

**WHEN AFFECTIVE FACTORS CHANGE:
A CORPUS-BASED ANALYSIS OF STUDENTS' REFLECTIONS
IN ENGLISH E-PORTFOLIOS**

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Abstract

Affective factors can play an important role in learning and may change over time. This paper investigates emotional states of first-year engineering students towards self-study experience through words associated with affect used in their reflections in e-portfolios over a semester. The study employed a corpus-based analysis by focusing on keywords of affect with the statistical criteria and analyzing the context those keywords occurred in. To uncover the students' recurrent feelings, the concordance lines for each keyword were further analyzed qualitatively to identify each of them into a category of pre-determined affective factors. Then, relative frequencies of each instance of each category were quantitatively counted for comparison. The findings show that affective factors in questions – namely motivation, self-efficacy, and anxiety, either positive or negative, changed with regards to frequency and direction in the different phases of learning. In sum, this study not only sets a practical model for analyzing extensive data quantitatively, but also can provide more insightful results

combined with awareness-raising for teachers regarding the fluctuation of affective factors over a period of time.

Keywords: Corpus-based analysis; Students' reflections; E-portfolio

Introduction

In educating the whole person, it is necessary to unite the cognitive (thinking) and affective (feelings and emotion) domains (Brown, 1971 & Castillo, 1973 cited in Arnold & Brown, 1999). Likewise, in foreign- and second-language teaching, incorporating the aspects of the affective dimension has long been taken into consideration to enrich the language learning process. In a language classroom interaction, a teacher should not only be concerned with 'language goals', but also with 'deeper aims' and 'pursuing new life goals' (Stevik, 1998 cited in Arnold & Brown, 1999). This context will encourage students to 'live more satisfying lives and to be responsible members of society' (ibid, p. 3). Thus, as language teachers, we should pay attention to our students' cognitive and affective natures and needs so that their learning process can build on a stronger foundation. In fact, there is growing evidence that many educational programs are successful when the affective side is given thoughtful attention. Studies about roles of affectivity can lead to greater understanding of the language learning process and improved language teaching methods.

Affective Factors

Affect is generally concerned with emotions and feelings, which play important roles in language learning. It may include positive emotions (self-esteem, empathy, motivation), which, if properly stimulated, can greatly facilitate language learning processes and negative emotions (anxiety, fear, stress, anger, and depression) that compromise optimal learning. Affect can lead to more effective language learning if the teacher pays attention not only

to overcoming the students' negative emotions but also to developing the positive ones (Arnold & Brown, 1999, p. 2). Affectivity in second language learning can be viewed from two perspectives: individual factors (concerning the language learners themselves) and relational factors (relating to the society around learners). This study looks at affective factors from the perspective of individual learners because they are closely related to students' self-study experiences.

Affective factors from the perspective of individual learners are part of learners' personality traits. The way we feel about ourselves and our capabilities can either facilitate or inhibit our learning (Arnold & Brown, 1999, p. 8). The various emotions affecting language learning are intertwined and interrelated, to the extent that the influence of any single one of them cannot be isolated completely. Some important affective factors in second language learning include anxiety (negative feelings such as unease, worry, and frustration), inhibition (a feeling of fear or a lack of self-confidence in a situation or task), self-esteem (a personal evaluation about one's own worth), motivation (learners' practical reasons for attempting to acquire a second language) and learning styles (learners' typical preferences for approaching learning such as introversion/extroversion) (ibid.).

Affective factors are perceived as a major influence on language learning and learning outcomes. However, studies with regard to affect in language learning tend to focus on classroom learning in general, despite observations that affective factors are perhaps even more important to independent language learners (Hurd, 2008; Valdivia, McLoughlin & Mynard, 2011) because in the absence of a teacher and peers they have to focus on managing their own feelings more than they have to in the classroom (Harris 1995, p. 48 cited in Hurd, 2008, p. 219). The two most influential affective factors for learning language independently include motivation and anxiety because their effects on learning may be intensified among independent learners (Hurd, 2008, p. 219).

Motivation is an internal drive that encourages learners to carry out a course of action (Harmer, 1991, p. 3) in order to

accomplish a goal (Williams & Burden, 1997, p. 120). A study by Dörnyei and Ottó (1998, cited in Gas & Selinker, 2008, p. 429) showed that there are three phases of motivation which can change over time: the *preactional* stage (the stage during which the motivation is generated), the *actional* stage (the stage of sustaining of the activity even with distracting influences) and the *postactional* stage (the stage of evaluating how the activity went). Different motivation may overlap at different points in time and come in different degrees. Highly positive motivation can lead to high performance, while low performance may be the result of low motivation and demotivation.

Anxiety in language learning is a situation-specific form of anxiety with “negative emotional reaction aroused when learning or using a second language” (MacIntyre, 1998, cited in Zheng, 2008, p. 2). High anxiety can cause the learner to work inefficiently and may sometimes lead to absenteeism until withdrawal from the task (debilitating anxiety) (Kimura, 2002; Zheng 2008). However, Arnold and Brown (1999, p. 2) label anxiety as ‘negative emotion’, though a proper level of anxiety can stimulate a learner to take a risk and complete a task (facilitating anxiety).

Apart from motivation and anxiety, there is another affect, self-efficacy, that is considered essential for independent learning. Self-efficacy is self-evaluation of one’s own ability to accomplish a particular task (Dörnyei, 1998; Bruning et al., 1999; Margolis & McCabe, 2006). In independent learning, self-efficacy affects the activity preferences, the effort used in a task or an activity, the duration of patience when facing a problem, and the level of anxiety or confidence. With positive or high self-efficacy, a learner will manage to cope with those situations until he or she has reached a successful outcome. On the other hand, if a learner has negative or low self-efficacy, he or she will experience anxiety and tension, and finally abandon the task (Bandura, 1982 cited in Kan & Akbaş, 2006, p. 78).

Students' Reflections and Electronic Portfolios

In an independent context, learners need to be aware of their own learning and need to understand the process of language learning (Kohonen, 1992, p. 24 cited in Benson, 2001, p. 93-94.) This can be done through their own conscious reflection upon their learning experience. Reflection is a mental process involving rational thought, emotion and judgment, which are 'distinctive characteristics of autonomous learning' (ibid., p. 90).

