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In vitro regeneration and hyperhydricity reduction of Lobelia Chinensis Lour

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Abstract

An effective protocol was developed to regenerate in vitro plantlets of L. chinensis Lour. and to reduce hyperhydricity of plantlets in liquid medium. The effects of 6-benzyladenine (BA) concentrations (1-6 mg/L) on shoot proliferation were investigated. The shoot proliferation was most effective in Murashige-Skoog (MS) medium supplemented with 2.0 mg/L BA, which supported 6.8 shoots per explants. All plantlets produced roots without adding in any exogenous auxin. In vitro plantlets were successfully established in solid and liquid proliferation MS medium supplemented with 2.0 mg/L BA. The number of shoots formed in liquid medium, 7.9 shoots, was significantly different from solid medium in which 6.6 shoots were produced. However, hyperhydric plantlets developed in liquid medium. Silver nitrate was found effective in preventing hyperhydric plantlets in liquid medium. After acclimatization, plantlets established in pots exhibited 100% survival rate. Plantlets successfully established in field and exhibited morphological characters identical to mother plants.

Keywords: In vitro regeneration, Hyperhydricity, BA, Liquid medium, Silver nitrate
Introduction

*Lobelia chinensis* (family Lobeliaceae), commonly known as Chinese lobelia herb, is a weed widely grown in South East Asia countries (Bown, 2002; Tada *et al*., 1995). It is a small, slender creeping perennial herb with ascending branches and fibrous roots at the nodes. The plant possesses unique flower. The corolla is reddish purple in colour, with a cylindrical base and an apex divided into five lobes which deviate to one side, like a half of a lotus flower (Bown, 2002).

Cytokinins such as kinetin and 6-benzyladenine (BA) are often used to stimulate growth and development. They usually promote cell division and meristem proliferation but retarded shoot elongation (Prathanturarug *et al*., 2004). In moderate to higher concentrations (1-10 mg/l) they can induce adventitious shoot formation and inhibit root formation (Taskin *et al*., 2003; Rout *et al*., 2000). Cytokinins promote axillary shoot formation by decreasing apical dominance (Syed, 1995). The stimulatory effect of cytokinins on bud break and multiple shoot induction has been reported in many species such as *Rhododendron simsii* and *Chlorophytum borivilianum* (Verleysen *et al*., 2005; Dave *et al*., 2003).

The growth rate of the explant during micropropagation can largely be influenced by physical state of the medium. In an agarified medium, the growth rate may be slow, as the toxic exudates may not diffuse from the explant quickly enough (Mishra, 2003). Gelling agents in plant tissue cultures are known to create gradients in mineral salts and bind organic molecules to the gel polymer (Adelberg, 2004), thus, influence on plant multiplication, vitrification and subsequent growth (Saxena and Sharma, 2003; Sharma and Modgil, 2003). Liquid systems may be broadly grouped into two types, submerged and partial-immersion systems. Several factors affect the
growth and proliferation of plant tissue in liquid culture. Among these are the media components, temperature and light (Kim et al., 2003; Ilan et al., 1995). The liquid medium has been used to proliferate several species such as garlic and pineapple (Kim et al., 2003; Escalona et al., 1999). Liquid cultures are more desirable because of the higher growth rates resulting from a high medium to tissue contact (Adelberg, 2004; Mishra, 2003). However, there are disadvantages of liquid systems such as complexity or cost of mechanical systems to manage oxygen and water relations and the occurrence of hyperhydricity (Adelberg, 2004).

Hyperhydricity is the formation of abnormal organs in vitro with a brittle and waterlogged appearance which are commonly experienced in tissue culture (Mayor et al., 2003). The excessive water content may cause hypoxia, deficient lignification (Franck et al., 1998; Gaspar et al., 1991) and deficient chloroplast differentiation as well as less formation of chlorophyll and other tetrapyrrolic compounds (Bisbis et al., 2000; Franck et al., 1998). The survival rate in such plants is very poor after their ex vitro transplantation (Hronkova et al., 2003; Mishra, 2003). Hyperhydricity can be lessen by raising the agar and/or sugar concentration, addition of ethylene-inhibitors, amino acid, phenolic glycosides phloridzin, naringin or esculin hydate (Curtis et al., 2004; Mishra, 2003; Witrzens et al., 1988).

From our observation, L. chinensis is not commonly found in wild. It possess low growth rate and easily infected by some pathogens. Propagation through plant tissue culture is one of the most efficient ways of solving plant shortage problems, and has been proven to be successful in numerous species (Zhang et al., 2003) and might be more effective for the rapid, mass propagation of selected clones (Iapichino, 2004). To date, there was no report on
micropropagation of *L. chinensis*. Therefore, this study was carried out to develop an efficient protocol for *in vitro* regeneration of *L. chinensis* using nodal explants and to investigate a) the effect of BA concentrations on shoot proliferation, b) the effect of solid and liquid medium on multiple shoots formation and c) the effect of various concentrations of kinetin, silver nitrate and calcium nitrate in reducing the incidence of hyperhydricity of *in vitro* shootlets.

**Materials and Methods**

**Plant Material**

Plants of *L. chinensis* were obtained from Air Itam, Pulau Pinang, Malaysia.

**Culture Conditions**

The pH of the Murashige-Skoog (MS) (Murashige and Skoog, 1965) medium was adjusted to 5.7-5.8 using 0.01 M NaOH or 0.01 M HCl before autoclaving at 121°C under 1.2 kg cm⁻² for 15 min. Gelrite 0.25% (w/v) was included as a gelling agent. Liquid medium was prepared without the addition of Gelrite. All cultures were incubated at 25±2°C under a 16 hours photoperiod provided by cool-white fluorescent lamps and 8 hours of darkness. 30 replicates were used for each treatment and the experiment was repeated three times.

**Preparation Of Aseptic Explants**

Nodal explants of *L. chinensis* were obtained from the glasshouse. They were directly washed under running tap water for 20 to 30 min to remove all the attached dust or small particles, followed by washing several times with detergent. Then the explants were immersed in absolute alcohol for 20 to 30 s under aseptic condition. Lastly, the explants were subsequently surface sterilized using Clorox® 10% with five drops of Tween 20 as a wetting agent for 10 min
continuous stirring and rinsed three times with sterile distilled water. The disinfected explants were aseptically excised to 5 mm segments and cultured in different culture medium.

**Effect Of BA Concentrations On Multiple Shoots Formation**

Nodal segments of *L. chinensis* were cultured on MS basal medium supplemented with 1, 2, 3, 4, 5, 6 mg/L BA singly to investigate the influence of BA concentrations on multiple shoots formation. MS medium without BA served as control.

**Effect Of Solid And Liquid Medium On Multiple Shoots Formation**

Nodal segments of *L. chinensis* were cultured on solid and liquid MS medium supplemented with 2.0 mg/L BA, to compare the effect of solid and liquid medium on multiple shoots formation. MS medium without BA served as control.

**Reduction of Hyperhydricity**

Nodal segments of *L. chinensis* were cultured in liquid MS medium supplemented with 0.5, 1.0, 1.5 and 2.0 mg/L kinetin, 2.5, 5.0, 7.5 and 10.0 μM silver nitrate or 8.0, 16.0 and 24.0 mM calcium nitrate to determine the effect of these treatments in reducing hyperhydricity. MS medium without BA served as control. The regeneration ability of the explants was scored by assessing the regeneration percentage and the average number of shoots per explant. Hyperhydrated shoots were determined by visual inspections. All shoots with a water-soaked, translucent, deformed and/or fleshy appearance were considered hyperhydrated.
Acclimatization And Planting Plantlets In The Field

Acclimatization was carried out to harden *in vitro* plantlets before transferring to the field. Uniformed rooted micropropagated lobelia plantlets were selected from the glass vessels and transferred to a growth chamber with air temperature of 25±2°C and a photoperiod of 16 hours. Inside the growth chamber, each plantlet was immediately transplanted into individual commercial plastic pots containing a steam-sterilized mixture of sand: soil (1:1, v/v). After transplanting, the plantlets were subjected to an acclimatization treatment of seven days of high humidity. At day eight, the vigorously grew and uniformed size lobelia plantlets were transferred to the glasshouse. All pots were fertilized twice a week with 100 mL of MS nutrient solution. Total survival rate of plantlets were determined at day 30 after transferred to glasshouse.

Statistical Analysis

Analysis was performed using Statistical Analysis System (SAS) (SAS Institute Inc., Cary, NC, 1985). Statistical differences were tested by Duncan’s multiple range test for the means. The significance level was set up at p<0.05.

Results and Discussion

Effect Of BA Concentrations On Multiple Shoots Formation
All the nodal explants grew well and proliferated in all the treatments. The highest number of multiple shoots formed was induced by MS media supplemented with 2.0 mg/L BA followed by 1.0 mg/L BA, giving a mean of 6.8 and 5.3 shoots formed per node, respectively (Figure 1; Table 1). However, the proliferation rate of nodal explants decreased with the increasing concentration of BA. The growths of plantlets were stunted for more than eight week and only 1.5 shoots formed at 6.0 mg/L BA.

![Image](image_url)

**Figure 1** Plantlets produced in MS + 2.0 mg/L BA

**Table 1** Effect of BA on multiple shoots formation

<table>
<thead>
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<th>Treatment</th>
<th>Hormone concentrations (mg/L)</th>
<th>Mean of shoots/node</th>
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<tbody>
<tr>
<td>MS (Control)</td>
<td>0</td>
<td>3.7±0.4 d</td>
</tr>
<tr>
<td>BA</td>
<td>1.0</td>
<td>5.3±0.4 c</td>
</tr>
<tr>
<td></td>
<td>2.0</td>
<td>6.8±0.4 a</td>
</tr>
<tr>
<td></td>
<td>3.0</td>
<td>3.7±0.4 d</td>
</tr>
<tr>
<td></td>
<td>4.0</td>
<td>3.0±0.3 e</td>
</tr>
<tr>
<td></td>
<td>5.0</td>
<td>2.5±0.5 f</td>
</tr>
<tr>
<td></td>
<td>6.0</td>
<td>1.5±0.5 g</td>
</tr>
</tbody>
</table>

*Values followed by different letters differ significantly at $P \leq 0.05$.

For cultured tissues, the requirement for exogenous hormones depends on the endogenous level of the plant tissue, which varies with organs, plant genotype, and the phase of plant growth (Chand and Singh, 2004). The regeneration efficiency depended on plant growth regulator concentrations and combinations (Ndong *et al.*, 2006; Popelka *et al.*, 2006).
Cytokinin is essential for induction of shoots (Yang et al., 2001) and its concentration had a crucial effect on bud development (Schestibratov et al., 2003). Likewise, Thakur et al. (2006) reported that BAP increased the average number of bulblets (9.0) of Lilium at low concentration (0.5 mg/L) when applied separately. This indicated that use of growth regulator alone at low concentration was sufficient to induce proliferation. Similarly, Elangomathavan and friends (2003) also found that higher concentration of cytokinins decreased the number of shootlet initiations and the shootlets failed to elongate and bud break was suppressed. High levels of BA (2.0 mg/L or more) resulted in vitrification of plantlets and reduction of shoot length (Tan et al., 2004; Elangomathavan et al., 2003) and multiple shoots formation (Anand & Hariharan, 1997). Christoph and Rajam (1994) suggested that high concentrations of cytokinins may cause cytogenetic instability in Capsicum, thus unsuitable for clonal propagation.

On the other hand, MS medium without plant growth regulators induced 3.7 shoots per node. The results showed that the nodal segments of L. chinensis proliferated faster with the addition of cytokinins than in the medium devoid of plant growth regulators. This was in agreement with the findings of Herath and colleagues (2004) on kenaf.

**Effect Of Solid And Liquid Medium On Multiple Shoots Formation**

The results showed that all the nodal explants of L. chinensis regenerated when they were inoculated into liquid and solid MS medium containing 2.0 mg/L BA (Figure 2). At the end of eighth week, 7.9 shoots were induced in liquid MS medium while 6.6 shoots were produced in solid medium and the differences between the means of shoots formed in liquid and solid
medium were significant. The explants proliferated faster in liquid medium than solid medium. However, liquid medium caused a morphological and physiological disorder called hyperhydricity to the plantlets. All shoots with a water-soaked, translucent, deformed and/or fleshy appearance were considered hyperhydrated.

![Image](image_url)  
**Figure 2** Plantlets produced in liquid MS medium supplemented with 2.0 mg/L BA

Liquid medium and semi solid medium had different effect on multiple shoots formation even within species in the same family. Generally, liquid medium appeared to increase proliferation as compared to solid medium. Prasad and Gupta (2006) found that gladiolus proliferated faster and better in liquid medium than in semi-solid medium. Quah (1995) also noticed that *Curcuma domestica* proliferated better in liquid medium. Chan and Teo (1993) observed that liquid medium increased the shoot proliferation rate and axillary buds production of papaya. Higher growth rate in liquid medium was resulted from a high medium to tissue contact (Adelberg, 2004). However, Anand and Hariharan (1997) found that *Alpinia galanga* produced more shoots in solid medium. Nallammai (1997) also reported that *Anubia nana* cultured in solid medium produced more multiple shoots.
**Reduction Of Hyperhydricity**

The results showed that all the nodal segments regenerated in all the treatments tested and the means of shoots formed were significantly different. In the liquid MS medium fortified with kinetin, the lowest frequency of hyperhydricity, 85.0%, occurred at 0.5 mg/L and the mean of multiple shoots formed was 4.1 shoots per explant. The highest incidence of hyperhydricity, 97.5%, was observed in medium containing 2.0 mg/L kinetin which induced an average of 6.4 shoots (Table 2). The incidence of hyperhydricity increased with the elevated kinetin concentration.

