions of the words in notebook.

Thursday – Students can make comparisons. Model using p. 326. Do p. 49-50

Friday – Vocabulary quiz and understand story p. 192. Listen to CD. Paste story questions in notebooks and answer individually.

Basic Years 6 and 7 – Main idea is the story “Pueblo Story Teller”

Monday – Introduce new unit, listen for a purpose, and use context clues for new vocabulary

Tuesday – Use prior knowledge to understand topic, understand new vocabulary. In groups of three make a word map with assigned word. Present word map to class. Copy words in notebook.

Wednesday – Read and understand the story on p. 190 and use adverbs to describe actions. Listen to CD, complete After You Read. Act out adverb cards. Paste adverb mini lesson in notebooks.

Thursday – Science

Friday – Unit control. Evaluate knowledge. Take turns reading story aloud. Complete p. 41.

Individual planning done during the professional development program was classified as (1) Goal based planning (Stage 4), (2) Text based planning with some goal based activities (Stage 3) and (3) Text based planning (Stage 1 or 2). A review of the planning during October and November 2008 indicates that six teachers (T2, T3, T7, T8, T9, and T10) have sustained evidence of intentionally connecting constructivist goals to planning. There are at least two unit plans that explicitly connect teacher and student goals to learning activities. Text material has been reprocessed using constructivist principles of learning. Examples of sustained goal based planning follow beginning in September 2008.

Teacher 3 (Second Basic Year – PGI Make things connect a lot.)

Unit 7 Big Idea: Ready to travel

Nov 10 “Ss (students) share ideas why people like to travel”

Nov 11 “Ss draw places where they are planning to travel”

Nov 13 “Ss make a web to plan things to do on the trip”

Nov 19 “Ss identify ways people travel”

Nov 20 “Ss create a storyboard planning their trip: where, what they need and transportation demonstrating understanding of weather”

Nov 25 “Ss write a thank you note to friend for going on the trip together”

Teacher 8 (Sixth Basic Year – PG1 Learn to balance and support independence i.e. learner autonomy)

Nov 12 plan – “Ss use summarizing rubric to...identify main ideas and supporting facts of a story.”

Nov 14 plan – “Ss use rubric to write their summary of the story...citing the source.”

Nov 18 plan – “Ss read Parts of an essay and report rubric.”

Nov 20 plan – “Ss take notes during guest Explorer’s presentation.”

Nov 22 plan – “Ss write a report based on an interview using rubrics.”

(Samples of Interview and report rubrics included. Ss work labeled)

Three teachers’ (T4, T5, T6) plans are mainly text based, but sometimes include activities connected to a goal.

Teacher 4 (Basic Year 4, PG Rubrics)

Oct 16 Plan – “Hand Ss a rubric on how they will be graded...Peer correction of the ad” (Students were creating an ad for a bakery.)

Nov 13 Plan “Each group will receive a rubric on how they will be evaluated.”

Only Teacher 1 had only text based planning with no evidence of connecting planning to personal goals. Even though there is little or no evidence of goal based planning by Teachers 1, 4, 5 and 6, classroom observations do indicate the presence of goal based learning activities that are not found in the planning. Planning is turned in every two weeks before teaching and evidently goal based learning activities were planned after the formal plans had been turned in.

Quality of Written Reflection – Reflection is the process of using new learning about constructivist principles to think about improving teaching practice. Reflecting took place when teachers used goals to plan and assemble the portfolios, as well as when completing the self assessment worksheets for writing reflections. Here, only the quality of the written reflections based on the self assessment worksheet was determined by adapting Moon’s operational definitions for reflection (2004) and her Stages of Learning (1999). Originally, the written reflections were to be classified as (1) Working with Meaning or (2) Not yet working with meaning. But the task of using the Self Assessment worksheet in order to write the reflection automatically placed all written reflections on the level of Working with Meaning, so the category Working with Meaning was refined during the process of analysis

to differentiate between reflections that were truly reflective (Stage 4) and those that were mainly descriptive with a hint of reflection (Stage 3) (Moon, 2004). Though all of the teachers reached Stage 3 at some point, the length and quality of the reflections varied. All teachers assembled the portfolios and did the reflections right before the TLC portfolio presentations so time constraints might have limited the quality of the reflections. Also confidence in writing in English might have affected the length and quality of the written reflections.

By the end of the program in January four teachers (T3, T4, T8 and T10) had reached at some point Stage 4 where writing can be described as reflective. Reflective writing is more than a description and might include a questioning stance, multiple perspectives or viewing goals as complex as in the following example. The reflection is purposeful and represents learning as well as is learning.

*“I started working...on applying rubrics so students can peer and self evaluate...I found out that even though I am now used to applying rubrics, my students are not. When they are asked to self evaluate or peer evaluate...they are not confident using rubrics and usually end up giving encouraging feedback rather than useful feedback. I guess they are just doing what they have seen me do. So I need to set that as a new goal. Helping them use rubrics.” (T8, Oct Ref)*

Another characteristic of reflective writing is deliberation about how to solve a problem as in the following example.

*“Meta-cognition...I don't fully understand it yet...I understand it's about knowing how we learn, how our mind works...I also don't have many ideas as to how to promote it with the students...” (T10, Jan 09)*

These two teachers have gone beyond describing goal based activities and accomplishments. Their reflections not only discuss progress but also have a questioning stance as they deliberate about the best way to go forward. Moon would classify this as reflective writing (2004).