Reflection is an internal process that cannot be observed directly. Researchers have used different instruments to record learners' reflection, including learner diaries, reflective journals, and learning logs (Murphy, 2008, p. 199), as well as paper-based and electronic portfolios (e-portfolios) (Nunes, 2004; Murphy, 2008, p. 199). E-portfolios are an online learning tool that can assist students in taking charge of their own learning process by facilitating the planning of learning (Akçıl & Arap, 2009), reflecting student growth and demonstrating learning results (Chang, 2001), and responding to the varied learning styles of all types of students (Tuksinvarajarn & Watson Todd, 2009), and thus offering an authentic way of self-studying. Tosh, Light, Fleming and Haywood (2005) assert that a key requirement for effective learning through e-portfolios is the students' motivation.

One example of research about affect was conducted by Pechsuttitanasan (2005), who reflected upon his own feelings of the use of learning strategies as he studied the Japanese language in Japan for a year. He used a diary to record his reflection once a week for nine months. The findings from content analysis showed that affective factors, i.e. anxiety, inhibition, motivation and self-esteem, could occur at any stage of the foreign language learning process, and they had a significant impact on his self-study.

Another recent study about students' motivation in online learning was conducted with a group of PhD students in Turkey (Selvi, 2010). They were asked to write a reflection about their motivating factors for taking the online course and what factors

increased their motivation. The subjects' reflections were analysed by means of content analysis and grouped as themes and sub-themes based on the students' motivating factors for e-learning. The findings showed that the factors affecting motivation in the online courses included the learning-teaching process, competencies of instructors, participants' attention, the online learning environment/technical infrastructure, and time management. Regarding the factors increasing motivation, the results came out threefold: the learning-teaching process, the online learning environment/technical infrastructure, and measurement and evaluation.

Rationale and the Purpose of the Study

In research, affect is sometimes overlooked and can be quite difficult to uncover due to different causes such as some limitations of research instruments including questionnaires, surveys or interviews for end-of-course evaluation. Interviewers without proper training may cause errors in responses (Fellegi, 2003, p. 39). Learners may be reluctant to respond to some sensitive questions or feel uncomfortable in expressing their opinions because they are worried about not giving the 'right' answer. Thus, investigating affect in a written format such as reflections of students' learning records can be a good solution to these problems.

However, much research on reflections has dealt with student-teachers, novice teachers or teacher trainees. To date, there is an obvious lack of studies that utilize data from students' reflection on their own learning in a systematic manner. Therefore, this study looks at the affective factors involving the self-studying process in e-portfolios by investigating the affect words using in students' reflections stored in e-portfolios. To explore the variation of engineering students' affective states, namely motivation, self-efficacy and anxiety, the study aims to answer the following research questions:

1. Were there any similarities or differences in the use of affect words in students' reflections on their self-study experience in their English e-portfolios during three phases of learning (beginning, mid-semester and final) over a semester?
2. If yes, what were they? If no, why not?

Methodology

In analysing students' reflections, the research reviewed earlier employed the content analysis approach, which can lead to high levels of subjectivity when interpreting data. To reduce the subjectivity, this study employed a corpus-based analysis approach to study affect words used in students' e-portfolios over a period of one semester. With this approach, the findings could assure that the keywords on affect used to uncover the recurrent feelings of the students came out as a statistically significant part of the whole data set. Also, the investigation of the extensive data over a period of time instead of only one time in an end-of-course survey could shed light on how this innovation of research methodology could help broaden the perspective for research design on affect in language learning.

Context of the study

The data used in this study was a collection of students' reflections in e-portfolios from 212 first-year undergraduate KMUTT engineering students enrolling in their first compulsory English course, LNG 101 General English, during the first semester of the academic year 2010. The course combined classroom learning (70%) with self-study (30% – 20% for a listening and reading quiz, and 10% for the students' reflection on self-studying in an e-portfolio) via paper-based and online resources. The idea of the self-study was to encourage students to focus on their specific needs in reading and listening skills and to enhance life-long learning skills.

Students were trained in the first month of the semester to get to know e-portfolios as well as to learn how to self-study by setting

their own learning objectives, choosing the materials (both online and paper-based) to fit the learning objectives, monitoring their own learning, and reflecting on their own learning. The other three months of the semester provided the actual time for self-studying and recording their reflections about their learning in an e-portfolio. Students submitted at least four pieces of self-study work, one of which had to be paper-based and the rest online. They submitted the first piece of work by the end of the initial phase (the second month of the semester), the second by the middle phase (the third month of the semester) and the remaining pieces in the final phase (the fourth or last month of the semester.)

The students' electronic portfolio program, referred to as ePort, is the computer-based program developed in 2010 for the self-study part of LNG 101 by the Centre of Information and Learning in the Department of Language Studies, School of Liberal Arts. (See Appendix A for the interface of the ePort program as an introduction to the program.) In the ePort, each student had their own account from the Self-Access Learning Centre (SALC) to log in to the program and engage in their self-study in the second, third and fourth months of the semester. Students chose paper-based materials from SALC, and online materials from a list of optional materials provided online. After finishing each piece of material, the students were required to record their learning by answering these four questions in the ePort:

1. Why did you choose this material/text/activity for learning?
2. What is the material/text/activity about?
3. What have you learned from the material/text/activity?
4. What is your reflection on the material/text/activity?

The data used in this study was from Question 4. The students wrote a reflection of at least 50 words per work piece of their self-study to keep their learning records as well as to monitor and assess whether they achieved their learning goals. The students

used the six guiding questions in Table 1 below to write a reflection upon their self-study in the ePort.

Table 1: The six guiding questions for the reflection

No.	Questions
1.	Did the activity serve your needs or interests? Why? How?
2.	What did you like or dislike about the activity or practice you just did? Are there things you would like to change?
3.	What learning difficulty or problem did you have? What seems to be the root causes of the difficulty or problem? And how would you solve them?
4.	Are you satisfied with your learning? Why?
5.	How will you think or act in the future as a result of these learning experiences? How can you apply these experiences to benefit yourself?
6.	Write what you would like to say to your language teacher.

Lastly, the students submitted their work. Then, the teacher would check their self-study work, score them, and give written feedback. The criteria for marking students' learning records consisted of comprehensibility, content, degree of self-awareness, reasons and examples given.