**Table 2**

Effect of kinetin, calcium nitrate and silver nitrate on shoot regeneration and reduction of Hyperhydricity

<table>
<thead>
<tr>
<th>Chemical</th>
<th>Concentrations</th>
<th>Mean of shoots/explants</th>
<th>Percentage of hyperhydricity</th>
</tr>
</thead>
<tbody>
<tr>
<td>MS (liquid)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kinetin</td>
<td>0.5 mg/L</td>
<td>4.1±0.4 d</td>
<td>85.0</td>
</tr>
<tr>
<td></td>
<td>1.0 mg/L</td>
<td>5.1±0.4 c</td>
<td>87.5</td>
</tr>
<tr>
<td></td>
<td>1.5 mg/L</td>
<td>5.5±0.5 b</td>
<td>92.5</td>
</tr>
<tr>
<td></td>
<td>2.0 mg/L</td>
<td>6.4±0.4 a</td>
<td>97.5</td>
</tr>
<tr>
<td>Calcium nitrate</td>
<td>8.0 mM</td>
<td>3.0±0.3 r</td>
<td>65.0</td>
</tr>
<tr>
<td></td>
<td>16.0 mM</td>
<td>3.6±0.5 q</td>
<td>37.5</td>
</tr>
<tr>
<td></td>
<td>24.0 mM</td>
<td>4.1±0.3 p</td>
<td>12.6</td>
</tr>
<tr>
<td>Silver nitrate</td>
<td>2.5 μM</td>
<td>3.1±0.4 z</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>5.0 μM</td>
<td>3.9±0.3 x</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>7.5 μM</td>
<td>3.3±0.5 y</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>10.0 μM</td>
<td>2.9±0.3 z</td>
<td>0</td>
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*Values followed by different letters differ significantly at P ≤ 0.05.*

On the other hand, in MS medium augmented with calcium nitrate, the highest incidence of hyperhydricity, 65.0%, occurred at 8.0 mM calcium nitrate and the average shoots formed per explant was 3.0 shoots. MS medium supplemented with 16.0 mM calcium nitrate supported 3.6
shoots/explant, however, 37.5% of the plantlets were hydrated. In contrast, the lowest frequency of hyperhydricity, 12.6%, was observed at 24.0 mM calcium nitrate and 4.1 shoots were produced.

In the MS medium supplemented with silver nitrate, no incidence of hyperhydricity was observed at all the concentrations tested. The number of shoots formed at 2.5 μM silver nitrate was 3.1 shoots. The highest number of shoots, 3.9 shoots, was achieved at 5.0 μM silver nitrate. As the concentration of the silver nitrate increased beyond 5.0 μM silver nitrate, the number of shoot formed decreased. The number of shoots produced at 7.5 and 10.0 μM silver nitrate were 3.3 and 2.9 shoots, respectively.

Hyperhydricity of microshoots is a physiological response that causes problems of differentiation and survival (Kevers et al., 2004; Kadota and Niimi, 2003). It was reported that hyperhydric individuals of Pyrus pyrifolia cultured continuously in the same medium or subcultured in fresh medium gradually turned brown and then wilt, thus reduced the survival rate (Kadota and Niimi, 2003). The results showed that calcium nitrate was effective in reducing hyperhydricity of L. chinensis at higher concentration.

However, Mayor et al. (2003) observed that calcium nitrate was not helpful in controlling hyperhydricity in sunflower. The results showed that kinetin was not effective in controlling hyperhydricity of L. chinensis at all the concentrations tested. This was consonance with the finding of Mayor et al. (2003). The addition of cytokinin in a culture medium could increase the cell water potential and resulted in hyperhydric plantlets (Yadav et al., 2003; Andrade et al.,
1999) as well as increases the abnormalities of microshoots (Upadhyay et al., 1989). Silver nitrate, which blocked the activity of ethylene by reducing receptor capacity to bind ethylene, could reduce hyperhydricity (Jha et al., 2007). Silver nitrate was effective in preventing hyperhydricity in *L. chinensis*. Similarly, in sunflower culture, increasing the level of silver nitrate from 2.5 to 5.0 μM reduced the percentage of hyperhydrated primordia from 71 to 0.13%, and achieved the best performance of the average number of shoots (Mayor et al., 2003). In addition, silver nitrate could improve regeneration in some plant species (Carvalho et al., 2000).

**Acclimatization And Planting Plantlets In The Field**

After acclimatization, plantlets transferred to glasshouse exhibited 100% survival. They grew well and exhibited morphological characters similar to wild plants. They developed new leaves and flowered normally.

**Conclusion**

The present study established an efficient protocol of micropropagation of *L. chinensis* in both solid and liquid medium. However, hyperhydricity developed in liquid cultures. Silver nitrate at all concentrations was found effective in preventing hyperhydric plantlets in liquid medium. Calcium nitrate could only reduce hyperhydric plantlets at higher concentrations. In conclusion, this protocol could serve as an alternative of *in vitro* cloning and propagation of this species.
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Using the mass media to enhance English major students’ language learning and cultural knowledge

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Abstract

As language and culture are interrelated, understanding the culture of the target language can foster students’ language learning and communicative skills. The present study was aimed at providing cultural knowledge of the English-speaking communities to Thai university students majoring in English. The course entitled “Western Culture” for the English-Major sophomores incorporated a variety of authentic learning resources for the students to study lifestyles, social values, religion, history, politics, economics, etc. of the people in the West. The media sources were derived from documentaries on the television, video clips on the Internet, news on the television, movies, songs and religious hymns. Journal writing was utilized as a means for the students to record information, reflect on their cultural learning experiences, and develop critical thinking skills. Students’ journals were randomly selected to study content in their journal entries. The research found that the authentic media sources provided the students with authentic language and cultural information, which enriched their cultural learning experiences and motivated them to learn and participate in active critical thinking activities. These were meaningful real-life cultural learning experiences for the English-Major students.

Keywords: cultural studies in EFL classes, using the mass media for EFL learning, journal writing
Introduction

As the world is growing more interconnected and transcultural, an important goal of English as a Second Language (ESL) and Foreign Language (EFL) education in the context of globalization should help students to develop significant sociocognitive thinking tools which could assist them to succeed in cross-cultural communication. It has been emphasized that knowledge of sociocultural contexts of the language that students study could facilitate their language learning and cross-cultural communication (Hinkel, 1999; Kramsch, 1998; Atkinson, 1999). Students’ sociocultural knowledge of the target language could support their effective cross-cultural communication (Atkinson, 1999).

Culture often determines how language is used to express meanings, and language use needs to be viewed as cultural and social phenomena (Hinkel, 1999). Therefore, culture is an important topic in language education because cultural knowledge is indispensable for understanding language and literature of the target language, including successful communication with the speakers of the language. To communicate in the target language effectively, to some extent second and foreign language learners need to readjust their linguistic and cultural systems relying on their understanding of the cultural worldviews held in the target language community (Hinkel, 1999). However, Thai students lack opportunities to socialize with the English-speaking communities in daily life; therefore, the chances for students to learn and absorb the target cultures through immersion in the English-speaking cultures are very limited. In addition, cultures of the English-speaking communities have been inadequately addressed and taught in EFL classes. As a result, it is difficult for students to learn and understand cultural framework.
which can be used to interpret the culturally determined assumptions, values, beliefs, thinking, and behaviors of the people in the target culture. This drawback has reflected what Atkinson (1999) has said: culture seems to be an underinvestigated concept in TESOL education. EFL education in Thailand, in fact, lacks knowledgeable cultural experts to teach the cultures of the English-speaking people and prepare students for cross-cultural communication. Therefore, to compensate these limitations we need to collect or prepare the supplementary media resources relevant for cultural studies in EFL classes.

The current study attempted to incorporate the available mass media from different sources for teaching the cultures of the English-speaking communities. The media were used as sources for cultural studies and a springboard for discussion, critical thinking, and reflective journal-writing. Students were encouraged to use journal writing, a common literacy practice in the Western hemisphere, as a tool to critically explore, discuss, analyze, and argue about cultural topics they have studied from the mass media.

**Literature Review**

**Culture**

Culture is difficult to define and a large variety of definitions have been proposed. The United Nations Educational, Scientific and Cultural Organization (UNESCO, 2011) defines culture as "the whole complex of distinctive spiritual, material, intellectual and emotional features that characterize a society or social group. It includes not only arts and letters, but also modes of life,
the fundamental rights of the human beings, value systems, traditions and beliefs." Culture is an important issue in TESOL education; nonetheless, it seems to be an inadequately emphasized topic. Furthermore, the methods and approaches to study cultural models, social practices, and cultural heterogeneity and differences are not well-known in this field (Atkinson, 1999). Because a culture is often diverse and fluid, it is difficult to design a framework for cultural learning. TESOL experts have criticized the approach that stereotypes culture and dichotomizes Western Culture as opposite to Oriental Culture (Kubota, 1999; Zamel, 1997; Spack, 1997). It is suggested that the approach to cultural studies should recognize interconnectedness and multiculturalism of world’s people; moreover, it should celebrate differences, uniqueness, and creativity of cultural diversity (Pratt, 1991). In addition, culture should be viewed as flexible, ever-changing, and nondeterministic (Zamel, 1997).

Atkinson (1999) suggests six principles of a revised view of culture which were used as a guideline for the present research and teaching. The first principle states that all cultural groups are composed of individuals, and individual heterogeneity and difference within their cultural groups should be put into account. This is to avoid reducing individuals into typical cultural types and stereotyping their cultural practices. Second, people’s thoughts and feelings are always molded and influenced by their biography, social context, and historical situations in the culture they live in. Individuals often reflect cultural assumptions of the society they grew up in a variety of ways. Third, social group membership and cultural identity of a society are multiple, complex, contradictory, and dynamic. It is important to remember that there exist conflicting values and roles within individuals. People can do and take any position in social practices in everyday life, and they may modify, resist, or ignore cultural norms. Fourth, members in society often share
certain social life and cultural assumptions. Fifth, approaches to studying cultural beliefs, assumptions, values, practices, heterogeneity and differences should be context-bound, qualitative, and ethnographic. Sixth, it is important to remember that even though language and culture are mutually implicated, culture is in fact multiple and more complex.

**The Benefits of Media for Language Learning**

Although we can study permanent cultural forms, for example in novels and art works, culture is always changing. The mass media, on the other hand, provide information of contemporary culture in natural and rich language input useful for learning both culture and language. The mass media is a society is a mode of communication which often contain assumptions of the society related to politics, economics, social relations, conflicts, and unresolved issues in daily life (Pally, 1997). The media help creating, distributing, and conveying shared and contested cultural meanings and values through the media channels to large and diverse audiences in the society. For instance, American Hollywood movies, which offer an intriguing array of cultural variations, engage and entertain diverse audiences; moreover, they often invoke, symbolize, reflect and sustain enduring values and traditions of modern periods such as American dreams, individualism, rational order, and democracy (Campbell, Martin, & Fabos, 2005). The media watch over institutions in society, make sense of important events, and chronicle the flow of daily life (Campbell, Martin, & Fabos, 2005).

The mass media, including television, radio, newspapers, movies, etc. also play an important role of educating the citizens and helping to build and maintain a uniform social framework; in
addition, they can influence the society’s awareness, perception, cultural attitudes, and public policies in some significant ways (Campbell, Martin, & Fabos, 2005). Therefore, the media can provide EFL learners with the invaluable opportunities to study the English speaking culture in the modern periods. The mass media have been reported to usually spark students’ interest and discussion in language classes, and they could fuel students’ reflective writing in journals (Stempleski, 1990; Stoller, 1992).

**Critical Thinking**

Critical thinking has been defined and applied in various fields of studies. To foster critical thinking, transformative pedagogy encourages examination of deep meanings, personal implications, and social consequences of any knowledge, theme, method, etc (Pally, 1997). In cognitive psychology, critical thinking stresses understanding the principles of causes and effects, consequences, and criteria for judgment and choices (Mohan, 1990). Critical thinking practices in English for Academic Purposes emphasize comparison and contrast, categorization and differentiation, and the ability to write in the conventions of an academic discipline (Leki, 1993). The present research incorporated the notions of critical thinking from various perspectives, including from students’ previously developed critical thinking in Thai sociocultural contexts. Students were allowed to freely explore, analyze, and criticize meanings of culture.
Journal Writing

Journal writing can be an introspective tool which instructors can use to support reflective and critical thinking. Reflective learning is the process that learners are internally exploring contents studied in class or issues of concern and they reflect meaning in relation to their experiences. Journal writing is a popular literacy practice in the Western world and its benefits have been reported extensively; however, research on journal writing in EFL contexts in Thailand is still limited.

Stevenson and Jenkins (1994) conducted a research study with international teaching assistants who were studying in the U.S.A. in order to examine the benefits of journal writing. The study analyzed content of daily journal entries of twenty participants to determine whether journal writing could contribute to the needs of international teaching assistants. Journal writing proved to be a promising technique for students to develop their language skills, acquire course content, and reflect on educational and personal experiences.

The majority of students acknowledged that they benefited from journal writing, particularly in improving their confidence and fluency in language use. Nevertheless, there was little evidence of reflective and analytical writing. The researchers suggested that teachers who use the journal writing technique should encourage greater reflectivity.

Myers (2001) reported research findings on journal writing fifteen ESL college students in Taiwan. The students wrote their journals over a three-month period. The majority of students
said that journal writing was a good exercise to help them to generate ideas, reason for their viewpoints, develop critical thinking, make connections, improve organization skills, and enhance academic writing and research skills. The study reported that generally students became active thinkers and energetic writers, and some students gained confidence as writers who wrote to a real audience. Students also reported that journal writing provided the impetus to research and they searched other sources and read about various topics before writing.

When writing in their journals, students thought about themselves, their learning processes, interests, current events, social life, and environment. Besides helping them to memorize the information, students said that journal writing helped them to become more independent thinkers and realize the importance of thinking. Students also stressed that thinking was an important aspect of the writing process. Myers recommended instructors to provide students with feedback to correct errors and to suggest students to revise their writing and reread their journals. As a result, students can fully appreciate the advances they have made in their writing and thinking. In the present study, journal writing served as a promising learning tool which fostered students’ cultural studies, critical thinking and writing skills development (Casanave, 1994; Myers, 2001; Stevenson & Jenkins, 1994).

**Purpose of the Study**

The present study was intended to examine the benefits of the mass media in enhancing the English-Major students’ knowledge of English and Western Culture through a qualitative examination of the students’ recorded reflections and learning experiences in their journals.
Research Questions

The current study, therefore, addressed the research question: Based on content analysis of their journals, how can media support the students’ English language learning and cultural understanding?

Methodology

This study focused on a single group of participants who were purposively chosen. The study was quasi-experimental and it did not attempt to control the variables. Pre and posttest quantitative measurements of students’ writing proficiency were not used in the design. On the other hand, the in-depth qualitative examination focused on content analysis. The study investigated the potential benefits of media for language and cultural learning manifested in the students’ journals which they wrote throughout the course.

The Participants and Context of the Study

Journal writing was introduced to 36 English-Major sophomores who were enrolled in the course “Western Culture” in the Applied Arts program at the Faculty of Industrial Education, King Mongkut’s Institute of Technology Ladkrabang in Bangkok. Five of them were males and thirty-one were females. Their English proficiency was at an intermediate level. Their age range was between nineteen and twenty-one years old.
The course was aimed at providing the students with cultural knowledge and raising their cross-cultural awareness. It was based on the assumption that language and culture are interrelated and that understanding the culture of the target language could foster students’ language learning and cross-cultural communication skills (Atkinson, 1999; Kramsch, 1998).