The reflections of the remaining six teachers were classified as Stage 3 of goal based learning. Their writing is mainly descriptive but there is a hint of reflection as a result of using the self assessment worksheet to write the reflections.

*Jan 09 "At the beginning it was hard to understand the Big Idea...I began to work with little projects. My objective was to connect grammar to real life activities...but after the interview...I clarified my ideas and started to connect real life to grammar." (T2)*

Though the teacher is working with meaning she has not taken a deliberate or purposeful stance toward reaching her goals and is therefore classified as Stage 3. She is describing or reporting progress rather than reflecting to solve a problem.

***Teacher Led Conference (TLC) Session Quality*** – The TLC sessions, in September and October 2008, and January 2009, represent learning as well as stimulate learning through interaction between teacher and facilitator. The TLC transcript analysis classified the level of interaction using Moon's Stages of Learning (1999) and looked for changes in patterns of interaction. The goal based interactive nature of the sessions automatically placed learning at Stage 3 for all of the teachers from the beginning because the purpose of the interaction was to help teachers connect theory to practice. The January TLCs have evidence for all of the ten teachers of Stage 4 meta-cognition related to personal insights into personal ways of learning. Examples follow.

*"It would be easier for me if I did the purpose and all that before I had everything done. I couldn't find it (the goal) so I had to ask T4 to read my plan to help me find it." (T6)*

*"It's been kind of hard to learn it (constructivism) because we have had a different learning process." (T7)*

The analysis of the TLC transcripts for interaction patterns led to two patterns of interest. One was related to changes in the content of the sessions even though the pre-set Agenda of each meeting was essentially the same. The other finding was related to how the role of the teachers became more active by January as they became more autonomous and deepened their understanding of constructivist principles. Their participation also became more elaborated.

During the September TLC's, the facilitator's role was active and the content of the interaction mainly focused on procedures such as how to assemble portfolios, on learning the portfolio presentation process and on goal setting with the facilitator. Facilitator questions about goals forced teachers to

work on Stage 3 and though the Agenda obligated the teachers to initiate interaction, the facilitator had to actively guide the process. The interaction consisted mainly of facilitator questions and teacher answers. There was more teacher initiative though when talking about the video recorded class. Most teachers had difficulty planning learning goals for both their students and themselves. A typical example of the change in interaction patterns is Teacher 2 of Third Basic Year.

*Facilitator – “Do you have the new plan?”*

*Teacher – “No. I have the last plan.”*

*F – “What is the objective of this unit...?”*

*T – “We are talking about creativity.”*

*F – “What are they going to learn about English?”*

*T – “They have to learn to use English in real life. For example, some specific vocabulary.”*

*F – “Where in this plan are there examples of things that connect to real life?”*

*T – “They have to describe physically each other...She is short, tall...They use adjectives... when we talk about things we like and don't like.”*

*F – “The idea is to teach grammar for a real purpose.”*

*T – “They are little. We don't force them to write anything very long...just a paragraph.”*

*F – “Maybe have them interview someone important in the school or group.”*

*T – “OK.”*

In October the interaction related more to the Agenda that focused on talking about planning and reaching goals. By October Teacher 2 takes a more active role and begins asking questions.

*T – “I am going to show you my portfolio. The first thing I have is my outline. Let me tell you my main objective. The title of the unit was My Community. My students had to describe the community and talk about Community Helpers.”*

*F – “OK, an interview. Do you have an oral rubric for this?”*

*T – “Not yet...I have to make a rubric and give them the rubric.”*

*F – (Looking at portfolio) “Your little exam rubric – that's nice. That would be better for peer evaluation though.”*

*T – “How do I grade groups?”*

*F – You should grade them (students) individually...For example – I (or student) use(s) English to talk to my friends...Always, sometimes, never - using happy faces.”*

*T – “How often do we do this?”*

*F – “To teach them how to use a rubric I would use it more regularly...That's why I've made so many rubrics for you all – so I can give you feedback.”*

*T – “To be honest I did it (planning with the rubric)...it sure makes you think...Are we*

*going to continue to plan individually?...I would like to continue planning like that until I feel sure I understand."*

During the January TLC's, the role of the teacher continues to be active and the contribution to the interaction is more elaborated than at the beginning. Though content focused on the Agenda topics of planning and self assessment, teachers compared their work at the beginning to the work produced at the end.

*F - "I also see you are connecting to big ideas. Did you always do that?"*

*T - "Yeah, we tried, but it was not always correct. Now I can tell you that I know how to connect to big ideas. But NOW...At the beginning it was really, really hard...In the planning we have already finished (for next year) we had to make like a project for each unit...It was not so easy to find one activity that connects all of this, but we had to think a lot but we did it."*

*F - "You have really tried different things that were real challenges for you."*

*T - "And we really enjoyed it too...if they (the students) enjoy it I do too and they really learn a lot...They really like the class. Every day they would say "...what are we going to learn?"*

*F - "Did you give them a rubric for self assessment?"*

*T - "We decided together what to write here (showing rubric). That was important because they decided what they wanted to evaluate in each other in the class. They said, 'We are talking about adjectives so we have to evaluate that.'"*

**Category 2 Goal Based Learning** In order to describe goal based learning, the interview transcripts and portfolio documents were reviewed first for evidence representing the stages of learning and then for changing conceptions related to goals. After Workshop #1 all of the activities of the professional development program took place at the Stage 3 level so all teachers were working on this level from the beginning. Learning at Stage 3 is mediated externally and connects new learning to what is already known and accommodates it into cognitive structure. The best representation of learning at this stage is that ideas are well integrated or linked (Moon, 1999). Examples of Stage 3 mediated learning follow and it is interesting to note the variety of ways learning was mediated, as well as the intention to link constructivist principles to teaching practices.