The Learner Corpus: Reflection in Electronic Portfolio

The data of students' reflections in the ePort over a semester was compiled into electronic format, or a learner corpus. Its balance and representativeness, content and size were observed as the following explains:

- ***Balance and representativeness***

The population of this study was 1,942 first-year students from the Faculty of Engineering, making up almost 75% of the

KMUTT first-year student body, and thus becoming the main focus of the study. The data in the learner corpus came from five out of 54 groups of students, enrolled in LNG 101 General English in the academic year 2010. In total, there were 212 students from five groups with different teachers and accounting for around 10% of the population. Out of 13 departments of the Faculty of Engineering, the population of the study was from seven departments, namely Chemical Engineering, Civil Engineering, Computer Engineering, Electrical Engineering, Environmental Engineering, Materials Engineering, and Production Engineering.

- **Content of corpus**

The learner corpus was first compiled from students' reflections with the six guiding reflective questions in the ePort program (see Table 1). However, the last question, with a reference to the class teacher, was optional for students and was not answered by many students, and when answered at all consisted mostly of emoticons. Thus, it was not brought into consideration in this study.

The corpus was compiled from students' reflections from the second, third and fourth months of the semester (the first month was the preparation for ePort and self-studying). Thus, the learner corpora was grouped according to month and named **The Beginning** for the work submitted in the second month of the semester, **The Mid-semester** for the work submitted in the third month of the semester, and **The Final** for the work submitted in the fourth or final month of the semester respectively. Categorizing the data in this way allowed for easier management and clearly marked the differences in terms of quantity of work pieces.

- **Size of corpus**

The learner corpus consisted of 212 entries of e-portfolios which contained 922 items of reflections resulting in 85,136 total words (see Table 2).

Table 2: Three corpora based on three phases of learning

Three corpora	Word count
1. The Beginning	18,649
2. The Mid-semester	16,283
3. The Final	50,204
Total Size	85,136

Students were assigned to complete at least four pieces of self-study work and submitted one piece each in the beginning and the mid-semester, and two in the final phase. Thus, the *Final Corpus* had the largest word count of the three corpora. However, the frequency counts of affect words across the three corpora in this study were normed to a basis of 10,000 words to be comparable corpora.

Research Instruments

The research instruments employed in this study were e-Port as the data collecting instrument, and AntConc version 3.2.4w as the data analysing instrument. AntConc is a freeware, multi-platform, multi-purpose corpus analysis toolkit which offers powerful concordance, word and keyword frequency generators, tools for cluster and lexical bundle analysis, and a word distribution plot (Anthony, 2004). First, the word list showed the frequencies of every word in each corpus by *Word List Tool*. Then, those word lists were used to explore the keywords which were significantly different across the three corpora by *Keyword List Tool*. After that, the concordance lines or keywords in context (KWIC) were sorted out by *Concordance Tool* for later analysis (see more details in the *Data analysis* section).

Research procedures

The research procedures of this study were divided into three main stages as follows:

Stage 1: Conducting preliminary survey

Data of one group of engineering students was extracted from the e-portfolio database for the preliminary survey to examine all the possibilities and to test the concordancing program for its feasibility to run the frequency and keyword analyses. In addition, seeing the total amount of words in students' reflections per group (about 16,000 words) allowed easier decision-making for randomly collecting the data from the five groups of engineering students, so the data would be the learner corpus of approximately 80,000 words. After studying the affect words found in the trial corpus such as 'love', 'enjoy', 'fun', 'happy', 'relax', 'excited', 'confused', 'bored', 'worried' and the like to try categorizing which words could be representative of some possible affective factors from the review of literature, the difference of the number of occurrences of those affect words was determined. This led to a further investigation into the similarities and differences of the use of those affect words in different phases of learning over a semester. Thus, the process of conducting the research was then developed with an awareness of data preparation before the stage of data analysis.

Stage 2: Building the learner corpus

After the preliminary study, the researchers developed a learner corpus by copying the reflection part of the ePort from the five selected groups of engineering students, and transferred it to five Microsoft Word documents (five data sets). Then, each set of data was categorized further into three phases of studying (beginning, middle and end of semester). In total there were fifteen sets of data which were combined into three corpora; the first one is the *Beginning* phase of all five groups of students, the second is the *Mid-semester* phase and the third one is the *Final* phase (see Table 2). After that, all the data was transferred from the Microsoft Word documents to the rich text format required by AntConc.

Stage 3: Preparing the data

After compiling the learner corpus, the frequency counts across the three corpora were explored. At this stage, the *Word List Tool* in the AntConc program was used to generate a list of words ordered alphabetically in the three corpora. When dealing with words in a corpus, there are several factors to be taken into account (Hunston, 2002). Thus, in order to increase the internal validity of the research, several issues which could have impacted the quantitative analysis were adjusted, and the inconsistencies and their solutions are as follows:

- a. *American and British English words* – The students used both American and British English in their reflections. The researchers changed all British English words into American because of its dominance in the whole data set.
- b. *Hyphenation* - All the hyphenated words which were counted as two separate words in AntConc were joined to make single words (e.g. “self-confident” was edited to “selfconfident”).
- c. *Repeated expressions* were counted as recurrent feelings.
- d. *Formulaic expressions and proper nouns* (e.g. ‘way’ in *by the way*, *six-way paragraphs*; ‘great’ in *The Great Wall of China*; ‘high’ in *high school*) were made as single units.
- e. *Abbreviations* of modality, auxiliary verbs and negation words were changed into their full form (e.g. *I’m* changed to *I am*, *I don’t* changed to *I do not*, *I’ve* changed to *I have*, etc.). The only abbreviation that was retained in the corpus was the “ ’s ” (apostrophe s) in the possessive form.
- f. *Colloquial words* were edited into their root form (e.g. *coz* = *because*, *wanna* = *want to*). The reason, here, is that with the frequency count, these kinds of words were necessarily considered as the same word.
- g. *Misspellings* were edited into their correct form (e.g. *sentense* = *sentence*, *interseted* = *interested*, *I thing* = *I think*, *can not* = *cannot*, *knowledged* = *knowledge*).