Cultural themes in this class centered on historical background, lifestyles, religion beliefs, worldviews, social values, norms, arts, economics and politics in the Western world. The topics and content were carefully selected to ensure that they were interesting and could invoke students’ discussion and critical thinking. Learning resources were drawn from various media sources relevant and useful for cultural studies, namely written texts and multimedia. The media sources included movies, documentary films on the History TV Channel and on the Internet, CNN news reports on television, and Christian hymns.

Journal writing was used as a means for the students to record their summaries of course content, make personal connections to the cultural topics studied in class, reflect on their cultural learning experiences, and explore class topics in various dimensions. Journal writing also offered the students extra opportunities to practice writing in English regularly in order to develop fundamental writing and critical thinking skills before taking formal writing courses in the subsequent semesters.
Data Collection Procedure

At the beginning of the course, the students were instructed to summarize and write their reflections on relevant issues and topics studied in class. The students employed an informal writing style to write in their journals. Every week, each student wrote one entry, typed, printed out, and submitted it the following week. As an instructor of the class, I read the students’ journal entries, responded to their ideas, and provided grammatical corrections. Then I returned the entries the following week and asked the students to attend to mistakes and revise for clarity and meaningful reflections. At the end of the semester, the students combined their revised entries and submitted their journals.

Data Analysis

The journals of ten students were randomly selected from the journals of thirty-six students. Each contained 13 entries. The student writers were identified as Student 1 to 10. After that, the journal entries were analyzed following standard qualitative research procedures. I read the entries to find general themes and patterns. From the merging themes and patterns, I could develop a flexible coding scheme and applied it when coding the data. The coding scheme was adjusted to sort out data categories. Recurring and relevant themes and patterns were identified through a consistent comparison method, which involved coding, categorizing, prioritizing, relating pieces of data according to emerging patterns of coding, and interpretation. Five important categories of qualitative data concerning the benefits of media: authentic language learning, cultural understanding, and critical thinking.
Results and Discussion

The present study found evidence to support that in this EFL cultural studies course the mass media had rich resources and could successfully enhance the students’ language learning, cross-cultural understanding, and critical thinking. The students found the media, such as movies, songs, and television programs interesting and enjoyable. The media could successfully capture the students’ attention and increase their motivation to learn. The present study reports three types of benefits of learning from the media in this article: the media increased the students’ cultural knowledge, fostered their language learning, and invoked and promoted their critical thinking.

1. The media provided interesting and relevant information for studying the culture of the English-speaking communities.

The media provided rich and essential content for the students to learn the culture of the native-English-speaking communities as media depicted their culture and lifestyles from various angles and perspectives. The media also tackled current issues and problems which were useful for learning, discussion, and critical reflection. They gave the students the opportunities to critically reflect on many Western cultural traditions and values. The students expressed their interest in Western cultures and admiration for Western values which encourage people to live a good life, keep a high spirit, appreciate spiritual matters over worldly possessions, and work hard to
accomplish goals. The media, thus, helped deepen the students’ understanding of the target culture in an essential way.


The documentaries were recorded from the television channel and played in the classroom. The channel has also put them on the Internet, so after classes the students could freely download the videos to study again at home. The media design and deliver cultural messages to large and diverse audiences. These resources provided essential historical, social, political and factual information pertaining and relevant to cultural and language learning of EFL students. They reflect social identities, beliefs, behaviors, groups, and institutions of the communities in many important and meaningful ways. The study also found that the media gave an impetus to fuel the students’ discussions in class and critical thinking when they were writing their reflections in journals.

(From Engineering the Empire - Rome) I watched a documentary about the engineering, architecture, and emperors of Rome. They extremely made me interested. (Students 3’s entry 2)
(From "Abraham Lincoln") Born in a poor family that hardly made end meet, Lincoln strove towards success and better status in the society by himself. ... Lincoln was an example of what the American Dream could give to anyone. No matter who you are and where you are from, chances are out there for you to take if you work hard enough. This idea rings true and gave opportunities to many presidents of the U.S. and heads of European countries who didn’t attend college. (Students 1’s entry 8)

The media provided opportunities for the students to rethink deeply about the Western customs they were familiar with, such as Christmas and Thanksgiving. The students found new meanings and gained a deeper insightful understanding of the customs, as they wrote in the following excerpt:

(From Christmas and Thanksgiving) Having learnt about the life of Jesus, I suddenly realized the importance of Christmas which is the celebration of the birth of Jesus and it is very important to all Christians. Every year, the celebration takes place around the world. But why some people think of Santa Clause before Jesus? What will Santa give us this year? I admit that I used to think like that, but no more. I’d be better to realize that God sent Jesus for humans on that miracle day instead of thinking about presents or fun parties. (Student 6’s entry 5)

In the selected media, the students could study genuine problems and current challenges in the culture of the English-native-speakers. The students expressed their empathy and deep concerns about the problems that the people in the Western societies are encountering as a result of some declining cultural values.
It was a television program from CNN. The topic was “What is a Christian? Where do you fit in? ... It said about the capitalist Christians who used religion to make money. The wealthy gospel makes people feel confused whether they should seek for the wealth or not to adhere to materials ... I religion is a very important part in humans’ life. So people should not use religion for their own advantages. Religion is important to our soul and it shouldn’t be mixed with money. (Student 3’s entry 6)

(From “Thanksgiving”) The present Thanksgiving Day has changed from the past as people emphasize on food, presents and family reunion more than thanking God; moreover, they forget the kindness of the Native Americans who had helped their ancestors ... At present, Christmas has been associated with materials; people buy gifts for friends and family, and they enjoy going out to see decorations along the streets. Religious traditions of Christmas have been devalued. (Student 3’s entry 9)

Christian hymns and lyrics were used to tell the story of Jesus and Christians’ religious faith in an intriguing and subtle way. The media reflect sets of common beliefs, shared values, and religious traditions of people in the society. The songs included “Holy, Holy, Holy,” “At the Cross,” “Jesus Paid It All,” “No Not One,” “He Lives,” ‘Amazing Grace,” “Victory in Jesus,” “Trust and Obey,” “Christian Soldiers,” “Thy Word,” “Give Thanks,” “Majesty,” etc.

Important words in the relics which signified crucial meanings, such as Savior, Trinity, merciful, mighty, purity, eternity, cavalry, etc. were deleted and the students filled in the blanks while
listening to the songs. The songs and music expressed deep meanings of Christians’ faith and love in God and they captured the students’ attention. Music helped the students grasp the real essence of Christians’ worldview in an important and meaningful way.

*This week I listened to the hymns, Christian songs. They sound magical, but I found it a bit strange because I don’t sing songs when I have religious ceremonies. However, I can feel that the hymns are filled with a powerful belief ... I learnt that Christians believe in the power of God and the sacrifice of Jesus and they can express these beautifully in songs. They trust and obey God in the religion with their whole hearts. (Students 3’s entry 5)*

At the end of the semester, the students worked in a group of four members, each group chose a movie to review cultural aspects of the Western societies, and they gave a presentation in class focusing on issues such as history, economics, religion, lifestyles, social values, politics, including controversial issues portrayed in the movies. The students analyzed, interpreted, discussed and compared them to their own experience and culture. The movies of their choices were such as *Spanglish, What a Girl Wants, Confessions of a Shopaholic, American Teens, Milk, The Parent Trap, Mean Girls, Juno, and A walk to Remember*. The class discussed and summarized important details from the presentations and reflected their learning experiences in their journals. Movies could capture the students’ attention and invoke their critical thinking and meaningful reflections. Hollywood movies often tell communal stories that reflect social values and behaviors; thus, they are useful sources for cultural studies. Sometimes, they allow the audiences to experience values that affirm or deviate from their own values, survey the boundary between permitted and forbidden, distinguish between normal and abnormal behaviors, and
confront with some moral borders repeatedly fought over by religious leaders, politicians, teachers, parents, entrepreneurs, and the mass media (Campbell, Martin, & Fabos, 2005).

Since most Hollywood movies are based on real life situations, cultures, and history, we can acquire lots of knowledge through these movies if we know what to look for and when to pay attention. In the two previous weeks, I enjoyed the movies that my classmates presented and I learnt a lot about societies in the Western world from these movies. (Student 1’s entry 13) “A walk to Remember”... shows us how powerful religion takes in the main character’s life ...

Daphne is the main character in the movie “What a Girl Wants”. She is a good example of American teenagers ... She is self-confident and dares to do everything she wants. “Mean Girl” is about life in high school.

American education promotes learning by encouraging students to think and find the answers ...

At first, I always watched movies for entertainment. I never thought that movies could give me much knowledge ... When I watch and think deeper, I will understand life. (Students 3’s entry 13) This week we learned about cultures from several films continued from last week. “Milk” was interesting. It reflects the conflicts between individual rights and some social value and violence in the society ... “The Parent Trap” was fun ... It reflects the culture of America and England in many scenes.

American teenagers seem to be more independent and outgoing ... I learned US slang and British slang ... The film shows some symbols of London such as the Buckingham Palace, House of Parliament, St Paul’s Cathedral, the London Eye. “Confession of a Shopaholic” reflects
American compulsive shopping behaviors ...adult society in a big city, meetings, job interviews, relationship between the employer and employees ... “Mean Girl” reflects lifestyle in American high school such as sex education, parties, prom ...I learned about home schooling and spelling bee ... a competition of spelling English words ... This week was interesting. I know a lot about new cultures from these films. I think films are “cultural mirror”. They reflect contemporary attitudes, philosophies, values, and lifestyles. Films are of course a product of culture. (Student 10’s entry 13)

Learners could not simply forsake their own culture because it is part of their beings (Byran, & Morgan, 1994 cited in Hinkel, 1999). When reflecting on their cultural learning experiences, the students rethought deeply about Western cultural values, their own culture, and personal ideas. The students related what learned to themselves, their own culture and social world. In this way, it helped them to realize diverse cultural and social assumptions which helped to increase their cross-cultural understanding, develop cross-cultural awareness, widen their worldview, and respect differences. This learning experience could help the students to understand and respect cultural diversity.

2. The media provided rich and authentic language input for studying English and enhancing the students’ language skills.

At the beginning of the semester, the English-Major students in the current study complained about their ineffective listening comprehension skills because previously they had little exposure to spoken English outside the classroom in their daily life. Therefore, the media were carefully
selected and employed to help the students familiarize themselves with authentic spoken English. Initially, the students strove very hard to comprehend the meanings in the documentaries and they worked excessive hours to summarize the content while watching. However, when the students had learnt from the media intensively through the semester, to some extent they could improve their listening comprehension skills and draw important meanings from the media. The students could express their ideas much better and more fluently. They became more confident and rigorously attempted to learn the information from the media before summarizing and reflecting their ideas in the journals. The following excerpts provide examples of their reflections:

*I have watched a documentary about the history of Athens. I’ll honestly say that I cannot summarize what they say. But I have watched for several times at home, then I understand better. I can even recite the sentences that I didn’t understand before. (Student 10’s entry 1)*

*This week, I have watched a documentary about the Romans. I feel the same as last week that I couldn’t understand the whole story. But I managed to catch up by watching again and again at home. I feel surprised by the mightiness of the Roman Empire. (Student 3’s entry 2)*

In essence, when the students were encouraged to engage in extensive critical listening activities and analyzing ideas from the media of the real world, they exerted more effort to learn and usefully use the target language from the media. Their vocabulary seemed to extend as they learned new words and expressions and productively used them to summarize the information and write their reflections in their journals. The students’ journals contained a variety of words and expressions either intentionally learned or naturally acquired from the media sources. The
important words, phrases and expressions that the students wrote in their journals are such as an independent state, originated, the birthplace of democracy, a prosperous city, a democratic institution, distinctive, proclaimed, legacies, diminished, was defeated, the expansion of the empire, launched the massive building campaign, reshaped the city, waterproof concrete, reigned, conquest, rebuilt, tyrant, prominent, war memorial, internal conflicts, evangelism, the scripture, atheist, was obsessed, constituted, amphitheater, combat, naval battles, etc. The media and learning activity, indeed, promoted meaningful language learning and uses.

The media from the real world are beneficial for foreign language learners who have little exposure to the target language outside the classroom and have very little socialization with the speakers of the target language. Thus, the current study supported that the media are indispensable learning resources for EFL students. Motion pictures and sounds in the media are intriguing and they capture the students’ attention making them more interested in learning. In addition, the media provide rich language input and abundant samples of authentic language uses in social contexts which could support language acquisition and learning. The students will have plentiful opportunities to learn authentic language in the real world from the media intended for real audiences, both the native speakers of the English language and others all over the world.

3. Media supported students’ critical thinking and higher-order-thinking skills development.

As the media contained a variety of interesting and relevant cultural topics, they triggered the students’ critical thinking and meaningful reflections. The current research observed that the media enriched the students’ learning experiences and fostered the development of their higher-
order-thinking in a significant way. Based on the media they had viewed, the students expressed personal viewpoints, posed questions, analyzed social problems, and suggested solutions to the problems. The students compared and contrasted different systems of cultural beliefs, attitudes, values, and lifestyles of the Western people and Thai people. The critical thinking strategies they used supported meaningful learning and enhanced their cognitive skills development.