*"My objective the second time was to use rubrics to teach my students to self assess. I used Maddie's portfolio to have an idea about rubrics and I began to build my own..." (T2)*

*Learning mediated with a model.)*

*“When I collect the examples of constructivist materials and check my portfolio...I know I learn by using the list.” (T3 Jan TLC - Learning mediated by Workshop #1 reading comparing traditional and constructivist classrooms)*

*“I think everyone did the reflections using the rubrics...and well I changed my planning so many times...looking at my planning, this doesn't show the teacher's learning goal.” (T3 Jan Interview - External mediation of learning using rubrics and own planning.)*

*“There are some things we are not sure we are doing it right...When I started to write (my reflection)...I asked her if this is the way and then she said it could be another way too.” (T5 Oct TLC - Peer mediation of learning)*

*“I understand big ideas by working with my portfolio and talking to others.” (T6 Jan TLC Peer and materials mediation of learning)*

*“The videos, pictures and samples...were very helpful to learn about constructivism.” (T7 Jan Reflection - Mediation of learning by portfolio materials)*

*“I find it hard to completely eliminate worksheets that apply specific content for I somehow think they help me learn...” (T10 Sept Reflection - Learning mediated by exercises)*

Stage 4 learning is internal and is best represented as a “...meaningful exposition that includes other personal and disciplinary knowledge in a manner that suggests reflection and anticipation” (Moon, 1999, p. 145). Unfortunately, neither the reflection process based on the Self Assessment worksheet, nor the TLC interactions in January based on the pre-set Agenda and interview questions led to extended explanations and reflections related to goals. Therefore, for the purpose of this study Stage 4 evidence includes the sustained use of goals for planning based on the assumption that reflection has taken place in order to connect goals to classroom practices for a sustained period of time. The six teachers (T2, T3, T7, T8, T9, T10) whose unit and daily plans provide evidence of sustained engagement with the process of intentionally basing teaching practices on constructivist goals, as well as meaningful connections between activities would represent Stage 4 though this type of reflection is not written. Though the January reflections of Teachers 3, 4, 8 and 10 at the end of the program were only one page, they do self assess their goal based learning and provide explanations that connect

personal and disciplinary knowledge in a more reflective and meaningful way than the other six teachers who limited themselves to the items on the Self Assessment worksheet. An example of this type of reflection is Teacher 3.

During the recording I discovered that technology not only motivated them but made my students assume a different role. They were responsible for their own learning and performance; I was only a facilitator. My students worked in groups and helped each other assessing their peer rather than the teacher assessing them. When they were hearing their dialogs, students started correcting the lines and fluency of their friends and their own. According to Jack Richards ‘...Fluency is natural language use occurring when speaker engages in meaningful interaction and maintains comprehensible and ongoing communication despite limitations...’ I think I accomplished that with great results. (T3 Jan Reflection)

All of the teachers’ understandings of constructivist principles changed in some way. For most, intuitive (common sense) understanding began changing with the need to use constructivist discourse to talk about their classrooms and planning. The two constructivist principles that engaged more teachers and that provide abundant evidence of deepening understanding were (1) Learner Autonomy or Assessment and (2) Big Ideas which are ideas that connect learning to real life. Nine teachers (T1-5 and T7-10) focused on using rubrics and self assessment. The Constructivist Planning Rubric and the Self Assessment worksheet described Learner Autonomy as “opportunities for students to set goals, ask questions and monitor own progress.” Assessment was described as evidence of “Assessment by self, peers and teacher that is ongoing with clear learning objectives from the beginning based on what learners can do and may have been negotiated.” The concepts of Learner Autonomy and Assessment are interrelated concepts because in order to set goals it is necessary to self assess. The professional development program modeled goal setting, self assessment, reflection and self directed learning using goals and rubrics so these experiences probably motivated their use in the classroom.

Understanding of learner autonomy evolved from understanding autonomy as giving learners’ choices or learners following directions to autonomy as a way of self assessment and self directed learning.

*Teacher 1 (Basic Year 2)*

“(Learner autonomy means)...they can write about what they like...They will try to do things by themselves.” (Sept TLC)

“They can reflect themselves about their work... they can say ‘One of my animals is alone – it is not in a community. I need to do (draw) more than one lion for a community.’ I had put a rubric on the board.” (January TLC)

*Teacher 2 (Basic Year 3)*

“It (learner autonomy) is important to let them decide what to do and how to use the language.” (Sept TLC)

“They (Basic Year 3 students when making a rubric together with the teacher) said, ‘Teacher you are talking about adjectives so we have to evaluate that’... they were really worried about what they had to do...Assessment is when you evaluate yourself or others. You are able to say what you can do and what you need to improve.” (Jan TLC)

The other main conceptual change related to the understanding of planning around Big Ideas which evolved from connecting grammar to an activity to connecting all activities to a theme and in the case of Teachers 9 and 10 the concept of Big Ideas came to be understood as ongoing conceptual development as a way to connect all activities. One of the planning tasks during the program was to connect as many learning activities as possible to teacher and student goals. There is evidence that understanding evolved from a specific to a more holistic view of learning with wider and deeper connections between learning activities.