Stage 4: Developing the coding list

After the data in all three corpora was made consistent, the researchers developed a coding list for data analysis to be objective (see Appendix B). The coding list consisted of “the definition of terms used” of the predetermined affective factors in the study (motivation, self-efficacy, and anxiety) both in positive and negative aspects. For positive the plus “+” sign is used, and for negative the minus sign “-” is used. For example, M+ represents positive motivation and M-negative motivation or demotivation.

Data Analysis

The collected data was analyzed step-by-step using (1) frequency analysis, (2) keyword analysis, and (3) concordance analysis as shown in Figure 1.

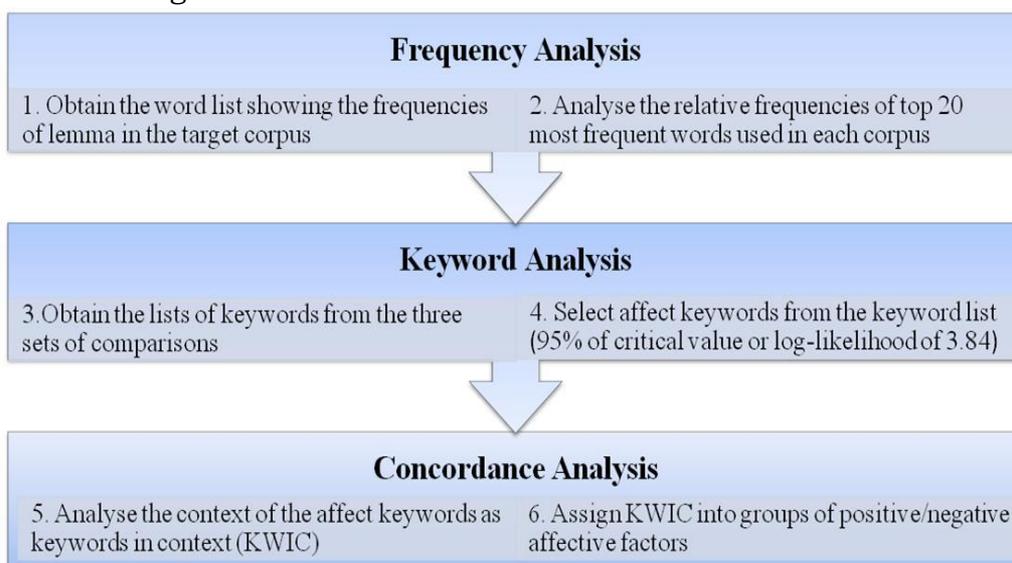


Figure 1: Flow chart of data analysis process

• Frequency analysis

In this study, the frequencies were analyzed by counting every word used in all three corpora. This process was done with the *Word List* tool. The words were counted separately according to their spellings (e.g. *enjoy* and *enjoys* were counted as two different words). When counting the frequency of a word, it is often more useful to

consider the different forms of the word collectively when the purpose of the study relates to the investigation of the meaning of language rather than its patterns. As a technical term, we call the base form of a word its “*lemma*”, and any different words in the same sense are a “*word-form*” (Hunston, 2002, p. 17). This study aimed at dealing with lemmas rather than word forms since, semantically, *enjoy*, *enjoys*, *enjoyed*, *enjoying*, or *enjoyment* are thought to share an aspect of meaning (the feeling of satisfaction and pleasure), so they all were counted in the lemma *ENJOY*, for example. To distinguish between word forms and the lemma, capital letters were used to refer to the lemma. The main argument about using frequency in the corpus-based analysis approach was to compare differences as a good start of any investigation. Thus, the frequency lists of each corpus were compared to investigate the similarities and differences of the data as an overview.

- ***Keyword analysis***

Keywords are the words which occur with statistical significance more frequently in a text or corpus than in a reference corpus (Fischer-Starcke, 2010, p. 65). The keyword list offers a measurement of “saliency”, whilst a simple word list only provides “frequency” (Baker, 2006, p. 125). Thus, in order to explore the use of words which show statistically significant differences across the corpora, the *Keyword List* tool was used to generate the log-likelihood values (keyness) of words found in the three corpora of students’ reflections in three different time intervals of learning. The criterion was that the selected affect words had to only appear in the keyword list of each corpus to be considered, and those words that did not appear as the keywords would not be taken into account. To compare the target corpus with the reference corpus, the following sets of comparison shown in Table 3 were employed.

Table 3: Three Sets of Comparisons

Target corpus	Reference corpus	Purpose of Comparison
The Beginning	The Mid-semester	To explore the affect words in the beginning compared to the mid-semester phase
The Mid-semester	The Final	To explore the affect words in the mid-semester compared to the final phase
The Final	The Beginning	To explore the affect words in the final compared to the beginning phase

In this case, one may wonder why there were no sets of reverse comparison across the three corpora in this study. It is noteworthy to discuss how comparison was determined (the use of the target corpora and the reference corpora) when the period of time was considered a variable. As is typical with investigations of change, time is used as the benchmark for data analysis. In other words, the purpose of comparing is not to make a conclusion on the trend of data, but to explain the phenomenon and make use of the keywords for further analysis and interpretation of the results. After the keyword lists of the three different phases were obtained, the affect words in each keyword list were selected with the following two criteria: (1) comprehension about affective factors as reviewed in the literature; and (2) statistical criteria. To identify the significant difference of frequencies of word use, the cut-off point in this study was set at the log-likelihood value of 3.84. This gave the probability (p) value of 0.05 or at 95% of critical value. Consequently, this means any affect words in this study that contained a log-likelihood value (keyness) equal to or greater than 3.84 were indicated as '*affect keywords*'. However, it is noted here that other keywords from the keyword lists that can be used to interpret the trend of phenomena across three phases of learning were kept as guidance for further investigation to a larger extent.

• **Concordance analysis**

As suggested by Baker (2006), a concordance analysis is one of the most effective techniques that allow researchers to carry out a combination of quantitative analysis and qualitative analysis. In this study, concordance analysis was employed to investigate the context in which those affect keywords occurred so as to manually categorize each concordance into each category of affective factor.

Table 4: Example of concordance analysis of the affect keyword *myself*

1. Yes, this English or six way paragraphs can make	myself	interests learning about English because	M+
2. language I satisfied because I do by	myself.	I will try learn and study skill for Eng	S+
3. people. I think it help me can learning by	myself	not need the teacher to teach me only on	S+
4. because I think this way can help me to learn by	myself	and have fun in the same time. I think t	S+
5. a vocabulary. I think the root of this problem is	myself.	I should work harder and focus on wha	A+

The language that students used in writing their reflections can inform us of their own feelings at that moment, in both positive and negative aspects. Also, the analysis of context of affect keywords (see Table 4) could help us address the differences of variation of each affective factor across phases of learning over a semester.