*(From Engineering the Empire - Rome)* Because there are different climates and geographies, each country has its own architectural style. For example, Roman architecture has arches and domes, and the materials are often concrete and marble. Chinese architecture emphasizes articulation and bilateral symmetry and uses of large structural timbers to support the roofs of the buildings. Thai buildings are raised as a result of heavy flooding. The roofs are high and the buildings are made of wood or bamboo. In the modern world, mixed architecture can be seen around the world. Vimanmek Palace was influenced by European and Thai modern style. *(Student 5’s entry 2)*

*(From The Lost Worlds - Athens Ancient Supercity)* Having a chance to see the restoration of the Parthenon in the first class of Western Culture, one question popped up in my head. Do we have the rights to build a new building which doesn’t belong to us in our time? Most techniques and equipment used now are different from the first time it was built ... in doing so we just undermine its own value ... doing no more disturbances to the site is enough for the preservation ... *(Student 1’s entry 1)*
(From Hell: Devil’s Domain) The belief in heaven and hell exists among the teachings of almost every religion but it existence in the real world is never known. ... For me, whether there are heaven and hell or not, life should not be lived for the afterlife. It is here and now that we have and it is so short. So we should live wisely, not just spending it all worrying about what we don’t know. Do good things because it is the right things to do, not because of our fear of hell. Love other because we truly care for them not because we want God to love us. Then we can say that we are true to ourselves and to God. (Student 1’s entry 5)

(From Hell: the Devil’s Domain and religious hymns) Through the history of Jesus, there were a lot of obstacles before he could accomplish his mission. Similarly, the lord Buddha, who was going to be the king, chose to spend his life to search true happiness, instead. After abdicating from the throne, he faced a lot of difficulties before he was enlightened and achieved nirvana. Thanks to his wisdom and effort, which helped him to think beyond the goal of this life in order to gain true happiness. ... Buddhist doctrine emphasizes rationality. Bad action will return bad reaction, so we should have good action for it will be followed by good reaction. There is no belief in God in our religion ... When Christians repent their sin, it will disappear. On the contrary, in Buddhism our sin will still be in our souls and we will inevitably have to repay or be punished. This is the underlying teaching of reincarnation in Buddhist doctrine. Although there are some different teachings between the two religions, the similar teaching is about love and kindness for everyone and doing good things for a better life. (Student 3’s entry 6)
(From CNN news) Climate change may be a big problem, but there are many little things we can do to make a difference ... We have to recycle cans, bottles, plastic bags, and newspapers. When we recycle we send less trash to landfills and we help save natural resources, like trees, oil, and natural elements such as aluminum. We can save energy by taking the bus, riding a bike, or walking. Whenever we use electricity, we help put greenhouse gases into the atmosphere. By turning off the lights, the television, and computer when we are through with them, we can help a lot. There are many solutions to save our world from the problem. (Student 2’s entry 10)

When the students attempted to critically discuss cultural meanings, they embraced their culturally influenced set of values and beliefs which are socio-culturally distinctive. This is in accordance with what literature suggests; learners’ understanding of cultural conceptualizations and constructs in a second culture is fundamentally influenced by their own culture, worldviews, assumptions, and presuppositions (Hinkel, 1999). Thai cultural and intellects were also clearly reflected in their writings. Several students focused on comparing the relevant aspects of Buddhism and Christianity, such as the life of the lord Buddha and Jesus, religious doctrines, ideas about the afterlife beyond this world, and the ultimate goals of teachings in the two religions. In this process, the students discovered a new understanding and deepened their insights in cross-cultural meanings.

(From “Thanksgiving”) Praying can help us to concentrate and stop our confused thinking. When we are praying, our mind will focus on the prayers. ... According to Buddhist teaching, when we have concentration, we will gain wisdom. ... From my own experience, the praying competition gives me the chances to learn about the doctrines I had never known before, to
meditate, and to join religious activities more often than ever. These chances made my life better. (Student 3’s entry 5)

These critical thinking strategies helped the students to generate interesting ideas in their journal entries. This kind of learning experience could help the students to develop their higher-order-thinking skills. Pally (1997) noted that critical thinking in second language classes allows students to develop their language skills, strengthen content knowledge, and foster thinking skills. Critical thinking skills are beneficial for students’ academic studies at the university and for their professional pursuits in the workplace; therefore, critical thinking need to be practiced in EFL classes. Beyond the classroom, critical thinking skills are applicable to various situations because they can help students to understand the sociopolitical factors that implicate their lives (Pally, 1997).

Conclusion

The present study has found that the media provide abundant and authentic language input, as well as relevant cultural content, for EFL students, especially the English-Major students, to learn English, understand the culture of the native-English speakers, and develop critical thinking. The media allow students to associate learning to their life experiences and the world outside the classroom in many meaningful ways. With the support from journal writing, students can reflect and form their own perspectives about cultural topics that they have studied. In this learning mode, students can engage in the literacy practices in their second or foreign language as knowledgeable, reflective, and analytical members of their academic community.
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The 10th International Conference on Developing Real-Life Learning Experience : Education for Sustainable Development as a Pathway to ASEAN Community


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A theoretical synthesis of knowledge sharing and educational leadership for sustaining learning communities

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Abstract

Knowledge is one of the crucial and dominant economic resources in order to obtain sustainable advantages in any community. The world is now shifting faster thanks to the advanced development of digital connectivity and increasing access to knowledge. Leaders of a community, society or country must contemplate what factors concerned in the emergent era of valuable network that foster learning communities. To some extent learning communities benefit each individual member and the community as a whole as they generate economic prosperity as well as improve student academic and social achievement. They even enhance interdisciplinary studies in higher education levels. Hence, it is of essence to have a strong learning community which requires all stakeholders to actively participate in sharing common values, beliefs, and knowledge in order to pass on their wisdom from generation to generation, and embracing a strong sense of loyalty and belonging among themselves so as to achieve together both individual needs and shared missions of the community. With the aim of sustaining a learning community it necessitates synthesizing the creative mechanism of knowledge sharing with the application of authentic educational leadership that encompasses a process of influencing, sharing knowledge of new concepts, practices, ideas, insights, abilities, and values for personal development and of facilitating ongoing learning, communicating certain values and useful information for people’s well-being in a community, enhancing academic progress, and inculcating sound awareness of continuous lifelong education. The purposes of this study through content analysis are to raise the awareness of the eminent power of sharing knowledge that requires a strong sense of educational leadership and to emphasize the significance of sustaining learning communities for the academic achievement of learners in particular and for the intellectual well-being of people in a community in general.
Keywords: Sustainable Education, Educational Leadership, Knowledge Sharing, Learning Communities

Introduction

Leaders in any community or circle are required to possess certain skills, abilities and knowledge in mobilizing communities for a better change. Despite having mutual purposes or shared mission, only one person could not at all achieve leading a community to success. Rather strong commitment and devotion in actively sharing their knowledge and wisdom from members involved are determinants to sustainable learning communities. In the effective mechanism of knowledge sharing for a community to confer sustainable capacity, three critical determinants involve what content should be shared, in which context is conducive to learning and what expected roles members in a community should perform for the betterment of a whole community. In order to create a learning community, it necessitates to have shared emotions, values and beliefs from its actively engaged members.

All stakeholders are required to work in close collaboration with strong partnership in order to achieve a common purpose: sustaining learning communities. Nevertheless, essential resources in terms of human, physical and financial factors are of the essence to success. In this study, content analysis was used as Krippendorff (2004) described it as one of the most important research techniques in social sciences. The data were created in terms of texts, images, and expressions for a content analyst to interpret and extract underlying meanings.
Content analysis is regarded an efficient method for public opinion research, tracking markets, political learning and emerging ideas. This paper aimed to derive theoretical synthesized determinants by coalescing theories of knowledge sharing and educational leadership along with the core notions of learning community and sustainability, the findings of which could provide a fresh impetus for leaders in a community to drum up support and commitment from their stakeholding members for the determination of shared visions in creating sustainable learning communities.

**Educational Leadership towards learning communities**

According to Bennis and Nanus (1985), leadership is a crucial instrument to develop visions that can mobilize communities for a better change. In the 21st century, there have been so many ongoing changes; the increasing intense of global competition, the rises of complexity and unprecedented changes, and the demise of hierarchy and position power all were creating new yet far-reaching challenges to all communities worldwide (McFarland, Senn, & Childress, 1994). In order to demonstrate leadership in a modern era a leader requires such certain characteristics as vision, inspiration, strategic orientation, integrity and organizational sophistication (Guthrie, 1990).

Meanwhile Bennis (1992) contended that true leaders to begin with should have four competences. The first attribute is management of attention by acquiring commitment with people. Leading a community to learn necessitates obtaining a great sense of commitment from all stakeholders. Management of meaning is the second quality that leaders should possess, which is carried out through the precise and concise communication of shared vision. Assuming
a role of communicator leaders inherit certain challenges. Thirdly, trust and constancy are major determinants in reaching successful leadership. Lastly, management of self which requires leaders to know what their skills are and how they deploy them effectively.

In the context of knowledge sharing and sustaining learning community stronger leadership abilities are highly needed (Razik & Swanson, 2001). Rather than focusing on leadership merely in terms of peripheral aspects (personality, traits, goal attainment) or content (knowledge-possessed leader) it is more crucial to focus on the process of leadership that involves “an influence relationship among leaders and followers who intend real changes that reflect their mutual purposes” (Rost, 1991).

Razik and Swanson (2001) also proposed that it is crucial to develop leadership capabilities through changes to the way future leaders and followers are to be educated. Thereby, the learning communities are of the essence to facilitate knowledge transferring among people in a community whereas to build up a strong bridge for passing on wisdom from one generation to another.

Referring to the development of learning communities Schein (1992) also put forward the leaders should possess the ability to share knowledge and support ongoing learning which are regarded as the most salient values of future leadership. The leaders of the future will be people who can lead and follow, be individualistic and team players, and most importantly, be perpetual learners themselves.
Referring to leadership values mentioned in the previous section, effective leadership is a process which involves ongoing learning, practicing, supporting, sharing knowledge and communicating shared values among leaders and followers. According to Owen, Hodgson and Gazzard (2004), “ongoing leadership requires freedom to develop in an environment that supports and guides thinking, emotional well-being, creativity, dialog, openness, trust, and responsibility” (p. 284). These values are regarded as the cornerstone of human development, which is also reflected in the missions of education in many countries. That is to develop people in all aspects such as intellect, knowledge, morality, and integrity.

In synthesis of educational leadership theories, in line with the meaning of education defined by Thai National Education Act of B.E. 2542 (1999), educational leadership signifies a process of influencing, sharing knowledge of new concepts, practices, ideas, insights, abilities, and values for personal development and of facilitating ongoing learning, communicating certain values and useful information for people’s well-being, enhancing academic progress, and inculcating sound awareness of continuous lifelong education.

**Knowledge Sharing towards Learning Communities**

Drucker (1995) stated that knowledge could be one of the most important dominant economic resources for a community to acquire competitive advantages. However, Brown (2000) simply concluded that knowledge brought about powerful intertwining forces, which were content, context and community. It is important to realize what to share (content), where to disseminate (context), and who to carry out such processes. As Allee (2003) posits, it is widely accepted that
the world is now shifting faster due to advancement of digital connectivity and increasing access to myriads of informative sources. People in a community need to be active participants for their circles evolve sustainably. As Drucker (1995) emphasized that it was important to equip people with extensive knowledge so that a society or a community could move forward with sustainable strengths. Without the effective process of sharing knowledge, learning communities would be unable to grow and develop for the betterment of the future.

However, no matter how valuable knowledge is to be disseminated but without sharing or being explicitly made available fruitfully for people in a community or a society, such knowledge could be of valueless. Additionally, Shin, Holden and Schmidt (2001) also demonstrated that the value chain of knowledge management requiring distribution, which functioned as a gate keeper whereby knowledge could be flowed out and shared among people throughout a community. It takes every individual to actively engage to a certain extent. Knowledge is not only a simple tool particularly for an individual to advance his/her career but rather a major driving force generally for the sustainable growth of a nation’s economy as a whole. In order to achieve sustainability, leaders of a community, society or country must be able to capture what variables and players involved in the emergent era of value network that fosters knowledge-sharing communities (Allee, 2003).

Probst, Raub and Romhardt (2001) state that knowledge is considered a commodity, which is only transferred by the exchanges of people in a community. The value of knowledge depends on to what extent it is used and applied in a certain context for benefiting a group of people in a certain community. Knowledge sharing is a means used to educate individuals within a
community. As it is believed that the sharing of knowledge turns isolated information or experiences into something valuable and is a critical determinant for a community to confer sustainable capacity (Gupta & Sharma, 2004; Probst, Raub & Romhardt, 2001).

Referring to a cycle or spiral with five sections of knowledge process by Gupta and Sharma (2004) based on the work of various theorists (Brown & Duguid, 1991; Denning, 1998; Huber, 1991; Kerssens-van Drongelen et al., 1996; Nonaka, 1994), knowledge sharing and dissemination are mechanisms that create linkage between individual to group for transferring knowledge, and enable in-flowing and out-flowing of knowledge evolving within a community.

According to Dixon (2000), there are five main types of knowledge sharing: serial sharing, near sharing, far sharing, strategic sharing, and expert sharing. Firstly, serial sharing occurs when knowledge (both explicit and tacit) is gained in one context and is then disseminated to the use in a different setting. Serial sharing involves regular meetings, monthly brief sessions, and so on. The second form is near knowledge sharing, which takes place where people who share explicit knowledge, generally routine, frequent and similar when repeated, to others by various kinds of media. Far knowledge sharing, the third form, is the sharing of tacit knowledge among people, from which collaboration is developed. Strategic knowledge sharing concerns both explicit and tacit knowledge, which is used in infrequent and nonroutine situations. Strategic sharing normally involves identification of key knowledge and also the collection and interpretation from knowledge specialists are sought, such as the knowledge required for corporate mergers and acquisitions. Finally, expert knowledge sharing occurs when explicit knowledge from experts is gained because the knowledge that people have is limited.
According to Probst, Raub and Romhardt (2001), it is undeniable that human beings are by nature knowledge sharers. They also highlighted that our natural inheritances to share knowledge have been regarded as crucial to a community. Just as innovation was important to early-aged societies, knowledge sharing has been vital in competitions at global and local levels as well as in organizational readiness. Simply concluding, knowledge sharing is a key to innovation of a community.

**Learning Communities towards Sustainable Education**

Learning communities have been defined in several ways and the concept of which is being discussed and practiced widely in educational circles. For a simple definition of a learning community, it refers to a group of people who have shared emotions, values, beliefs and actively engage themselves in learning together from one another. The process of learning is undertaken through participation in “communities of common purpose” (Kilpatrick, 1999).

According to Feldman (2000), educational theories and practices in the twentieth century defined that era as the “century of individual” which demanded a learner to be a “lone seeker of knowledge” but the growing the theory of social constructivism of Vygotsky (1978) realised the contribution of togetherness: learning from each other. The main characteristics of learning communities compose of synergistic interests and curricular content. According to Lenning & Ebbers (1999), active collaboration and strong partnership in learning communities develop and facilitate people to share knowledge and potentially create new knowledge for the benefits of the community as a whole. In educational setting, educators, teachers, students or even staff as they
are regarded as crucial members in learning communities must value learning, work to improve curriculum and instruction, and focus more on the students’ sustainable growth (Peterson, 2002). Even though learning communities could evolve through strong participation and partnership of their members, they require sound leaders who thrive them to achievement. As Taylor (2002) proposed that it is of significance for leaders to foster learning communities by equipping people with human, physical, and financial resources including opportunities so that trust, a shared culture and vision could be viably built. Towards the twenty-first century learning communities keep on evolving for the interest of the diverse needs of learners and the communities. Kilpatrick (1999) stated that learning communities shall involve stakeholders with shared purposes, collaborate on building up learning environment that is conducive to enhancing capabilities of all members to share and create new knowledge.