*Teacher 8*

“I’ve started connecting all the activities to the big objectives although it was not easy at the beginning...I realized that even though I did include some isolated constructivist activities like using language in realistic contexts...I was not fully aware of what I was doing and I did not plan them connected with the big idea.” (Oct Reflection)

*Teacher 10*

“The big idea was heroes. In groups the students determined the definition of the concept and then referred back to it throughout the unit. We applied the definition to all the persons that came up in the readings. The students found it (their definition) always applied...but they did change the conception of helping others when we read Anne Frank.” (Oct Reflection)

*Category 3 Participant perception of process* The goal of the professional development program was to help the teachers accomplish their group goal of using portfolios to teach English. If successful, the experience of making their own portfolios, of learning by doing, would help them understand that a learning portfolio can help learners become more autonomous. The following data has been taken from transcripts of the structured interviews made on January 14 and 29, 2009, at the end of the professional development program. First the teachers made their final portfolio presentation (TLC) and then the facilitator interviewed the teachers based on the following questions aimed at understanding how the teachers felt about the process (See Appendix 9). The answers to questions #6 and #7 were sometimes brief or superficial because the responses had already been discussed during the TLC and teachers were not asked to elaborate or repeat what had already been discussed.

Question 1. Describe how you prepared your portfolio. What did you feel confident about and what was difficult?

When preparing the portfolio all of the teachers first collected material, then identified and labeled evidence of working with goals and finally did the Self Assessment and reflection. With the exception of T3 who collected student work along the way, it was done all at once before the Teacher Led Conference (TLC) during which teachers presented the portfolio to the facilitator. The starting point for collecting material varied. Four teachers began with planning and then looked for evidence (T2, T7, T8, T9), four teachers began with best student work (T1, T3, T5, T10) and only two teachers indicated that the process of organizing the portfolio began by focusing on personal goals and trying to find evidence of personal learning (T4 and T6).

The most difficult part of the portfolio process for most of the teachers was

Self Assessment. Reasons varied from the personal, private nature of self assessment to the difficulty of finding evidence of learning.

*“The difficult part...was to check myself with the rubrics. For example I thought (I would have) 4 points but it was 2...It was easier for me to evaluate myself through with the rubric.” (T2)*

*“I think it is difficult for everyone to talk about their own work.” (T3)*

*“The hardest part was when we actually had to do the self assessment... (and) I didn’t know where to get the evidence from.” (T5)*

Q2. What, if anything, did you learn by doing the portfolio?

Five teachers described goal based learning.

*“I learned....to connect to big ideas.” (T2)*

*“I learned how to connect grammar (to communication)..” (T4)*

*“At the beginning I wasn’t using rubrics.” (T5)*

*“I learned to find an objective for every activity because before when we didn’t have any idea about constructivism we just made activities.” (T7 PG was assessment)*

*“I learned that assessment is important...When I planned I had to start thinking about assessment ahead of time...Now they (the students) pay more attention to their mistakes.” (T9)*

Four teachers said they learned about portfolios.

*“I understood the concept of a portfolio at first but I didn’t understand why we were going to do it or how. Once I understood how with the planning and making connections I learned that a portfolio is very useful.” (T4)*

*“I learned that it can be hard work and that if I want my students to do it I am going to have to help them out a lot...they can learn a lot from it...I have learned that you need to provide evidence for what you are learning. I can’t just say I learned that.” (T8)*

*“I learned that a portfolio is a learning tool...a frame, but it is elastic and can be adapted to everyone.” (T9)*

*"I learned how to do a portfolio with my students. What a portfolio is. What objectives it has...the idea of a portfolio having an objective gave the key to go away from the idea of a Best Work portfolio (to a learning one)." (T10)*

Two teachers said they learned about constructivism without elaborating.

*"Constructivism." (T3)*

*"What is constructivism. Like the concepts. At the beginning we were talking about it but we didn't know where we were." (T6)*

Q3. How do you know you learned?

All of the teachers described learning as doing rather than knowing. Improved planning and student work found in the portfolio was presented as evidence during the interview. Examples are:

*"(Students)...show better work." (T1)*

*"...I see every lesson has something in common and we have to find that point and it is very hard." (T2)*

*"When I collect examples of constructivist materials and check my portfolio...I check what I did before and see the change..." (T3)*

*"When I realized that I could connect to big ideas... and use rubrics." (T4)*

*"...because of the evidence of the class work...The portfolio helps me see how my style of teaching is gradually changing." (T5)*

(Pointing to portfolio) *"Here I had the proof and I could see it...I can say here are the big ideas and then show it." (T6)*

*"I know because it shows up in the girls...now they use rubrics easily." (T7)*

*"I can see learning and hopefully the students will see learning too when they collect their evidence. Before I couldn't." (T8)*

*"I changed planning...I had to start thinking about assessment ahead of time..." (T9)*

*"I made one (portfolio)." (T10)*

Q4. What did you do that helped you learn this?