Once all coding was completed, the reliability of coding was assessed. 82 random concordance lines (10%) out of 815 were selected for inter-rating. The coefficient of the reliability of coding was high (84%).

Findings

As an overview, the students' reflections during the three phases of learning had 85,136 total words, comprising word-form of 2,633 items, which could be divided into 2,096 lemmas. The findings imply that the variability of students' word use was quite low. This was considered an important issue, as reflections normally involve expression of feelings. Abstract concepts such as these require more

complexity and variability of language use. This lack of variability suggests that the training and preparation in language use for reflection may be insufficient at present. Table 5 provides an initial summary of the findings in the students' reflections over a semester. The quantity of affect keywords amounted to about 0.96% of the total word count. This implies that in language learning, perhaps not much attention has been paid to the affective aspect.

Table 5: An overview of the language use in students' self-study reflections

Total summary	Findings
Total items of students' e-portfolios	212
Total items of reflections	922
Total reflective answers	3,360
Total word count	85,136
Average length of words per reflective answer	25.33
Total number of word-forms	2,633
Total number of lemmas	2,096
Lemma as % of total word count	2.46%
Total number of affect keywords as lemmas	32
Total number of occurrences of affect keywords	815
Lemma of affect keywords as % of total word count	0.96%

Table 6 shows the salient affect keywords in the students' reflections as a group of representative keywords to be categorized as each of the predetermined affective factors. The numbers of occurrence shown in Table 6 are the absolute frequencies from different sizes of corpora divided by period.

Table 6: Sets of affect keywords with absolute frequencies in the three corpora

No.	The Beginning		No.	The Mid-semester		No.	The Final	
	Keyword	Freq		Keyword	Freq		Keyword	Freq
1	hope	8	12	high	10	22	rather	18
2	less	7	13	hardness	3	23	excite	28
3	attempt	6	14	intelligent	3	24	favorite	13
4	beautiful	6	15	unusual	3	25	enough	44
5	capability	6	16	yourself	12	26	wonderful	10
6	myself	58	17	become	4	27	really	56
7	overlook	5	18	more	217	28	proud	8
8	encounter	4	19	increasingly	2	29	weak	8
9	over	4	20	poor	3	30	good	189
10	love	26	21	prove	3	31	useful	25
11	basic	19				32	attract	7
Total frequency		149			260			406

To make the corpora comparable, relative frequencies per 10,000 words were used for calculation. Table 7 summarizes the relative frequencies of affect keywords across the three phases of learning over a semester. The table shows that *The Mid-semester Corpus* has the highest frequency of affect keywords (160 times) when compared to *The Final* and *The Beginning Corpus*, (81 and 80 times, respectively). In other words, the *Mid-semester* period makes up almost half of the total affect keywords (49.83%), whereas the *Final* and the *Beginning* comprise the rest (25.24% and 24.93%).

Table 7: Summary of the affect keywords across three phases of learning over a semester

Summary	Corpus			Total
	The Beginning	The Mid-semester	The Final	
Absolute frequencies of lemmas of affect keywords	149	260	406	815
Total word count in the three corpora	18,649	16,283	50,204	85,136
Relative frequencies per 10,000 words	80	160	81	320
Percentage	24.93%	49.83%	25.24%	100%

The findings show that the students expressed more emotions and feelings regarding self-study tasks in the middle phase of learning than in the other two phases over a semester. In the next sub-section, the similarities and differences of affective factors over a semester will be discussed.

Quantity of affective factors

In this study, the affective factors in question were motivation, self-efficacy, and anxiety as shown by amount in Figure 3. Apart from these affective factors, 12 out of 815 concordance lines (1.92%) were considered irrelevant. The findings on affective factors, therefore, came from 803 concordance lines (98.08%), identified as positive and negative and shown by percentage in Figure 4. First, motivation was found to be 77.77% of the total affective factors, 75.02% of that being positive and 2.75% negative. Next, 15.05% of the KWIC were identified as self-efficacy, or 12.05% positive and 2.99% negative. Finally, anxiety made up 5.26%, or 4.89% positive and 0.37% negative. If we focus on the words of positive and negative meanings, we can see that as many as 91.95% of words are associated with

positive affective factors, and 6.12% with negative ones. This can be interpreted as saying that, overall, the students displayed positive feelings towards their self-study tasks through the e-Port method.