As Delors (1996) recommended “four mutually supportive pillars of learning as the cornerstone of education for the 21st century”, they are regarded as overarching concepts of sustainable learning paradigm: learning to know, learning to do, learning to live together and learning to be. According to UNESCO (2008), in order to develop education for sustainable development there must be emphases on promoting learning processes: critical thinking, problem solving, developing a holistic vision, systems thinking and futures-oriented thinking. It is crucial for community leaders to help their members develop these skills; particular “linking-thinking” which could be practically employed in their real-life contexts. Participation, collaboration, and dialogue in educational processes are important determinants of sustainable education.
Self-sustaining Cyclic Triad: Learning-Leading-Living

A theoretical reflection on “cosmological models in which the universe follows infinite, self-sustaining cycles” (Steinhardt & Turok, 2007), sustainability of education is derived from the strong and continuous relationship among three key determinants: learning (content/knowledge sharing), leading (ongoing leadership) and living (learning communities).

Aristotle once said, “For the things we have to learn before we can do them, we learn by doing them.” It is inevitable to accept that we need our learners to do and embrace explicit and tacit knowledge through experience. Nowadays, an emphasis on practical learning processes has been laid firmly as UNESCO (2008) urged educators worldwide focusing on critical thinking, problem solving, developing a holistic vision, systems thinking and futures oriented thinking.

These skills enable learners to “link” their knowledge and facilitate them to “think” critically through applying their learnt theories in real-life situations. In the effective sharing of “content (education and experience)”, environment plays a major role to facilitate people in a community to acquire sustainable education successfully. Therefore, a “context” that is conducive to successful knowledge sharing requires active participation, collaboration, and dialogue among stakeholders in communities as a whole, particularly their leaders. A strong sense of an ongoing leadership could pave ways “to develop an environment that supports and guides thinking, emotional well-being, creativity, dialog, openness, trust, and responsibility” (Owen, Hodgson and Gazzard, 2004). These values, combined with integrity and morality education, contribute greatly to the quality development of learning community members. All in all, a leader needs to
be fully aware of what to share, where to share it and how to make the sharing achieved for
thriving this cyclic triad to be dynamically self-sustainable.

![Self-Sustaining Cycle](image)

**Figure 1** Self-Sustaining Cycle

**Conclusion**

All stakeholders including educational institutions, public and private sectors in any communities need to be actively aware that their supports could contribute to the sustainability of their communities more or less. As members, they merely learn to share and develop their knowledge and wisdom actively and that could turn to be a powerful means for a community to evolve sustainably. Opportunities to learn and experience provided by public and private organizations are considered crucial learning factors for young generation to embrace practical knowledge and education as they could learn from real-life experiences. For leaders, they are to provide a community with a strong and fresh impetus to determine shared visions, to develop an environment supporting creative dialogue, openness and build up strong commitment in creating sustaining education for people in a community.
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Integrating a sustainable learning culture through English-medium programs in Thai universities: Reflections from a classroom practice

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http://aijss.org/index.php/aijss20140104/
Abstract

Internationalising university curricula has become a major priority for many universities in Thailand. There are different motives for developing English-medium programs among Thai universities. The emphasis on English language competence of students supersedes concerns about cultural challenges in a classroom. This paper aims to share and discuss experiences and evidence of classroom practices. The methodology of this research is qualitative research. Participatory action research was employed as a research approach by using a case study of a postgraduate program of the Department of Industrial Architectural Education and Design in the Faculty of Industrial Education at King Mongkut’s Institute of Technology Ladkrabang, Bangkok, Thailand. The participants were postgraduate students who studied an Advanced Graphic Design course between 2011-2012. There are three main research outcomes. Firstly, English language skill is not a significant barrier to the learning processes; however, the students’ learning attitude towards English-Medium classroom is found to be the major concern. Secondly, the unique feature of the program is enabling sustainable life-long learners, independent problem solvers and international professionals in the region. It is recommended that students should be enabled as sustainable change agents because they are the most significant stakeholders in the learning process. Finally, there is a need to shift the role of lecturers to facilitators in order to further students’ learning at each step they have taken both inside and outside the classroom.

Keywords: Internationalization, learning culture, English-Medium Program, sustainable change agents, Thai value,
Introduction

The 21st century is the century of learners; the focus is on learners rather than lecturers. Building a sustainable learning culture through the current popular English-medium degree programs in Thailand requires new attitudes of all stakeholders in education. It is about shifts in ways of what students learn, the way they learn it and how they are taught. Since the aftermath of the 1997 economic crisis, knowledge and skills are recognized as vital to the future of Thai economy. Internationalisation has integrated in Thai government policy since 1990 in an effort to improve educational standard and English competency of Thai students.

It also includes the nation’s need to build the nation’s competitiveness in the pace of economic globalisation challenges. Driven by Thai and international employers from both public and private sector increasingly seek proof of English ability of university graduates and employees for their organisations. Thai higher education institutions are currently having more active roles and working closely with industries in terms of matching demands and supplies of knowledge-workers (degree qualifications), skilled workers and English-speaking workers as Marginson & Considine (2000: p5) suggested ‘universities must mirror markets in order to serve markets’ (Marginson & Considine, 2000).

Internationalised curriculum, according to Bremer and van de Wende (1995: p.10), should have ‘an international orientation in content, aimed at preparing students for performing (professionally and socially) in an international and multicultural context and designed for domestic students and/or foreign students’ (Bremer & van der Wende, 1995). Thus, a university’s curriculum needs to embrace and sustain national or local values and knowledge systems while at the same time incorporating the best and most appropriate international ‘bodies of
knowledge.’ Internationalising university curricula has become a major priority for many Thai universities and a powerful English language as the lingua franca in higher education is one of significant factors in an internationalisation process of Thailand. Much research has been done on curriculum contents, but there have been limited research on how students go about learning in English-medium degree programs offered by local Thai universities. In addition, most universities assume that students have learned how to learn when they access to higher education.

The popularity of the establishment of English-medium programs signifies greater attention being given to the economic dimension of globalization while cultural dimensions and social development are given less emphasis or even ignored. Therefore, this paper aims to share experiences and evidence of classroom practices as well as guide teaching staff in Thai higher education institutions who intend to implement a sustainable learning culture through English-medium programs in their (program, faculty, department too much use of program).

This paper draws from a case study of an Advanced Graphic Design course which was offered between December 2011 and March 2012. This course is a part of the current Master of Science in Industrial Education (Industrial Design Technology). This paper presents findings of the first cyclical process. Reflections from classroom practices and observations are also included as suggestions for further research.

**Perceiving a Sustainable Learning Culture in a Thai Context**

Most traditional curriculum focused on how the lecturer teaches rather than how students learn. There has been a paradigm shift taking place, moving the emphasis from teaching to learning and
a more student-centered curriculum. Consequently, the recent change has impacted on the curriculum design process with a greater emphasis on student learning, particularly knowledge, skills and competencies. The focus is on how learners learn.

The Delors’s Report (1996) is still a significant guide for educators to rethink towards the concept of lifelong learning. Learning is a process and the process of learning to think is a lifelong learning. There is a need for greater self-knowledge; it requires learners to exercise greater independence and a stronger sense of personal responsibility. Essentially, learners need to have freedom to think, judge, feel and imagine in order to participate effectively in a changing world. Learners’ personal qualities and skills are important to sustain this development. Consequently, there are increasing global pressures for universities in Asian-Pacific region to revise academic curriculum contents, especially to priorities English medium education in science, technology, economic and business management disciplines (Delors, 1996).

Traditionally, teaching staff in universities have focused their efforts on the acquisition and transmission of knowledge rather than on the processes by which students come to understand the subject matter being transmitted. It is important to change this emphasis in order to assist teaching staff to understand how they might involve in the internationalisation of the curriculum, it is necessary to challenge the way they think about teaching and assisting students’ learning. The best approach to improving teaching is by studying students’ learning. (Ramsden, 1992). The improvement of teaching is related to the extent to which teaching staff are prepared to conceptualise teaching as a process of helping students to ‘change their understanding’ of the subject matter they are taught.

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Building a sustainable learning culture from collectivist society like Thailand requires a ‘new attitude’ of educators to challenge and create an ‘individualistic learner’ who is prepared to think critically in relation to global, political, economic and social issues and trends. Significantly, most ‘individualistic learners’ in the Thai context would have a sense of their cultural origins and the cultural foundations of their society. They should be able to conceive the educational and career aspiration from a uniquely Thai cultural perspective. Culturally defined behaviours of Thai students such as *krengjai, choei* or *jai yen* are however based on status, seniority, power and rank are moulded by these social relationships (Klausner, 2000).

Core concepts of Thai cultural values, perspectives and behaviours affect teaching and learning practices in the set international scenario within the (Thai) local context. One of the most difficult Thai concepts for westerners to understand is the behavioural pattern defined as ‘krengjai’. *Krengjai* attitude, one of significant Thai core values often plays a significant role in a community especially, instructor/lecturer and student relationship. The students’ relationship to the lecturer is also expressed in the word ‘*bun khun*’ which means ‘*gratitude*’, the correct and natural response of the student to the lecturers’ *kreng jai* (Caiger, Davies, Leigh, Orton, & Rice, 1994). It is notable that *krengjai* is a displayed attitude towards one higher in the rank, social status and age scale. Klausner explained it as ‘*diffidence, deference and consideration merged with respect*’ (p.258).

Accordingly, students from a collectivist culture tend to avoid confrontation/criticism with their lecturers. Students also try (every effort) not to cause lecturers to lose face at any circumstance at school. Thai students’ behaviour of ‘choei’ (uninvolved) and seldom ask questions in a classroom is very likely to be observed in a Thai classroom. Different perceptions of lecture-
based class of Thai students significantly appear in the behaviour expected of student towards their lecturers and learning. Thai students have ‘the expectation that university classes will be taught in a lecture format and their expected “response set” is to sit quietly and listen. Students expect that lecturers/professors’ notes will be written on handouts or overhead projections, but they expect also to take cursory notes during class’ (George, 1987). Sanuk (fun, enjoyable) interaction in a classroom setting is another unique Thai attitude towards both work and play. This view is often observable in a Thai classroom as ‘sanuk’ implies absorbing and interesting. It is important for lecturers to conduct their teaching styles in an enjoyable or a fun way in order to encourage students’ learning and make an interesting classroom atmosphere (Chalapati, 2007).

Methods

This study explored both personal experiences of internationalization across a wide range of stakeholder groups. Questions were asked about how English-medium degree programs were experienced and interpreted by educational policy makers, senior university executives, teaching staff, and students. Significantly, this study offered scope for authors to reflect upon the research process and in particular the significance of cultural values in conducting cross-cultural research. While both authors are Thai and many of our research subjects were also Thai, we still encountered cultural obstacles throughout the research process.

This study employed a case study research methodology using qualitative techniques and emphasizing on the qualitative approach. Participatory Action Research (PAR) was a research approach of this study because PAR allows researchers to actively involve in real-life situations and able to collect the data of a ‘reality’ in real time. PAR also enables the active participants both academic researchers and participants to investigate and examine a problematic situation or
action to change it for the better (Kindon, Pain, & Kesby, 2007; Peters, 2011). Finally, PAR has empowerment effects on the participants through the process of constructing and using their own knowledge (Walter, 2009), so that they become life-long learners and independent problem solvers.

The ethnographic data included observation, focus group interviews and physical artifacts such as photographs and written reports which were created by the participants. They were used in order to enable the researchers to have a better understanding of how students’ learn, plan, think and transform their ideas to actions while they were working outside classroom without the researchers’ supervision.

The Case Study

A case study, which was the principle qualitative research strategy employed in this study, allows the authors as researchers to gather data on the same subject from a variety of sources to better reflect the social context in which the research takes place (Merriam, 1998). The Master of Science in Industrial Education (M.S.I.Ed. in Industrial Design Technology) was chosen as a case study because it is one of the most well-established postgraduate programs of King Mongkut’s Institute of Technology Ladkrabang (KMITL), Bangkok, Thailand. It is a postgraduate program in the Department of Architectural Education and Design, the Faculty of Industrial Education at KMITL. Significantly this program has been considered to be offered as a full English-medium program initiative (using English as a sole medium of teaching and learning). There is an increasing demand by local Thai students and students across the region, particularly students from Laos.
The Advanced Graphic Design course was selected as the key course of this study because it introduced English as the medium of teaching and learning. This course consisted of both theories and practices. The class activities were composed of a two-hour lecture about graphic design principles and theoretical frameworks, two-hours for design practices in classroom under supervision of the lecturers, and three-hours for self-learning outside the classroom. This course also required the students to create their own design project; however, the evaluation was based on group assessments. The students also needed to read from primary sources.

The students of this program are expected to have English proficiency because KMITL requires prospective students to have GPA above 2.50 when applying for the program. Significantly they must possess GPA of English courses above 2.75 or a TOEFL (Test of English as a Foreign Language) score of 61 (Internet Based), or TU-GET (Thammasat University Graduate English Test) score of 550, or CU-TEP (Chulalongkorn University Test of English Proficiency) score of 500, or IELTS (International English Language Testing System) score of 5.5.

Research Objectives

This case study is a part of KMITL’s initiatives for English-medium program establishment. The main goal of the case study is to investigate how Thai students learn through the English medium program, so that the teaching staff could have a better understanding of their students learning approaches, attitudes and behaviors. The study also intends to promote a sustainable learning culture through English-medium programs of Thai universities.

Research Design
The research procedures had three main phases. The first phase was participant recruitment and data collection because there are different students studying Advanced Graphic Design each semester. The second phase was class activities which were lecturing and group activities. The group activities were multiple cyclical processes which consisted of a group discussion for reflection and planning an action, taking action and observation, and then a group discussion for reflection and planning an action. The final phase was evaluation. The following presents activities and findings of each phase.

The first phase: Participants Recruitment and Data Collection

The participants were recruited through the Advanced Graphic Design class. As the course is offered for the first-year students in the second semester, the participants were required to undertake this course before submitting their thesis proposal. This course offered two sessions. The first session was in the morning. It had twenty-five students. The other session was in the afternoon. It had twenty-four students. As a result, forty-nine participants took part in this research.

Focus group interview in class revealed important information as follows. Firstly, the participants had different knowledge and skills as they graduated from different disciplines, such as industrial design education, fine art, and engineering. Some of the participants had prior knowledge and work experience in graphic design principles and practices. Almost all of them had work experience in government organizations and the private sector because they were aged between 25-45 years old. Only a few had no work experience as they entered the program immediately after they graduated with a bachelor’s degree. Secondly, the expectation of the participants from the Advanced Graphic Design class was not very high because not all of them
wanted to study this course. However, they had to undertake the course as it was needed in order to fulfill the requirement of the program.