Eight teachers mentioned that setting goals helped them learn. (T2, 3, 5, 6, 7, 8, 9, 10)

*"The portfolio has a lot of ideas and different activities that aren't really connected. By having the activities (together) I could get the big idea...(also) I think just sitting in front of the book and looking at every single topic in the lesson...(and) looking in the portfolio and looking at the activities and asking are they connected or not. It took a lot of time." (T2 – PGI Big Idea)*

*"I used the list (of constructivist principles from the workshop). I wanted to do more constructivist than traditional things... I changed my planning many times...Looking at my first planning...thinking this doesn't show the teacher's learning goal." (T3)*

*"I think setting your own goals...The portfolio help me organize...I had to include my plans...and see if my goals were achieved by the end...it made me center more while I was planning..." (T5)*

*"It's much easier when you can see something. I am a very visual person the portfolio helps me see and explain things better. I can say here are the big ideas...and then show it. By the work of my students to show that it went well...I also had to do this (label goal based learning) with the pictures." (T6 PG Big Ideas)*

*"Using rubrics is one of the activities I'm trying to implement in constructivism. The portfolio helped me to be more organized to help me with rubrics." (T7)*

*"Once you start choosing evidence and labeling evidence, I can see learning...Before I couldn't." (T8)*

Six teachers (T3, T4, T6, T7, T8, and T9) believe that personal learning was facilitated by self assessment and reflection using Self Assessment Worksheet and Constructivist Planning rubric. Examples follow.

*"(The portfolio) helped because of the reflections I did...I think everyone did the reflections using the rubrics. You give yourself feedback..." (T3 PG Rubrics)*

*"I think using the rubric had the greatest influence on my change of planning..." (T4 PG Rubrics)*

Q5. What do you think I (the facilitator) wanted you to learn through doing the portfolio? Did it make sense to do a portfolio to learn it?

The stated goals of the professional development program were to (1) help teachers facilitate learning by applying constructivist principles in their classrooms and (2) to reflect on their own process of learning. All of the teachers connect in some way to the objectives of the program. Most of their answers connect to learning by doing – learning to facilitate student portfolios by making one. Examples follow.

*“I think you think students can learn better by doing the same. They can reflect better.” (T1)*

*“...to learn to work with portfolios...to connect ideas.”(T2 – PG1)*

*“First constructivism...and to be in the girls’ shoes and to feel that they feel.” (T3)*

*“...to be better teachers by not giving the answers to the students, but by having them get their own knowledge.” (T4)*

*“...to learn about our own learning process...by seeing how we actually improved through the portfolio.” (T5)*

*“...to change our minds...about the learning process...I didn’t have any idea about constructivist principles. I didn’t know that word...I think to make the students learn and see they are learning so they can also do self assessment.” (T7)*

*“...to learn what a portfolio is...how it helps you support all your learning with concrete evidence...A portfolio is a good way to be more autonomous and reach your goals.”(T8)*

*“...to not focus on grading but on learning.” (T9)*

*“...To learn how to make a portfolio...The portfolio was a means to learn about constructivism.” (T10)*

Q6. You set learning goals for this project. Some teachers think the goals are useful – others don’t. How do you feel?

None of the teachers had ever set professional learning goals before, but all of them found goal setting to be useful for focusing professional learning and

for having ownership of the learning process.

*"They gave me the whole view of what I have to do...I may change or add goals if I think it is necessary." (T3)*

*"My...goals are personal to me. Maybe other teachers don't need classroom management - others need different things." (T4)*

*"I am more autonomous because I set my own goals even though I needed a lot of practice. They were my goals. You didn't set them for me I set them myself." (T8)*

*"Super important... (Goals) help focus and give you direction." (T9)*

*"...having two or three things to think about allowed us to feel successful and monitor progress." (T10)*

Q7. Select a constructivist principle (from a list) that you feel you understand. Tell me what you understand. Select one you feel you don't understand and tell me why you don't understand it.

Understanding was usually related to goals.

*"I think (I understand best) assessment. (PG2) Assessment is when you evaluate others or yourself...what you can do good and what you need to improve." (T2)*

*"..student autonomy (PG 1)...That means that students need to be in charge of their learning. ...They have to start doing stuff on their own with the rubrics." (T8)*

Sometimes understanding and goal setting was connected to facilitator feedback after initial class room observations. Teacher 9 had been told that it was nice to see her students asking thoughtful questions since it is usually teachers who ask the questions and this idea framed future interactions and learning.

*"Pursuing student questions is highly valued...It helps them clear their difficulties or doubts...By answering by themselves they are on their own level and developing their ideas themselves. More excited, more ownership..." (T9 Jan Interview)*

Constructivist principles identified as difficult to understand usually related to autonomous learning. When autonomous learning was a personal goal,

it was seen as more complex than at the beginning.

*"...student autonomy...they had to work in groups and give their own ideas and give feedback on the dialogue and I wasn't the one who changed the role...but maybe I don't understand autonomy like in Maddie's portfolio where they have learning goals at the beginning..." (T3)*

*"...student autonomy...I understand what it means but I don't understand how to do it..." (T7)*

**Category 4 The Role of Emotion.** Before adopting change, participants need to be convinced that the new way of doing things is better than the traditional way. Positive emotional responses to change motivate change. One pattern that emerged was the role of positive emotional responses to the changes taking place in classrooms. The fact that the students enjoyed activities based on constructivist principles probably motivated and rewarded the teachers' efforts to introduce changes in their classrooms. Examples for T1, T2, T4, T6 and T10 follow.