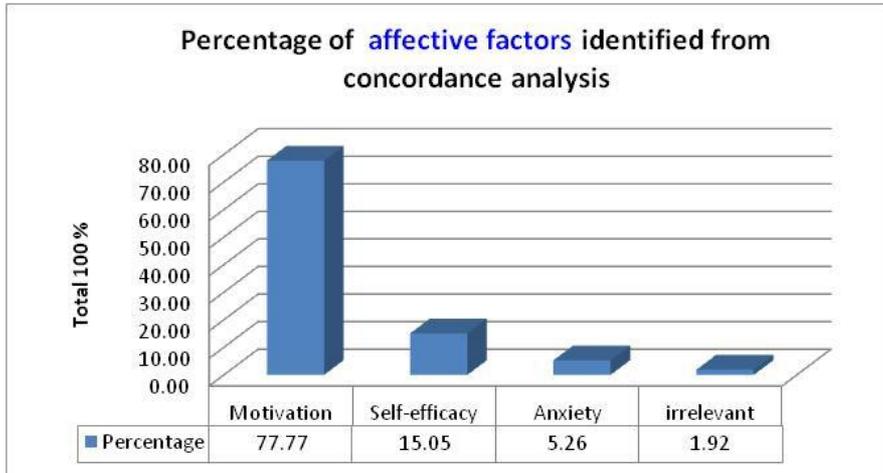


Figure 3

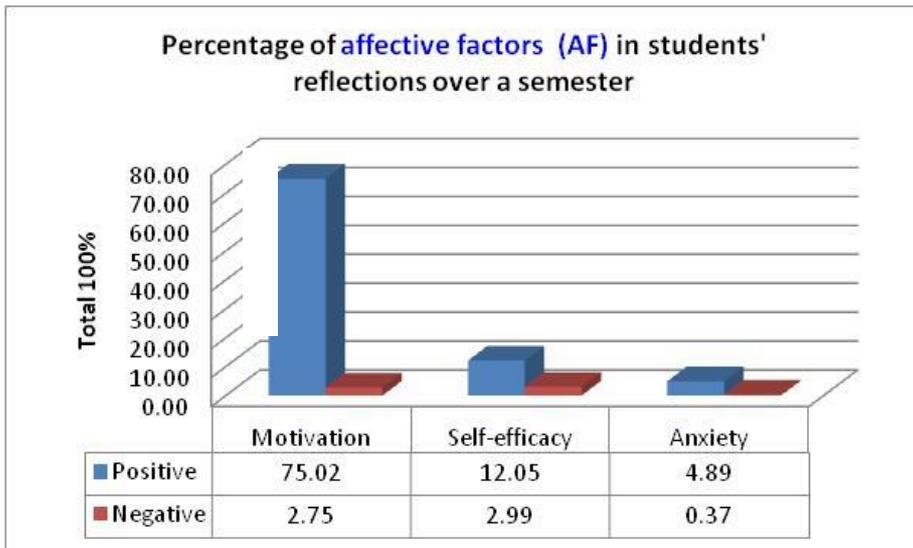


Figure 4

Change in frequencies and directions of each affective factor

Apart from the different types of affective factor, particular attention was paid to investigate ‘change’ in terms of quantities of affective factor over the course of one semester. The findings in Table

8 demonstrate the overview of change in three different phases of learning from the three corpora. Firstly, positive motivation starts at 11.21% in the beginning phase, increases to 45.04% in the middle phase and sharply decreases to 18.77% in the final phase. This is contrary to negative motivation, which starts at 1.17%, drops slightly to 0.96%, and falls to 0.62% at the end. Secondly, positive self-efficacy starts at 7.70% and then slumps to 2.49% and 1.86%, respectively. This could be evidence that the students might have lost their belief in their own capabilities on specific tasks during their self-study. It is also worth noting that negative self-efficacy is likely to increase over a semester, at 0.50%, 0.19% and 2.07%, respectively. Thirdly, 3.51% of positive anxiety appears in the beginning, with 0.19% in the middle phase and rising to 1.18% in the final phase. It is interesting to see that negative anxiety in this study accounts for 0.37%; it only occurs in the final phase of learning.

Table 8: Summary of change of affective factors over a semester

Affect keywords	The Beginning		The Mid-semester		The Final		% of grand total
	Per 10,000 words	% of total	Per 10,000 words	% of total	Per 10,000 words	% of total	
1. Positive Aspect							
Motivation	36	11.21	144	45.04	60	18.77	75.02
Self-efficacy	25	7.70	8	2.49	6	1.86	12.05
Anxiety	11	3.51	1	0.19	4	1.18	4.89
2. Negative Aspect							
Motivation	4	1.17	3	0.96	2	0.62	2.75
Self-efficacy	2	0.50	1	0.19	7	2.07	2.99
Anxiety	0	0	0	0	1	0.37	0.37
3. Irrelevant							
Irrelevant	3	0.84	3	0.96	0	0.12	1.92
Total	80	24.93	160	49.83	81	25.24	100

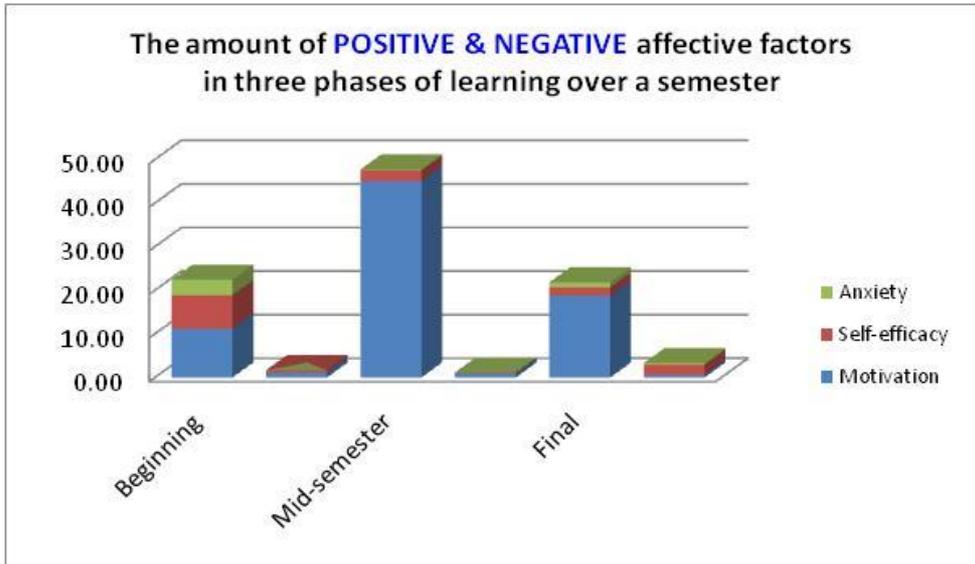


Figure 5

Figure 5 shows that change of affective factors was visible across three different phases of learning over a semester. We can see different intensities of motivation, self-efficacy and anxiety, both in positive and negative dimensions. Moreover, in terms of direction of change, it is apparent that the trend of each affective factor in different phases of learning is different in both positive and negative aspects (see Figure 6 and Figure 7).