Thirdly, the participants confessed that only a few of them passed the English requirement of KMITL before they entered the program. However, they could enter the program because KMITL allowed them to do so conditionally. They were required to pass the English test before they submitted the proposal of their thesis. Only students under MOU (Memorandum of understanding) between KMITL and other academic institutions allowed undertaking two English courses for postgraduate students while they were studying instead of taking the English tests. After they passed these English courses, they could submit the proposal of their research project. Finally, throughout the program the participants were required to read from primary sources such as journals and books as well as write 300 word abstracts of their thesis. There were no assessments of their English proficiency. As a result, they did not make any effort to improve their English skills.

The focus group interview enabled the investigator to realize that the participants had limited prior knowledge, skills, and work experience involving graphic design. Their expectation from studying this course was not very high. In an attempt to change this expectation, the following phase was designed to facilitate a learning environment in order to enable the participants to become long-life learners and independent problem solvers by using graphic design elements.

**The second phase: Class activities**

The second phase was class activities which were lecturing and group activities. The group activities were multiple cyclical processes which consisted of a group discussion for reflection
and planning an action, taking action and observation, and then a group discussion for reflection and planning an action. The main goal was to facilitate the students becoming long-life learners and independent problem solvers through their own experience.

Based on observation during lecturing in class, the participants were quiet or ‘choei’. There was no interrupting or asking any questions after the lecturing. They would interact only if the lecturer asked them questions. When the lecturer worked as a facilitator and used a mind map on the white broad, the participants had more responses and interaction. This class activity revealed that the participants did not understand a lot of keywords or technical terms in English, such as ‘design brief’ ‘artwork’, ‘vector’ or ‘bitmap’. Thus, the participants were assigned to read from recommended books in order to have a better understanding of keywords or technical terms in graphic design principles and practices. However, there was no assessment whether the participants studied outside the class or not. The participants did not make any effort to study extra outside the classroom.

The participant observation during the practice sessions exposed that the participants’ responsibility was very low. The lecturer introduced a new concept in class, such as ‘sustainable graphic design’ because the participants were expected to use this new concept as a theoretical framework of their design project. To help them to have a greater understanding, the participants were assigned to read recommended books and journals as supplementary materials. Their written report revealed that they did not read the recommended books and journals. They also were assigned to download Endnote software from the website of the university into their computer notebook and then brought their notebook to the following class. Endnote is the
software for citation the references in the written report. It is available for KMITL students. However, they did not download the software into their computer.

The focus group interview during the group activities in class also revealed that the participants’ English proficiency was not sufficient. The lecturer demonstrated how to use Adobe Creative Suite: Illustrator, Photoshop, and InDesign in class. This is the western software for creating visual communication and artwork, which is widely used in the printing industries both in Thailand and other regions. However, they did not continue to learn how to use the software. As they explained, they did not use this software because they did not understand the meaning of each word on each panel.

The group activities were composed of a design project and presenting their final design to external experts in the graphic design field. The participants were assigned to write a proposal and complete a graphic design project as a group. They were also required to use ‘sustainable graphic design’ as the theoretical framework. At the end of the semester, they needed to submit a written report and present their final design through PowerPoint in class. They were encouraged to select their own group members. Each group should have 4 or 5 members. Each week, the participants would work together as a group to create ideas and potential solutions. They also needed to present the progress of their project (see Figure 1).
The participant observation during the group activities exposed that the participants had a lot of fun or ‘Sanuk’ working together as a team. They had opportunities to share their experience and exchange their ideas within the group. They were very pleased with themselves when they could see the progress of their project.

In the final stage of their project, the participants did not have an opportunity to make their own decision because the teaching staff made a decision for them. According to the teaching staff, they would select the final solution as they wanted to show the best work to the external professors who they invited to do the final evaluation. Even though the participants disagreed with the teaching staff, they did not argue. They just accepted the final decision without discussion because they were ‘krengjai’ the teaching staff and would like to pass this course.

**The final phase: Evaluation**

The final phase is evaluation. This activity was set up as a workshop. The external professors from different universities were invited to evaluate the participants’ design projects. The teaching staff were only observers. The observation revealed that the external professors did not understand that the participants created their new design by using ‘sustainable graphic design’ as theoretical framework because the participants did not provide this information in their written
report. During the presentation, the participants could not explain why they selected the final solution because the teaching staff had selected the solution for them.

However, they did not explain that to the external professors either. As a result, most of them felt really frustrated, but they did not say anything because they were ‘Krengjai’ the teaching staff (see Figure 2).

![Figure 2: Evaluation activities](image)

This evaluation activity made the teaching staff realized that this teaching approach could not enable the participants to become long-life learners and independent problem solutions because the participants were not given an opportunity to create their own solutions and make their own decisions. The participants were not able to be international professionals in the region because they were not able to access primary sources of knowledge or use western software.

**Results and Discussion**

The research findings of this study reflected students’ belief and attitude towards the programs based on their traditions of social, cultural and educational values. These cultural challenges as Mulder(1997, p.25) highlighted ‘the tendency to shy away from the critical analysis of things’ is a Thai weakness (Mulder, 1997) and it is commonly agreed by many western scholars.
Significantly, the results reflected the institution’s strategic management and plan for future English-medium degree program establishments.

The first theme of research findings was levels of English proficiency of the students. English proficiency has become one of the necessary criterions for university graduates in Thailand and among Thailand’s neighboring countries in the region. However, having a variation in English language proficiency of university entry standards was problematic. The students felt that they could not effectively read academic articles written in English which were provided for their additional reading resources due to their lack of English reading skills. In addition, students felt reluctant to access international research articles which are relevant to their subjects of studies and most of which are written in English. However, it was also found that English language skills is not the only significant barrier of students’ learning processes, but students’ learning attitude towards English-medium classroom is found to be the major concern.

The second theme of research findings was the students’ responsibility of learning. Students did not perceive that they should take the ownership of their own learning processes. It is recommended that students should be enabled as sustainable change agents because they are the most significant stakeholders in the learning process. They should be given an opportunity to create their own ideas and make their own decisions, so that they could become more self-reliant. Students will be able to sustain and assure both current and future learning performances. In order to achieve this, there is a need to shift the role of lecturers to facilitators in order to further students’ learning at each step they have taken both inside and outside the classroom. It is important that teachers enable students to experience changes in order to increase the students’
abilities to manage future changes. This learning culture is sustainable when students are able to
take ownership of their own learning rather than rely entirely on teachers’ assistance.

The lack of the University’s on-going English language support was the final theme of research
findings. Currently, KMITL does not have an English language learning center where students
can access English language assistance and improve their English proficiency. Moreover, the
learning environment in the University does not encourage the students to use English language
both inside and outside the classroom.

Conclusion

Producing quality graduates and raising Thai students’ English proficiency are integral parts of
the policy. It is a challenge faced during the process of bringing practice into the classroom. It
requires teaching staff to not only focus on the content but also the teaching and learning
processes. The teaching staff needs to be more outward looking and internationally and cross-
culturally aware if they are to develop international perspectives in their students.

The emergence of English-medium degree programs in Thailand can be seen as a positive step
towards educating a more globally literate managerial class in Thailand. English language degree
programs in Thailand have however been developed within a Thai speaking environment.
Institutions’ social environments have made it difficult for Thai students and especially for those
future targeted students from Thailand’s neighboring countries such as China, Laos and Vietnam
to express themselves in a regular English-speaking environment, particularly outside the
classroom. It appears that educational institutions have neither ongoing English language support
for learners nor a compulsory program as a part of their curriculum. This lack of English language support programs discourages students from using English.

Enabling Thai students to be life-long learners and independent problem solvers is a long-term process. Thai students rarely engage in critical thinking. They only do what they are told and do not challenge the lecturers or authorities both inside and outside classroom. In order to improve this, teaching staff should provide an environment, opportunity and encouragement for them to engage in critical thinking through their learning processes both inside and outside their classroom.

**Suggestions for Future Research**

To determine student approaches to learning, students will need to be interviewed further in order to gain a greater level understanding of their approaches and their perceptions to learning.

**Acknowledgements**

The authors would like to thank the postgraduate students who undertook Advanced Graphic Design course between 2011 and 2012 for their participation and photographs. The authors also thank to the anonymous reviewers for their useful suggestions in order to improve this paper.
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An investigation into motivation and language learning strategies to improve critical reading employed by high and low English ability students

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Ratima Tianchai, Songsri Sornastaporn, Thanayus Thanathiti, and Karansupamas Engchuan

Tianchai, R., Sornastaporn, S. Thanathiti, T. & Engchuan, K. (2014). An investigation into motivation and language learning strategies to improve critical reading employed by high and

Abstract

The purposes of the study were: 1) to investigate the motivation and language learning strategies to improve critical reading employed by high and low English ability students and 2) to determine whether any difference exists between high and low English ability students in motivation, language learning strategies, and critical reading. The samples of this study consisted of 332 first year students (290 low and 42 high English ability students) at Vintage University (pseudonym). The purposive sampling and simple random sampling techniques were used to select the samples. They were divided into two groups (low and high English ability students) according to their entrance examination scores and a university criterion. The Attitude/Motivation Test Battery (AMTB), the Strategy Inventory for Language Learning questionnaire (SILL), and the Critical reading test were used as the instruments to collect quantitative data; while, the semi-structured interview was used to collect qualitative data. Quantitative data were analyzed by using statistical techniques such as percentage, mean, standard deviation, and t-test. The Cronbach alpha reliability coefficient of the SILL and AMTB were 0.92 and 0.88 respectively. Semi-structured interview were audio-recorded and then transcribed by using open and axial coding technique, and data were then analyzed by content analysis. The major results of this study were as follows: 1) There were significant differences (p < .05) in language learning strategies employed by high and low English ability students. High English ability employed more frequent and various kinds of language learning strategies than low English ability students. 2) High English ability students attained higher scores in a critical reading test than low ability students. 3) Motivation which is employed by both groups of students was not significant differences (p > .05).
Keywords: language learning strategies, motivation, critical reading ability, high and low English ability students

Introduction

Reading, listening, writing, and speaking skills are focused in teaching English as a foreign language; however, reading skill is the most important for students in tertiary level because the students were often assigned to read textbooks and international journals which are written in English (Satitporn, 1995). According to Smiths (1963), the highest level of reading skill was ‘Critical reading’ because the students are required to evaluate, analyze, and comprehend the information based on the texts. “Being able to read English gives a person access to an accumulated capital of information, interest and pleasure. The more effectively a person can read, the more effectively can he gain access to that capital,” (William, 1992, p. 126).

Additionally, undergraduate students are expected to become critical readers and develop a ‘deep’ approach to reading (Rice, 2003). They will study other subjects successfully when they are good at critical reading skill (Wannakhao, 2006). Because of these reasons, reading skill is emphasized as the most important skill for all levels in language learning (Ur, 1996). According to Applebee, Langer and Mullis (1985), university students stated that the textbooks in university were written very complicated due to the range in topics, knowledgeable references, and the variety in task.

Similarity to the previous study, Taraban, Rynearson, and Kerr (2000) proposed that the international textbooks in university could be frightening students who had low ability in reading and were non-native speakers of the English such as in Malaysia and Thailand. In Thai context, some research studies (Sanganet, 1980; Mangprayoon, 1981; Chaisuriya, 2000) proposed that
university students had low ability in critical reading ability for twenty years until nowadays. Because of this reason, some research studies in Thailand have investigated critical reading employed by EFL students in different levels and fields.

For example, Chaisuriya (2000) had investigated the relationship between critical reading ability and critical thinking in English language of Mattayom suksa six students. The finding of her study was concluded that Mattayom suksa six students in schools under the office of the private education commission had critical reading abilities in English at the lower than minimum norm level with the percentage of arithmetic mean of 47.48. Moreover, Thammongkol (1994) had studied the critical reading ability of undergraduate students and she found that the students from educational field had the lowest level of critical reading ability; while the students from faculty of medicine had the highest level of critical reading ability.

Thus, EFL students need to develop their reading skill in order to understand the text clearly (Wongphangamol, 2005). Not only critical reading was the most desirable for EFL students, but language learning strategies and motivation were also the main factors that enable students to study foreign language successfully (Pearson, 1984). According to Gardner (1985), “motivation is also an important contributor to language achievement in terms of linguistic outcomes, which traditionally embrace the knowledge structure of the language, i.e. vocabulary, grammar and pronunciation and the four basic skills of the language, including listening, understanding, reading and writing (p.10)”.

Researchers (O’Malley & Chamot, 1990; Oxford, 1990; Rubin, 1987) have defined language learning strategies as behaviors and techniques employed by language learners to increase their learning. Moreover they also classified language learning into various strategies. However, Oxford’s framework has developed language learning strategies to be more comprehensive
system compared to the models of other researchers in which the factors are overlapping (Jones, 1998). Oxford’s (1990) classifications include two major groups of direct (including memory, cognitive, compensation) and indirect (metacognitive, affective, social) strategies.

Memory strategies help learners retrieve the information; cognitive strategies enable learners to interact in the target language; compensation strategies help learners to overcome knowledge gaps to continue the communication; metacognitive strategies help learners to control and regulate their learning; affective strategies help learners deal with their emotions and feelings; and social strategies promote learning through interaction with the speakers of the target language (Oxford, 1990, p.17). Some research studies have investigated that language learning strategies and motivation were the most two main factors of the context in which language learners become the center of language teaching and learning successfully as in China including Thailand (Hedge, 2000; Chun-huan, 2010).

In terms of language learning strategies, Kaotsombut (2003) had investigated the language learning strategies used by graduated science students at Mahidol university. The result of her study showed that the graduated students used six strategies to learn English language for their successfulness. Considering that motivation were also the main factors that enable students to study foreign language successfully, Lambert’s (1963b) study proposes that “the extent to which an individual successfully acquires a second language will depend upon ethnocentric tendencies, attitudes towards the other community, orientation towards language learning and motivation”. There were a few studies of motivation employed by Thai students.

For example, Lordasa (2007) had examined the impact of integrative and instrumental motivation upon Thai students learning English. The finding revealed that motivation was the important factor for Thai students to learn English language. However, there have a few studies
of relationship between language learning strategies and motivation or motivation and critical reading used by Thai students. Thus, this study investigated language learning strategies and motivation employed to improve critical reading by high and low ability students at Vintage University. Additionally, the study examined the differences scores that high and low English ability students attained based on critical reading test.