*"When they participated in the community unit. Did you see their faces? They were having fun. Everyone is happy." (T1)*

*"My objective....was to use rubrics and teach my students to self assess...At the beginning it was difficult but later they really enjoyed it...thinking about their job and scoring themselves." (T2)*

*"Classroom management was easier because Ss wanted to do these activities...they are happy." (T4 Oct TLC and reflection)*

*"(Before) I just told them to find the meaning (of the vocabulary words) and they hated it every Monday...(When) my English partners...suggested to make a song...I did it in groups...and the girls enjoyed making the songs instead of just copying. Then we started doing individual stories..." (T6)*

*"At first I didn't know what it (Big Idea) was until I...started doing my plan and project about leaders...It was the first time the girls really enjoyed the writing process..." (T6 Jan TLC)*

*"(Discussing critical moments of learning)...through the whole process...I definitely saw them enjoy the group activities...just to see the enjoyment and*

being more on task.” (T10)

The quantitative and qualitative results presented in this section help answer both research questions. The analysis of the pre-post classroom observations indicates that there was an increase in the use of constructivist teaching practices in the classroom. The Effect Size for the Total CTI was .55 or a percentile gain of 21. This indicates a moderate to substantial effect that can be considered good for the three months between collecting the pre intervention and post intervention data. The subscale with the greatest increase was Curriculum and Assessment. The analysis of qualitative data provides evidence that the self assessment activities of the portfolio process were the area of greatest transfer into the classroom. Teachers focused on personal goals related to assessment as they became more involved with the self assessment activities of the program and then began using rubrics for peer and self assessment activities for the students rather than summative assessment. All of the professional development activities worked together to bring about change in the classroom, but perhaps the most influential effect was the fact that the professional development program modeled the constructivist principles - teachers learned by doing.

## VI. DISCUSSION

What was the effect of the five month portfolio based professional development program on the learning of constructivist principles? Both quantitative and qualitative results confirm that a learning portfolio can be a useful pedagogical tool for in-service professional development (Darling-Hammond & Baratz-Snowden, 2005; Kohonen, 2001). Portfolios were used because the teachers wanted to introduce learning portfolios with students and it was assumed that having a personal experience with portfolios would help them understand the constructivist principles that a portfolio process represents; especially learner autonomy based on self assessment.

Quantitative results using the Constructivist Teaching Inventory (CTI) (Greer, 1997) indicate an effect size of 0.55 for the overall scale or a 21 percentile increase between the beginning of September and the end of November 2008. The CTI determines the presence of constructivist practices using four sub-scales: Community of Learners, Teaching Strategies, Learning Activities and Curriculum and Assessment. The subscale with the greatest increase is for Curriculum and Assessment which has a moderately high effect size of 0.57 or a 22 percentile gain. Curriculum and Assessment considers curriculum to be content and processes and assessment refers to the means, reasons and use of assessment data. The portfolio process required teachers to assess planning using rubrics and to reflect on goal based progress using a self assessment worksheet. Classroom observations and qualitative analysis of the portfolio documents confirm that ninety percent of the teachers set goals related to self assessment and worked to introduce self and peer assessment in the classroom. Students were frequently observed in the post innovation observations using rubrics to peer or self assess. However, summative assessment continued to include traditional vocabulary and grammar test items probably due to parent and institutional expectations.

Other sub-scales indicating progress were Community of Learners (0.50 effect size) and Learning Activities (0.53 effect size). Community of Learners focuses on verbal interaction in the classroom between students and teacher and among students. This sub-scale is directly related to learning English for communicative purposes. Two new teachers began using group work for the purpose of classroom management. Also, as teachers began planning

independently using the goal of connecting learning activities to Big Ideas, many began focusing on ways to connect learning to authentic communication and started using group work to support using new vocabulary to write songs or stories. The sub-scale of Learning Activities focuses on what the teacher has the students do to learn. Base line observations revealed that a lot of class time was spent learning vocabulary by copying dictionary definitions or grammar by filling in the blanks. The goals of connecting activities to real life uses using big ideas or using a rubric to peer assess changed the type of learning activities observed.

The sub-scale with the least change was Teaching Strategies which focuses on decisions the teacher makes and her perception of her role in facilitating learning. CTI items include the use of teaching strategies such as cognitive disequilibrium, the scaffolding of learning and actively encouraging critical inquiry. Though the facilitator modeled the strategies of using cognitive disequilibrium and scaffolding during the facilitator-teacher interactions, these strategies were never introduced explicitly, so the teachers were not aware these strategies were being used intentionally for the purpose of learning. Also some of the teaching strategies on this sub-scale, such as critical inquiry, are not appropriate for using with young learners before they are somewhat fluent in the language. The program activities and the constructivist teaching principles selected by the teachers were more related to the other sub-scales of Community of Learners, Learning Activities and Curriculum and Assessment and thus had a greater effect in those areas. Explicitly introducing the teaching strategies would have distracted the teachers from the goals they were working on.

Even though the pre-post CTI results indicate a good effect for the two and a half month time period between the initial observations and the final observations, the teachers have relatively low scores for the total CTI. The total CTI at the end of the program is 116 points out of a possible 244 points indicating that teachers have started adopting constructivist teaching practices, but there is still a long way to go. These results are similar to those of a study done using the CTI (Chiluiza-Garcia, 2004) in rural schools in the peninsula of Santa Elena, Ecuador, during a three year professional development program using social constructivist principles to introduce Information Technology into rural classrooms. These two studies confirm that the change from traditional to constructivist teaching practices is a

slow process that requires ongoing support. This also emphasizes the need to explore different alternatives for supporting in-service teacher change here in Ecuador as well as helping institutions learn to manage their own processes so change can be sustainable.