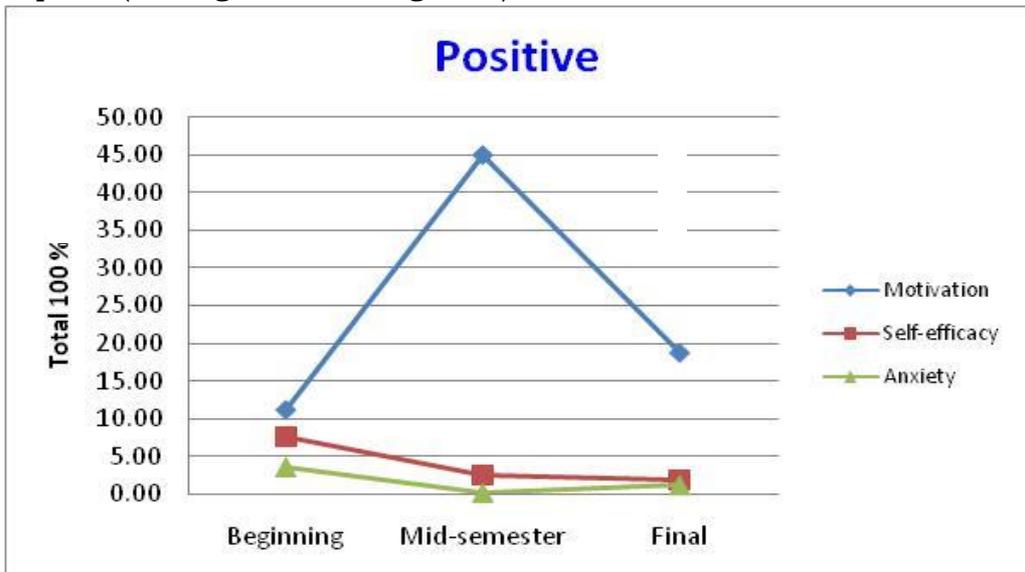


Figure 6

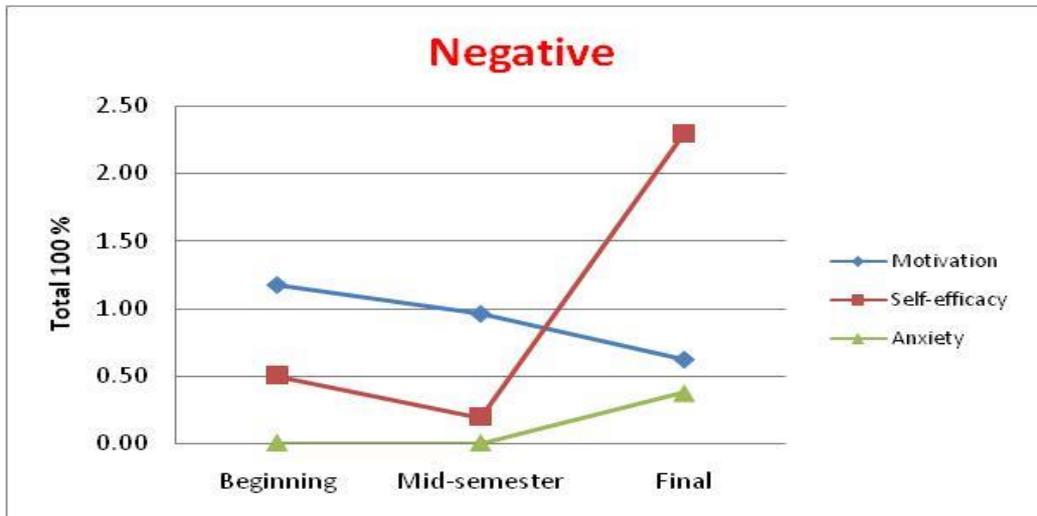


Figure 7

Discussion and Implications

Although a variety of affect words were found in the students' reflections from many aspects, in terms of quantity, the emphasis should be put on the frequency and direction of change of each affective factor over one semester. The discussion here, however, needs to make clear that the results of the differences are being presented as a specific phenomenon of three phases of learning over a semester, and it may not render generalizability of affective factors in other contexts. Based on the findings presented and interpreted, as students performed the self-study tasks in three different phases of learning over a semester, their reflections showed various emotional states through the different use of affect words. In total, the mid-semester phase of learning was the period in which the students expressed their emotion in the highest degree, both positively and negatively. Interestingly, the extent of the difference was beyond the researcher's expectations. That is, the highest frequency of affect words appeared in the mid-semester phase, at approximately 50%, which means they were used nearly twice as frequently compared to the beginning and the final time intervals. In other words, this result confirms that teachers should not overlook the variation of affective factors by paying attention only to the end-

of-course evaluation, since it affects the students' task performance in many aspects over a semester.

In addition, there are some more issues on the results and their implications worth discussing in several areas. First, specifically, motivation was the most powerful affective factor in the self-study context in every period of the study, as seen in its highest frequency in every phase of learning over a semester. However, the students could not sustain their motivation in the long run; as the findings showed in the final phase that their positive motivation sharply decreased. Interestingly, this part of the results can be related to the issue raised by Williams and Burden (1997), who state that most teachers are misled by the term "motivation" because they think it is all about simply capturing the students' interest and nothing else. In fact, it is far more important and is concerned with the process of maintenance and the encouragement of independent learning. In line with this, the results on the variation of motivational fluctuation over a semester are thought to raise awareness of teachers to take such an issue into consideration in the context of self-study through an online environment.

Second, the possibility of self-efficacy was likely to continuously decrease, especially in the final phase of learning. The students appeared to lose self-confidence in their task performance and learning outcomes, particularly as they approached the end-of-course evaluation. This result can be explained in line with Oxford and Shearin's (1994, cited in Arnold & Brown, 1999, p. 17) self-efficacy notion, particularly in an education setting. They claim that students need to have both a belief in their control over the outcomes of the learning process and the feeling of a "sense of effectiveness within themselves" to make the effort to learn a new language. In this respect, they suggest that teachers can promote self-efficacy "by providing meaningful tasks at which students can succeed and over which students can have a feeling of control, and by giving students a degree of choice in classroom activities" (*ibid.*, p. 17). This suggestion seems to influence the way that learning materials in this

study were offered to the students as various optional programs for them to choose in accordance with their preferences. To some extent, in terms of methodological preparation, when selecting listening material, the teacher can guide the students with a checklist of topics, settings, number of speakers, accents, speed of delivery, listening scripts, and length, for example (Riley, 1981 cited in Dickinson, 1987, p. 166).