Methodology

Sampling and samples

The first year undergraduate students from level 2 (low English ability) and level 6 (high English ability) will be selected as the subjects in this study by using simple random sampling technique. Krejcie & Morgan (1970) table at 95% confidence level will be used to calculate the number of the subjects. The amount number of subjects (level 2 and 6) are 2,248, thus, the sample size of this study will be at least 331. The subjects of this study were 290 low English ability students and 47 high English ability students.

All of them are asked to complete the AMTB questionnaires, the SILL, and the critical reading test based on their consent. After that, the researcher employs purposive sampling technique to select 5 subjects from high English ability group and 5 subjects from low English ability group to participate in semi-structured interviews based on a voluntarily basic.

Procedure

The researcher sent the consent letters to ask for permission from the eight class instructors who teach level 2 and level 6 in administering the instruments with the students in their class. After getting permission, all subjects are asked to complete the Attitude/Motivation Test Battery (AMTB), the SILL (Strategy Inventory for Language Learning), and the Critical reading test in
class. Additionally, 10 subjects (5 from high English ability group and 5 low English ability group) are asked to participate in semi-structured interviews according to their voluntary basic.

**Statistical Analysis**

The information gathering from the collected questionnaires will be tabulated and analyzed by the SPSS program (Statistical Package for Social Sciences). Descriptive and inferential statistics were conducted in this study. In term of descriptive statistic, *Frequency Count and percentage* were used to interpret the data from general background knowledge based on the questionnaire, *Arithmetic Mean* was employed to provide a single summary of the average levels of language learning strategies and motivation employed by two groups of subjects, and *Standard Deviation (SD)* indicated the nature of the distribution of a set of scores.

For inferential statistics, t-test was used to analyze whether the mean scores of critical reading employed by high and low English ability students were significant differences. Cronbach’s Alpha was calculated for the translated AMTB questionnaires to test their internal reliability. Additionally, the data gathered from semi-structured interviews were transcribed verbatim based on the research questions and then the tape scripts will be coded by using open and axial coding technique (Strauss & Corbin, 1990).

**Results**

**Language Learning Strategies**

Table 1 shows the significant differences (t-test) for language learning strategies employed by both high and low English ability students. The SILL averages for individual learning strategies in terms of subdivisions of strategies indicated that high and low English ability students employed their language learning strategies differently and significantly (p < .05).
Additionally, the results show that there was significant difference between the uses of memory strategies \((p = .00)\), cognitive strategies \((p = .00)\), compensation strategies \((p = .00)\), and metacognitive strategies \((p = .04)\). However, there was not significant difference between the uses of affective strategies \((p = .66)\) and social strategies \((p = .05)\).

Table 2 shows the average use of six main groups of language learning strategies employed by both high and low English ability students. The bold numbers and letters in Table 2 indicate the highest and the lowest level of language learning strategies used by two groups of students. The results indicated that high English ability students often used ‘Compensation Strategies’ such as ‘guessing unfamiliar English words’ to improve their critical reading ability at the average frequency of 3.57 \((M = 3.57)\), while ‘Metacognitive strategies \((M = 3.13)\)’ was the most frequently employed by low English ability students. However, ‘Affective strategies \((M = 2.95)\)’ was sometimes used by high ability students; whereas, ‘Cognitive strategies \((M = 2.67)\)’ was sometimes used by low ability group.

Table 1 t-test of language learning strategies employed by two groups of students (N=337): High English ability (n=47) and Low English ability (n=290)
Note: The bold numbers and letters indicate the significant differences (p<.05) between the uses of language learning strategies by two groups of students.

**Table 2**

Frequency of Categories of Strategies Used by both high and low English ability students (N=337)

<table>
<thead>
<tr>
<th>Language Learning Strategies</th>
<th>Group</th>
<th>M</th>
<th>SD</th>
<th>Cronbach’s Alpha</th>
<th>Average Frequency of Use of Motivation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Memory Strategies</td>
<td>High</td>
<td>3.09</td>
<td>0.63</td>
<td>0.95</td>
<td>Medium</td>
</tr>
<tr>
<td></td>
<td>Low</td>
<td>2.74</td>
<td>0.66</td>
<td>0.95</td>
<td>Medium</td>
</tr>
<tr>
<td>Cognitive Strategies</td>
<td>High</td>
<td>3.24</td>
<td>0.63</td>
<td>0.95</td>
<td>Medium</td>
</tr>
<tr>
<td></td>
<td>Low</td>
<td>2.67</td>
<td>0.65</td>
<td>0.95</td>
<td>Medium</td>
</tr>
<tr>
<td>Compensation Strategies</td>
<td>High</td>
<td>3.57</td>
<td>0.52</td>
<td>0.95</td>
<td>High</td>
</tr>
<tr>
<td></td>
<td>Low</td>
<td>3.12</td>
<td>0.62</td>
<td>0.95</td>
<td>Medium</td>
</tr>
<tr>
<td>Metacognitive Strategies</td>
<td>High</td>
<td>3.35</td>
<td>0.71</td>
<td>0.95</td>
<td>Medium</td>
</tr>
<tr>
<td></td>
<td>Low</td>
<td>3.13</td>
<td>0.73</td>
<td>0.95</td>
<td>Medium</td>
</tr>
<tr>
<td>Affective Strategies</td>
<td>High</td>
<td>2.95</td>
<td>0.59</td>
<td>0.95</td>
<td>Medium</td>
</tr>
<tr>
<td></td>
<td>Low</td>
<td>2.91</td>
<td>0.65</td>
<td>0.95</td>
<td>Medium</td>
</tr>
<tr>
<td>Social Strategies</td>
<td>High</td>
<td>2.96</td>
<td>0.75</td>
<td>0.95</td>
<td>Medium</td>
</tr>
<tr>
<td></td>
<td>Low</td>
<td>2.73</td>
<td>0.72</td>
<td>0.95</td>
<td>Medium</td>
</tr>
</tbody>
</table>

Note: The bold numbers and letters indicate the highest and the lowest level of language learning strategies used by two groups of students.

**Motivation in Learning English**

Table 3 shows the significant differences (t-test) for motivation employed by both high and low English ability students. The twelve domains of motivation employed by two groups of students were not significant differences (p > .05). In other words, the findings indicated that there was significant difference in the use of four domains of motivation; interest in foreign languages (p = .00), English class anxiety (p = .00), English teacher evaluation (p = .00), and English use
anxiety ($p = .00$); whereas, there were not significant difference at a confidence level of .05 in the use of parental encouragement ($p = .61$), motivational intensity ($p = .41$), attitudes toward learning English ($p = .33$), attitudes toward English-speaking people ($p = .23$), integrative orientation ($p = .37$), desire to learn English ($p = .41$), English course evaluation ($p = .18$), and instrumental orientation ($p = .98$). The mean ($M$) and the standard deviation ($SD$) of motivation employed by both high and low English ability students were also showed in Table 3.

The bold numbers and letters in the Table 3 indicate the highest and the lowest level of motivation used by two groups of students. The results of the present study indicated that both high and low English ability students often used ‘Instrumental Orientation’ such as ‘*Studying English is important because I will need it for my career*’ to improve their critical reading ability at the average frequency of 4.80 ($M = 4.80$) and 4.81($M = 4.81$) respectively. However, ‘English Use Anxiety’ was rated as the lowest level used by high ability group at the average frequency of 3.25 ($M = 3.25$); whereas, low ability group saw ‘Attitudes toward English-speaking people ($M = 3.75$)’ as less important to improve their critical reading ability.

**Table 3**

Means, SD, and t-test of motivation employed by two groups of students (N=337): High English ability (n=47) and Low English ability (n=290)
<table>
<thead>
<tr>
<th>Motivation</th>
<th>Group</th>
<th>( M )</th>
<th>( SD )</th>
<th>( t )</th>
<th>( df )</th>
<th>( p )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interest in Foreign Languages</td>
<td>High</td>
<td>4.40</td>
<td>0.68</td>
<td>4.04</td>
<td>335</td>
<td>.00</td>
</tr>
<tr>
<td></td>
<td>Low</td>
<td>3.96</td>
<td>0.72</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parental Encouragement</td>
<td>High</td>
<td>4.32</td>
<td>0.90</td>
<td>0.51</td>
<td>335</td>
<td>.61</td>
</tr>
<tr>
<td></td>
<td>Low</td>
<td>4.25</td>
<td>1.04</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Motivational Intensity</td>
<td>High</td>
<td>3.90</td>
<td>0.56</td>
<td>0.81</td>
<td>335</td>
<td>.41</td>
</tr>
<tr>
<td></td>
<td>Low</td>
<td>3.83</td>
<td>0.56</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>English Class Anxiety</td>
<td>High</td>
<td>3.49</td>
<td>0.84</td>
<td>3.84</td>
<td>335</td>
<td>.00</td>
</tr>
<tr>
<td></td>
<td>Low</td>
<td>3.99</td>
<td>0.71</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>English Teacher Evaluation</td>
<td>High</td>
<td>4.03</td>
<td>0.75</td>
<td>2.84</td>
<td>335</td>
<td>.00</td>
</tr>
<tr>
<td></td>
<td>Low</td>
<td>4.38</td>
<td>0.89</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attitudes toward Learning English</td>
<td>High</td>
<td>4.49</td>
<td>0.80</td>
<td>0.96</td>
<td>335</td>
<td>.33</td>
</tr>
<tr>
<td></td>
<td>Low</td>
<td>4.36</td>
<td>0.92</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attitudes toward English-speaking people</td>
<td>Low</td>
<td>3.75</td>
<td>0.88</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Integrative Orientation</td>
<td>High</td>
<td>4.70</td>
<td>0.83</td>
<td>0.89</td>
<td>335</td>
<td>.37</td>
</tr>
<tr>
<td></td>
<td>Low</td>
<td>4.58</td>
<td>0.96</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Desire to Learn English</td>
<td>High</td>
<td>4.38</td>
<td>0.83</td>
<td>0.81</td>
<td>335</td>
<td>.41</td>
</tr>
<tr>
<td></td>
<td>Low</td>
<td>4.28</td>
<td>0.85</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>English Course Evaluation</td>
<td>High</td>
<td>4.21</td>
<td>0.78</td>
<td>1.35</td>
<td>335</td>
<td>.18</td>
</tr>
<tr>
<td></td>
<td>Low</td>
<td>4.04</td>
<td>0.86</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>English Use Anxiety</td>
<td>High</td>
<td>3.25</td>
<td>0.88</td>
<td>4.86</td>
<td>335</td>
<td>.00</td>
</tr>
<tr>
<td></td>
<td>Low</td>
<td>3.91</td>
<td>0.77</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Instrumental Orientation</td>
<td>High</td>
<td>4.80</td>
<td>0.73</td>
<td>0.02</td>
<td>335</td>
<td>.98</td>
</tr>
<tr>
<td></td>
<td>Low</td>
<td>4.81</td>
<td>0.92</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: The bold numbers and letters in the Table indicate the highest and the lowest level of motivation used by two groups of students.

**Critical reading test**

Table 4 shows the significant differences in the critical reading test scores of high and low English ability students. The results of the study indicated that high English ability students (\( M = 24.19 \)) attained higher scores in a critical reading test than low ability students (\( M = 8.14 \)).
Conclusion

The aims of the study were: 1) to investigate the motivation and language learning strategies to improve critical reading employed by high and low English ability students and 2) to determine whether any difference exists between high and low English ability students in motivation, language learning strategies, and critical reading. Concerning the type and frequency of learning strategies used by high and low English ability students, ‘Compensation strategies’ was the most frequency used by both groups of students. The results are consistent with those of Kaotsombut’s (2003) and Satta-Udom’s (2007) studies. Additionally, the interviews revealed that most students used ‘Compensation strategies’ such as ‘guessing unfamiliar English words’ and ‘reading English without looking up every new word’ to improve their critical reading more effective. However, high and low ability students seldom used ‘Affective strategies ($M = 2.95$)’ and ‘Cognitive strategies ($M = 2.67$)’ to improve critical reading respectively.

The interviews also revealed that high ability group sometimes wrote their feelings in a diary and seldom gave myself a reward; while low ability group sometimes skim an English passage before read it carefully. In term of motivation, the findings was in line with the previous study of Lordasa (2007) in which the ‘Instrumental Orientation’ such as ‘Studying English is important because I will need it for my career’ was frequency used by both groups of students to improve their critical reading ability.

**Table 4** Means, SD, and t-test for critical reading test of two groups of students (N = 337): High English ability (n=47) and Low English ability (n=290)

<table>
<thead>
<tr>
<th>Critical Reading Test</th>
<th>Group</th>
<th>M</th>
<th>SD</th>
<th>t</th>
<th>df</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scores</td>
<td>High</td>
<td>24.19</td>
<td>3.96</td>
<td>38.07</td>
<td>335</td>
<td>.00</td>
</tr>
<tr>
<td></td>
<td>Low</td>
<td>8.14</td>
<td>2.41</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Moreover, the interviews also stated that the both groups of students employed ‘Instrumental Orientation’ in their learning English. They believed studying English will make them more educated and get a better job.

Therefore, the results of this study support Dörnyei’s (1990) conclusion that instrumental motivation is more relevant to foreign language learners than to those learning a second language. However, ‘English Use Anxiety ($M = 3.25$)’ and ‘Attitudes toward English-speaking people ($M =3.75$)’ were seldom used to improve critical reading by high and low ability students respectively. Furthermore, this study provides useful information for language teachers in tertiary level in which they understand the use of students’ learning strategies and motivation and then they can improve their teaching techniques of critical reading appropriate to students’ ability effectively.

Additionally, this study is useful for EFL tertiary level students who have low English ability. They understand how high English ability students use language learning strategies and motivation to improve critical reading effectively, so they can improve themselves to be better in critical reading ability and then they will be able to study English language successfully.