Qualitative analysis was aimed at describing the effect of the portfolio process on the learning of constructivist principles. The process was based on self assessment, written reflection, goal setting, individual planning, portfolio assembly and facilitator guidance. Though teachers think about setting goals and objectives for students, only one of the ten teachers had ever thought about setting personal learning goals. Goal setting was difficult but proved to be essential to bringing about change. Goal setting helps teachers have a commitment to learning. Once goals were explicit, the portfolio process helped the teachers keep focused on their goals through planning, reflecting, collecting portfolio artifacts and interacting with others. By setting goals teachers began to use professional discourse that helped them reframe the way they think about their practice (Freeman, 1996). The goals that were most used by the teachers were connecting learning activities to Big Ideas and Assessment/Learner Autonomy. These concepts were either explicitly encouraged or modeled by the program (Freeman, 2002). The required unit plan connected personal and student goals to learning activities and the Self Assessment worksheet and Constructivist Planning rubric required teachers to connect their goals to planning and reflecting. Planning and classroom observations at the end of November also indicate that self assessment with rubrics is what transferred to the classroom.

The professional development program provided flexibility in goal setting so both new and experienced teachers could work with meaningful goals within the context of the professional development objective of learning about constructivist principles. This also gave the teachers ownership of the change process since they themselves had first decided on implementing portfolios, then collaboratively selected six of nineteen constructivist principles and finally selected the most meaningful ones for applying in their own classrooms. This supports the recommendations made by Biggs (1998), Gearhart (2008) and Kohonen (2001) as a result of their portfolio studies with in-service teachers.

The review of planning indicates that planning can be used to guide learning as well as to describe progress learning. The review of planning reveals the power of prior experiences on teaching (Darling-Hammond, 2006). English as a foreign language programs are typically text based. Teachers' manuals can simplify teaching and guide new teachers. The school uses a text series that incorporates many constructivist principles such as connecting vocabulary to prior knowledge, the use of graphic organizers to help students make connections and the KWL chart (What do I KNOW? What do I WANT to know? What did I LEARN?) for thinking about what students know and want to know. The planning reveals, however, that prior experience in traditional classrooms framed planning. Planning before the program began was based on learning grammar and vocabulary as an end in itself rather than using them to communicate. This is evidence of prior experience having even a more powerful effect than the teacher's manual itself. Informal conversations also indicate that parents' expectations influence the way vocabulary and grammar is taught. The planning is evidence of not realizing the importance of the underlying principles of learning that the text is based on. The portfolio professional development process helped the teachers take ownership of the planning and teaching and move away from the traditional practices that they had experienced as learners. The analysis of planning was also useful for research purposes because it revealed what teachers could do alone and where they needed guidance.

Moon's Stages of Learning (1999) proved to be useful for analyzing qualitative data because the process led to interesting insights into the mediated nature of learning introduced by Vygotsky (1978) and applied to professional development by Schon (1992) and Moon. Learning is mediated externally at Moon's Stage 3 and mediated internally at Stage 4. The tasks of planning and teaching based on constructivist goals placed the program at Stage 3 automatically. The structured interviews at the end of the program indicate that teachers mediated learning in a variety of ways, which included peers, models, readings, photographs, videos and the portfolio artifacts. Stage 4 learning would require little or no external mediation. Evidence of this is the sustained goal based planning alone that took place for six teachers in the month of November without direct guidance from the facilitator. Understanding these different stages of learning helped the facilitator balance guidance and independence for the teachers.

The analysis of written reflections reveals that written reflection did not produce the expected support for learning. Though reflection is part of connecting theory to practice, the reflections in this study were brief and usually did not deal with the problems that the teachers were having as they tried to integrate constructivist principles into the classroom. Learning to write reflectively is useful for learning because it requires teachers to slow down and think about connecting theory to practice (Zeichner & Liston, 1996; Rogers, 2002). It helps teachers make sense of the chaotic nature of teaching, however, teachers are usually asked to reflect without ever being taught to reflect. Because much of the reflective process is invisible to the facilitator, professional development could be more effective if the learning process were more visible via written reflections. During this study one Collaborative Assessment Conference focused on one of Maddie's reflections as a model, but the teachers did not receive written feedback on the quality of their reflections except in one case when the teacher voluntarily asked for feedback. The teachers normally wrote the reflections right before the portfolio presentations where they were read orally. Feedback usually focused on concept clarification and goal based planning rather than improving the quality of reflective writing. It was originally hoped that the written reflections would play a major role in learning; however, it was the modeling, rubrics and oral interactions with the facilitator that proved to be more influential. It is possible that at Stage 3 when learning is mediated externally it is hard to write reflectively; however, by the time learning has been internalized, written reflection will be easier and help deepen understanding and help solve problems encountered in teaching.

According to Moon (2004), teachers benefit from instruction on how to reflect. A reflection is focused on solving a problem rather than describing and teacher educators can help teachers learn to reflect during workshops by comparing samples of reflective writing and by providing opportunities and tasks that lead to reflection such as journals, portfolios and peer and self assessment. Future professional development activities should include explicit guidance on how to write reflectively and future research should explore learning via written reflection. Research into the effectiveness of written reflection is difficult and represents one of the gaps in teacher education research at the current time.