Third, the students' language anxiety in an online learning context with optional lists of multimedia learning materials was surprisingly found to be at the lowest degree out of the total number of affective factors. And whatever anxiety that did exist was mostly positively oriented. This can be supported by the study of Huang and Hwang (2013), who examined the relationship between multimedia environments and English learning anxiety in EFL college students in Taiwan. The results suggest that a multimedia environment can reduce student anxiety and provide a less-stressful classroom environment. With its complexity, the foreign language anxiety in this self-study context gives us the awareness of its significant effects as to help our students make use of it beneficially. In this respect, the study of Woolfolk (1993) proposes ways to deal with anxious students. As teachers, we ought to help highly anxious students to set realistic goals, because these students have the most difficulty in making wise learning choices. They are likely to select either extremely difficult or extremely easy tasks. In the first, they tend to fail, which increases their feelings of hopelessness and apprehension associated with schoolwork. If they choose the latter, they probably will succeed, but they will miss the sense of satisfaction that could encourage greater effort. Thus, it is necessary for teachers to guide the students in how to select materials appropriate to their level of proficiency in order to avoid such anxious feelings when they perform the tasks on their own.

Conclusion

With the purpose of this study to investigate the variation of affective factors through the use of affect words in students' reflections towards their self-study in an e-portfolio over one semester, a combination of corpus analysis methods (frequency, keyword, and concordance analysis) can offer new insights into the field of English Language Teaching (e.g. affective factors, self-access language learning and corpus studies). The quantitative results not only respond to avoid potential bias of the researcher but also interestingly provide a broader view of the complex phenomenon. What can be drawn from this study is that the intensity of affective factors, i.e. motivation, self-efficacy, and anxiety, either positive or negative, can change over a period of time and can inevitably have significant impacts on task performance. Thus, instead of putting emphasis only on the end-of-course evaluation, teachers, educators and course developers should have proper awareness of these changeable factors and utilize their implications in terms of direction of change in a more practical way.

Remarks

This paper has been published as one part of an MA thesis. For more insightful implications, the complete study integrated the corpus methods and qualitative analysis to further examine the factors contributing to the change of each affective factor over a semester.

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Appendix A: The interface of e-Port program

Student's Electronic Portfolio

Authenticated Security Logon

User Name Password

LOGIN

Webboard : Register : Forget password

What is Student's Electronic Portfolio (or ePort)?

Student's Electronic Portfolio (ePort) will let you collect together all your self-study work and your reflections on language learning. It can be used to demonstrate your effort and progress over a period of time. One of the aims of ePort is to encourage you to be more responsible in your learning and to practice English outside class. You can select material or activities based on your interests and your own individual pace of learning. ePort can also help you reflect on your learning and to monitor and assess your strengths and weaknesses. The program also supports communication between students and teachers. You can consult your teacher about your learning problems and learning plans and record the results in the form of a learning contract, and you can learn about your performance by reading your teacher's feedback.

List of Students

Name	Username	Level	Interest	Topic	Score
Anna Kongsakul	ANNA	11	2	200	100
Anna Kongsakul	ANNA	11	2	200	100
Anna Kongsakul	ANNA	11	2	200	100
Anna Kongsakul	ANNA	11	2	200	100
Anna Kongsakul	ANNA	11	2	200	100
Anna Kongsakul	ANNA	11	2	200	100
Anna Kongsakul	ANNA	11	2	200	100
Anna Kongsakul	ANNA	11	2	200	100
Anna Kongsakul	ANNA	11	2	200	100
Anna Kongsakul	ANNA	11	2	200	100

My Worksheet

Question : 1

Read the text and answer the question.

Topic : Love English

Text : I love English because it is useful for my future. I can use it to communicate with people from other countries. I can also use it to find information on the internet. I can use it to watch movies and listen to music. I can use it to travel and see the world. I can use it to find a job. I can use it to find a friend. I can use it to find a love. I can use it to find a life.

E-Port คืออะไร ?

E-Port จะเป็นที่เก็บสะสมชิ้นงาน และความรู้อิงของผู้เรียนที่มีต่อการเรียนภาษา รวมถึงความพยายาม และความก้าวหน้าในการเรียนภาษาตลอดช่วงระยะเวลาหนึ่ง วัตถุประสงค์ของการใช้ e-Port ก็เพื่อให้ผู้เรียนมีความรับผิดชอบต่อการเรียนของตนเอง โดยการฝึกการใช้ภาษาอังกฤษนอกห้องเรียน ผู้เรียนสามารถเลือกสื่อ หรือกิจกรรมตามความสนใจของตนเอง และที่เหมาจะสอดคล้องกับความสามารถของตนเอง โปรแกรมนี้จะช่วยให้ผู้เรียนตระหนักถึงความสามารถของตนเองในการเรียนภาษา รวมถึงความสามารถในการตรวจสอบ และประเมินจุดแข็งและจุดอ่อนของตนเองได้ โดยผู้เรียนสามารถติดต่อกับครูผู้สอนและเพื่อนๆ ได้โดยตรง เพื่อรับฟังทัศนคติ และปรึกษาเกี่ยวกับปัญหาในการเรียน การวางแผนการเรียน การประเมินตนเองตามแผนการเรียนที่วางไว้ ตลอดจนแจ้งพัฒนาการในด้านภาษาเรียน

Source: <http://202.44.15.6/v53/eport3/index.php>

Appendix B: Definition of Terms

Affective factors	Definition
Motivation	<p>An internal state of mind including a source of energy that arouses a student's behaviour to pursue a task with a goal set previously.</p> <p>If it helps encourage students to accomplish a task or at least to have a good attitude towards a subject matter, it is called 'positive motivation'. [M+]</p> <p>If it distracts students from working on a task happily or is any state of mind that makes them feel unsatisfied, it is called 'negative motivation' or 'demotivation'. [M-]</p>
Self-efficacy	<p>The degree of a student's belief in his or her own capability to accomplish a specific task.</p> <p>If students have high confidence in their own ability, we call it 'positive self-efficacy'. [S+]</p> <p>If students express their attitude towards any task with low-confidence utterances such as 'I can't do it', we call it 'negative self-efficacy'. [S-]</p>
Anxiety	<p>A student's feelings of worry, nervousness, dissatisfaction, fear, and physical symptoms felt when performing a task in language learning. The focus is put onto the problems that the students experienced and mentioned.</p> <p>If it is positive (facilitating anxiety), it will stimulate students to approach a new learning task with solutions. [A+]</p> <p>If it is negative (debilitating anxiety), it will emotionally stimulate students to have a bad attitude towards a task and sometimes lead to avoidance of persistence. [A-]</p>
Irrelevant	<p>The statements which are irrelevant to a context and cannot identify a category of a predetermined affective factor. [I]</p>