**Acknowledgements**

The author would like to express her gratitude to Assoc.Prof. Dr. Songsri Soranastaporn, Assist. Prof. Dr. Thanayus Thanathiti, and Lect.Dr. Karansupamas Engchuan for their comments and suggestions on this paper and the study. She also would like to express her thanks to Assist. Prof. Dr.Maurice M. Broughton for his comments on proofreading this paper.
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An investigation of vocabulary learning strategies employed by high and low English proficiency students based on selected vocabulary from a business corpus

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Abstract

The purposes of this study were: 1) to compile a corpus of business English in order to examine high frequency of technical vocabulary as a resource for designing a test of technical vocabulary in context and 2) to explore vocabulary learning strategies which were employed by high and low English proficiency students. The participants included 40 undergraduate students, who enrolled in the English for business course in the academic year of 2011. All of them were selected by the purposive sampling technique and were then classified into two groups: high and low English proficiency students (based on the scores obtained from the technical vocabulary test). To collect quantitative data, questionnaires were used to identify the participants’ vocabulary learning strategies. The Cronbach’s alpha reliability coefficient of the questionnaires was 0.92. The quantitative data was analyzed by percentage, mean, and standard deviation. Additionally, semi-structured interviews were employed to gain more in-depth information focusing on perceptions towards teaching and learning technical vocabulary. The interviews were tape-recorded and transcribed verbatim on the same day in order to increase validity of the data. Then the transcriptions were analyzed by using open-axial coding procedures. The main results of this research showed as follows. 1) There were 209 technical vocabulary items found in the business corpus and the most frequent words are marketing, company, product, business, and firm. 2) High English proficiency students used various vocabulary learning strategies and more highly frequent than low proficiency students. Furthermore, it was suggested that the students should be trained to use appropriate vocabulary learning strategies which can assist them to learn technical vocabulary more successfully.

Keywords: Vocabulary Learning Strategies (VLS), Corpus Linguistics, Technical Vocabulary, English for Specific Purposes (ESP)
Introduction

Specialized or technical vocabulary has always been a key issue in the teaching of ESP (Nation, 2001). As stated by Robinson (1991: 4) “It may often be thought that a characteristic of ESP is that a course should involve specialist language and content.” Therefore, it is essential to prepare ESP learners to familiarize technical vocabulary in their text since each field of study has its own characteristics and specialized vocabulary. Nation (2001: 18-19) mentions the characteristics of technical vocabulary that these words covered about 5% of the running words in specialized texts, and were made up of words that occurred frequently in a specialized text or subject area but did not occur or were of very low frequency in other field. In order to identify technical vocabulary, corpus-based approach has often been used by many scholars. This approach involves using automatic term extraction software to compare the number of word frequencies in a technical corpus with the number of word occurrences in a reference corpus by using chi-square or log-likelihood statistics (Baker, 1988; Chujo & Utiyama, 2006). The software will list outstanding words regarding to their keyness values. In this sense, positive keyness value refers to vocabulary items which occur much more frequent in a technical corpus rather than a reference corpus. These words are considered as technical terms (Romer & Wulff, 2010).

According to Sutarsyah, Nation and Kennedy (1994: 47), technical vocabulary consists of the terms that occur more frequently in a specialized text than in texts outside the area and it is commonly found that learners have difficulty with this vocabulary while reading texts. The examples of such research in Thai context is the work of Kaewphanngam (2002), who investigated psychology students’ comprehension of technical and sub-technical vocabulary as a basis for the development of teaching materials in English for academic purposes. The data shows that both first year and third year students performed better in sub-technical vocabulary
than technical vocabulary. Moreover, scores achieved by two groups of the students were less than 50% of the total scores. It might be assumed that the students may not have relevant and adequate experience in both technical and sub-technical vocabulary in psychology texts.

The results of the above studies raise interesting questions about teaching and learning ESP in Thailand. What technical vocabulary should be learned? How should it be taught to the students? What strategies do students use to acquire technical vocabulary? Considering the large numbers of technical vocabulary that occurred in specialized texts, language teachers need to prepare learners to deal with them.

In order to help learners learn vocabulary and use those words in communication, vocabulary learning strategies (VLS) have been proved to be positively correlated to language acquisition (Rubin, 1981; O’Malley & Chamot, 1990; Schmitt, 1997). According to Lessard-Clouston, (2008) strategies which learners use in approaching vocabulary learning may thus influence both their acquisition and their academic socialization. It corresponds to Lawson and Hogben’s statement: “In the early stages of language learning, when the tasks being undertaken by the students are more novel; this processing activity is more deliberate than automatic. The deliberate procedures, or strategies, developed during this period are probably retained; these strategies should be apparent in the behavior of students as they undertake a vocabulary learning task (1996, p. 104).

From this statement, course designers and teachers should pay special attention on vocabulary learning strategies employed by students in order to assist students as well as teachers to develop more effective learning and teaching of English vocabulary respectively. In Thai context, some studies, however, have explored strategies for learning vocabulary in secondary level (e.g.,
Waemusa, 1993; Mingsakoon, 2002; Sixiang, 2009), yet there are no study have been investigated on vocabulary learning strategies in an ESP context.

For this reason, it is worthwhile to study what strategies do ESP students employ to learn technical vocabulary in a business field in order to encourage them to learn ESP more efficiently. Thus, this study aims to answer the following questions:

1. What are the most frequent technical vocabulary items in the business corpus?

2. What sort of vocabulary learning strategies does high English proficiency students employ to develop their technical vocabulary acquisition? And to what extent do they use these strategies?

3. What sort of vocabulary learning strategies does low English proficiency students employ to develop their technical vocabulary acquisition? And to what extent do they use these strategies?

**Study Significance**

The study was conducted to explore strategies for learning vocabulary employed by “high” and “low” English proficiency university students in an ESP context. Moreover, the degree to which the students use specific vocabulary learning strategies was examined. The researcher expects that the findings obtained from this study may provide some fundamental and practical input for both teachers and learners of ESP. The outcome can be beneficial in assisting and promoting students to apply appropriate vocabulary learning strategies in their specific field of learning. Additionally, it enables ESP teachers to develop more effective teaching materials in order to assist students to efficiently improve their vocabulary learning. Lastly, the results can be an information base for further research in related fields.
Scope and Limitations of the Study

The study focuses on the investigation of strategies for learning vocabulary employed by high and low proficiency students. The participants of the study are university students who enrolling in English for Business Course at the Viridian University (pseudonym) in the academic year 2011. As a result, possible generalization will be only to those students who are in the same level and background.

In the present study, the business corpus consists of texts from three main areas: Accounting, Banking, and Marketing, according to the suggestion of the instructor who teaches in the English for Business course. Therefore, the findings of this study will be applied only to these selected areas of the analysis.

Participants

The participants of this study were 40 undergraduate students who are majoring in English at the Department of Teaching English as a Foreign Language (TEFL), Faculty of Education, Viridian University (Pseudonym). They were male and female non-native speakers of English who enrolled in English for business course in the academic year 2011. All of them were selected by purposive sampling method. The participants were asked to take a technical vocabulary test in context developed by the researcher in order to separate them into two groups: high and low English proficiency students. Then the participants were asked to answer the questionnaires about vocabulary leaning strategies. Furthermore, they were also interviewed and signed a consent form allowing the researcher to use their answers in this study.
Methods

The following procedures were carried out in order to attain the objectives.

Step 1: There were two main corpora used in the present study: the Business Corpus compiled by the researcher (as a specialized corpus) and British Academic Written English Corpus compiled by the University of Warwick (as a comparison corpus).

Step 2: In order to create a technical vocabulary, “Keyword List Tool” of the AntConc software was employed to calculate the degree of word frequency of the Business Corpus with the word frequency of the BAWE Corpus.

Step 3: After receiving a list of technical vocabulary, these words needed to be checked against the glossary in the book; namely, “Key Words in Business,” (Mascull, 2002) in order to guarantee the appropriateness to the level of this group of students.

Figure 1 Conceptual Framework
Then, the Technical Vocabulary Test in Context (TVTC) was designed based on the deriving vocabulary list from corpus analysis. The particular items included in the test were extracted from the results obtained from concordance lines in the business corpus.

Step 4: The TVTC test was administered to the students. It allowed the researcher divide the students into high and low English proficiency students.

Step 5: The questionnaires used in this study were adapted from taxonomy recommended by Schmitt (1997). It asks about vocabulary learning strategies that participants use to gain lexical knowledge.

Step 6: Semi-structured interviews were also used as a supplementary instrument in this study. It aims to obtain in-depth information about participant’s vocabulary learning strategies as well as to classify the information gathered from the questionnaire. This research instrument focuses on different opinions of the high and low English proficiency students toward the vocabulary learning strategies that they use to gain lexical knowledge.

Step 7: Lastly, the data in the questionnaires was analyzed using SPSS program and the information from the interviews was analyzed by using open-axial coding method (Strauss & Corbin, 1990).
Findings

Corpus Analysis

Table 1 The 20 Most Frequent Technical Vocabulary Items in the Business Corpus

<table>
<thead>
<tr>
<th>Rank</th>
<th>Technical Vocabulary</th>
<th>Positive Keyness</th>
<th>Frequency</th>
<th>Rank</th>
<th>Technical Vocabulary</th>
<th>Positive Keyness</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>marketing</td>
<td>5144.034</td>
<td>1382</td>
<td>11</td>
<td>customers</td>
<td>737.631</td>
<td>465</td>
</tr>
<tr>
<td>2</td>
<td>company</td>
<td>2365.882</td>
<td>1121</td>
<td>12</td>
<td>consumer</td>
<td>682.970</td>
<td>332</td>
</tr>
<tr>
<td>3</td>
<td>product</td>
<td>2313.506</td>
<td>1066</td>
<td>13</td>
<td>investment</td>
<td>681.464</td>
<td>352</td>
</tr>
<tr>
<td>4</td>
<td>business</td>
<td>2025.343</td>
<td>1018</td>
<td>14</td>
<td>investor</td>
<td>651.791</td>
<td>202</td>
</tr>
<tr>
<td>5</td>
<td>banking</td>
<td>1738.409</td>
<td>374</td>
<td>15</td>
<td>buyer</td>
<td>611.346</td>
<td>168</td>
</tr>
<tr>
<td>6</td>
<td>firm</td>
<td>1638.495</td>
<td>544</td>
<td>16</td>
<td>growth</td>
<td>582.030</td>
<td>472</td>
</tr>
<tr>
<td>7</td>
<td>accounting</td>
<td>1255.663</td>
<td>346</td>
<td>17</td>
<td>management</td>
<td>581.904</td>
<td>528</td>
</tr>
<tr>
<td>8</td>
<td>sale</td>
<td>1239.300</td>
<td>508</td>
<td>18</td>
<td>loan</td>
<td>577.002</td>
<td>169</td>
</tr>
<tr>
<td>9</td>
<td>price</td>
<td>994.433</td>
<td>571</td>
<td>19</td>
<td>brand</td>
<td>563.942</td>
<td>260</td>
</tr>
<tr>
<td>10</td>
<td>competitor</td>
<td>754.110</td>
<td>271</td>
<td>20</td>
<td>financial</td>
<td>560.246</td>
<td>392</td>
</tr>
</tbody>
</table>

From the corpus analysis, there were 209 technical vocabulary found in the business corpus. As it is illustrated in the Table 1, these technical vocabulary items were highly topic-related and directly reflected by the corpus of business such as the words, “marketing”, “business”, “accounting”, “investment”, “consumer”, “commercial”, “firm”, and “financial”.

Table 2 Vocabulary Learning Strategies Used by High Proficiency Students

Table 2 shows descriptive statistics for the frequency of use of vocabulary learning strategies by high proficiency students (N=24). It shows that the overall reliability of the questionnaires for this group of students, using Cronbach’s alpha, was relatively high at 0.92.

(N = 24)
The most frequently used strategy category were determination and metacognitive; whereas, the other three categories: social, memory, and cognitive were often used. The mean score for determination strategies ($M=4.58$) was in the highest level; while, the mean score for social strategies ($M=3.83$) was in the lowest level.

However, social strategies were still rated at often used, not occasionally or seldom used. In addition, the interviews indicated that various kinds of determination and meta cognitive strategies such as using English language media (news and movie), using surrounding words, using affixes and roots to guess the meaning of a word, and using English-English dictionary were usually employed by high proficiency students. However, social strategies including asking the teacher to give the example of a word in the sentence, interacting with native speakers, and having the teacher check their wordlists for accuracy are the least frequently used strategies.

**Vocabulary Learning Strategies Employed by Low Proficiency Students**

**Table 3** Vocabulary Learning Strategies Used by Low Proficiency Students

<table>
<thead>
<tr>
<th>Vocabulary Learning Strategies</th>
<th>No. of Items</th>
<th>$M$</th>
<th>SD</th>
<th>Cronbach’s Alpha</th>
<th>Average Frequency of Use of Strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cognitive Strategies</td>
<td>7</td>
<td>4.57</td>
<td>1.25</td>
<td>0.92</td>
<td>Usually Used</td>
</tr>
<tr>
<td>Determination Strategies</td>
<td>8</td>
<td>4.04</td>
<td>1.21</td>
<td>0.92</td>
<td>Often Used</td>
</tr>
<tr>
<td>Metacognitive Strategies</td>
<td>8</td>
<td>4.00</td>
<td>1.37</td>
<td>0.92</td>
<td>Often Used</td>
</tr>
<tr>
<td>Memory Strategies</td>
<td>14</td>
<td>3.61</td>
<td>1.04</td>
<td>0.92</td>
<td>Often Used</td>
</tr>
<tr>
<td>Social Strategies</td>
<td>8</td>
<td>3.37</td>
<td>1.13</td>
<td>0.92</td>
<td>Occasionally Used</td>
</tr>
</tbody>
</table>

(N = 16)

Table 3 shows descriptive statistics for the frequency of use of vocabulary learning strategies by low proficiency students (N=16). It shows that the overall reliability of the questionnaires for this
group of students, using Cronbach’s alpha, was relatively high at 0.92. The most usually used strategy was cognitive; whereas, the other three categories: determination, metacognitive, and memory were often used. The mean score for cognitive strategies (M=4.57) was in the highest level; while, the mean score for social strategies (M=3.37) was in the lowest level and it was rated as occasionally used.

Additionally, the interviews revealed that the low proficiency students felt that various kinds of cognitive strategies such as learning the word through written repetition, learning the word through verbal repetition, and making note of the word and its meaning when listening to the teacher could help them. Nevertheless, social strategies such as having the teacher check their word lists for accuracy and asking the teacher to give the example of the word in the sentence are the least frequently used strategies by low proficiency students.

**Conclusions and Implications**

Based on the questionnaires and interviews data, it was indicated that the high proficiency students generally used the vocabulary learning strategies more frequently than the low proficiency students did. The high proficiency students prefer determination and metacognitive strategies such as using English language media (news, movie, and newscast), using surrounding words, using affixes and roots to guess the meaning of a word, and using English-English dictionary. However, the low proficiency students identified that they prefer cognitive strategies such as learning the word through verbal and written repetition, and making note of the word and its meaning when listening to the teacher. Based on the research findings, various vocabulary learning activities should be suitably organized in response to the different levels of students.
Furthermore, students should be trained to use effective strategies such as using context clues, using monolingual dictionaries, or even using English language media, in order to assist and promote them to learn technical vocabulary in their specific field of learning successfully.
References