Validity in action research is different from validity in experimental research (Burns, 1999). Instead of seeking to generalize the results, outcome and process validity are sought. Outcome and process validity are determined by the usefulness of the results to the school and the sustainability of the process. The context of the current study was optimal since the school is currently dedicated to meeting international certification and accreditation standards, and even though results are satisfactory considering the short time period, the process was not sustainable. The teachers themselves did not seem committed to continuing with their own portfolios voluntarily at the end of the program, though they believed that they were useful for professional development and to help students set goals and focus on learning processes. The introduction of student portfolios was planned in January for April 2009 but was not carried out. Though some teachers are still using formative assessment with their students, the portfolio project has been postponed until new teachers and the new Area Coordinator can support the project. Further, the change from traditional to learner centered classrooms will be slow since constructivist principles are based on new research on learning and there is still a general lack of understanding of or commitment to using constructivist teaching practices. There is also little research proving that constructivist practices are more effective than traditional ones (Kirschner, Sweller, & Clark, 2006). Change involves contextual understanding and support for change to be sustainable. Not only the teachers' beliefs about learning must change but also institutional and parents' expectations. Informal conversations with teachers indicate that parents expect the vocabulary lists and grammar rules to help their children study and pass tests and this influences the way they teach and test.

### *Limitations*

Though the study has positive results, the results need to be interpreted within limitations of the research process.

First, in action research bias is a problem because the researcher is a participant in the process and additionally in this study, the CTI is considered to be a high inference rating scale (Wiersma, 2000). Though care was taken to avoid researcher bias and improve reliability of the quantitative results, interactions with teachers as well as the passing of time can lead to new interpretations. Also the interpretation of qualitative results is a personal

interpretation of the researcher even though care has been used to provide evidence for all interpretations. The use of more than one rater would have improved the reliability of the results. Also educational research needs tools to help analyze data in an unbiased way.

Second, the nature of action research is small scale. This study was done with a population of ten teachers which did not represent the normal distribution of a random sample. The statistical analysis was only descriptive because the qualitative data analysis dealt with the teachers on a case by case basis due to the individualized nature of the program. The qualitative data was ample to triangulate the quantitative data and confirm that the increase in the use of constructivist teaching practices was mainly due to the professional development program; however, qualitative data analysis is time consuming and limited to small groups. If large scale studies are to be carried out, statistical tools need to be developed that are sensitive to the contextualized nature and diversity found in classroom research.

Third, there is always the possible influence of uncontrolled variables on the results. This study did not control for the influence of previous professional development done in the school by the facilitator. Though traditional teaching strategies predominated at the beginning of this program, it is possible that teachers who demonstrated the most progress were those who had participated in more of the previous professional development activities. Future research would be improved with a control group design particularly if large scale studies are carried out.

Fourth, the Constructivist Teaching Inventory should have been piloted in order to clarify concepts ahead of time and adapt certain items to the context of foreign language teaching. Some of the items were not appropriate for beginning level English classes and other items were difficult to interpret within the context of learning a language so the researcher had to develop personal definitions. This limits comparing the results with other studies using the CTI, but the concept clarification process did make the pre-post ratings more reliable since the definitions and time frame were unified.

Fifth, the CTI requires repeated classroom observations which are obtrusive as well as stressful for the teachers. Though the classroom observations probably motivated the teachers to work harder, they added a note of

tension to the process that was not normally present in previous professional development activities with the school. The facilitator-teacher relationship was further strained when the facilitator was asked to evaluate the teachers to avoid having more observations. The risk free environment required for experimentation with new teaching strategies was probably affected by having to evaluate the teachers. If replicated, classroom observations should be done only as part of a collaborative learning process rather than for the purpose of evaluation, and there is the possibility that change in the classroom can be studied only qualitatively if the study is small since the portfolio process provided clear evidence of change.

### *Conclusions*

The results of this study provide insights into how portfolios can be used for in-service professional development as well as how action research can contribute to learning about how theory can transform classroom practices

First, the results of this study indicate that portfolios can be useful, flexible pedagogical tools for in-service teacher training if the program models the expected change as well as provides authentic tasks that are meaningful to the teachers. What teachers did transferred to the classroom. Setting personal goals within the context of the general objectives of a professional development program helps meet the diverse needs of in-service teachers and helps them commit to change. The portfolio helped focus on the process of learning as well as mediated learning and helped the facilitator balance guidance and independence. The process can also be facilitated by the area coordinator once the initial goals have been understood.

Second, teachers would benefit from explicit guidance on how to write reflectively once they are at Moon's Stage 4 where they understand and are working with the new techniques and concepts introduced during professional development.

Third, support for teachers needs to be ongoing and contextualized. Though the teachers may take the initiative to carry out the portfolio project for students in the future, better communication of the goals and benefits of the program at decision making levels within the school would have increased

understanding of the importance of continuing support. Though isolated workshops can motivate teachers to try new things, the change from traditional to learner centered classrooms needs to be viewed as a process that requires ongoing support on all levels and if the bottom-up approach is to work teachers and decision makers need to communicate more and better.

Fourth, because action research is context sensitive, it is useful for studying the effectiveness of alternative methods of professional development with in-service teachers as long as the methods and analysis follow rigorous standards for research. According to Nuthall (2004), if action research is replicated in different contexts, it offers the possibility of developing an explanatory theory of how practice and theory are transformed in the classroom for the benefit of the students.

Fifth, the task of supporting the “learning and relearning” for in-service teachers here in Ecuador is urgent and requires new strategies. It involves not only public school teachers trained professionally in traditional subjects and classrooms, but also private school English teachers who speak English but have little or no professional training. In-service professional development needs to be cost and time efficient and change needs to be sustainable. Professional development needs to take an institutional perspective and develop strategies that help institutions take charge of their own learning processes. Schools need to become learning as well as teaching institutions.

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