CHAPTER 5

Materials Evaluation

5.0 Introduction

While Chapter 4 described the task construction on the basis of IT learners’ needs and language ability, this chapter revolves around evaluating the effectiveness of those sample units of language tasks specially designed. In this present study, materials evaluation was carried out in two ways: predictive and retrospective evaluation. Since the newly developed materials should be first evaluated for their effectiveness prior to their implementation in the actual classroom, predictive evaluation was conducted. The results of this evaluation have helped to adjust or improve the appropriateness of the developed tasks. Subsequently, retrospective evaluation was carried out to investigate the effectiveness of two specific tasks in actual classroom of IT students. Information derived from this type of evaluation would be analyzed to seek answers to research questions mentioned in Chapter 1. The results of predictive evaluation will be first discussed and the analysis of the retrospective evaluation derived from the trialling of two tasks will be presented in the next section.

5.1 Results of predictive evaluation

Referring to the six criteria of predictive evaluation, the effectiveness of the constructed materials was presented in terms of its objectives, methodology, task sequencing, coherence, content authenticity and content as a source of language learning unitwise to have a clear picture of chained activities. Each task in a unit was not complete in itself, but the preceding task was a prerequisite for the following one. In other words, response to a single task in each unit would elicit certain feedback that did not reflect the view in all its entirety; therefore it was necessary to evaluate materials in all their entirety to have a more objective and comprehensive view. Results were analyzed quantitatively and qualitatively. Here, it is appropriate to present numerical data that indicated the level of effectiveness of the constructed materials followed by the evaluators’ points of view and comments.
5.1.1 Effectiveness of constructed materials

Given below in Table 5.1 is the level of materials effectiveness unitwise. Three language evaluators who were language specialists involved in technical education for over ten years (See Appendix H for a list of the external evaluators) indicated their response on a three-point rating scale: 3, 2 and 1 respectively, after which the mean average score was calculated and translated to measure the level of effectiveness as follows.

<table>
<thead>
<tr>
<th>Score Card</th>
<th>the level of effectiveness</th>
</tr>
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<tbody>
<tr>
<td>3.00</td>
<td>very effective</td>
</tr>
<tr>
<td>2.00</td>
<td>effective</td>
</tr>
<tr>
<td>1.00</td>
<td>not effective</td>
</tr>
</tbody>
</table>

* When the level of score is .5 then we interpreted the score as marked on the next level.

<table>
<thead>
<tr>
<th>Features</th>
<th>Unit 1: Network topology</th>
<th>Unit 2: An IT specialist</th>
<th>Unit 3: Troubleshooting</th>
<th>( \bar{X} )</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>E1</td>
<td>E2</td>
<td>E3</td>
<td>E1</td>
</tr>
<tr>
<td>Objectives</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Methodology</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Task sequencing</td>
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<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Coherence</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Content authenticity</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Content as a source of language learning</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>( \bar{X} )</td>
<td>2.89</td>
<td>2.89</td>
<td>2.61</td>
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Table 5.1 Level of materials effectiveness unitwise

E1 = Evaluator 1   E2 = Evaluator 2   E3 = Evaluator 3   \( \bar{X} \) = Mean

The mean scores of Unit 1 to Unit 3 (2.89, 2.89 and 2.61 respectively), revealed that the overall effectiveness of the developed tasks was found to be very effective, in terms of six predetermined criteria. Again, the survey also demonstrated that each individual parameter, that is, objective, sequencing, coherence, content authenticity and content as a source of language learning when measured was found to be very effective except for ‘methodology’ which was at 2.33, an average score at
the effective level. However, it was also appropriate to provide the results of all three units. Table 5.2 shows the level of materials effectiveness by individual evaluators.

<table>
<thead>
<tr>
<th>Features</th>
<th>Evaluator 1</th>
<th>Evaluator 2</th>
<th>Evaluator 3</th>
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<tbody>
<tr>
<td></td>
<td>U1</td>
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<td>U3</td>
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<td>Objectives</td>
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<td>Methodology</td>
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<td>3</td>
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<td>Content authenticity</td>
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<td>Content as a source of language learning</td>
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<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Task sequencing</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Task coherence</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>( \bar{X} )</td>
<td>2.83</td>
<td>3.00</td>
<td>2.67</td>
</tr>
<tr>
<td></td>
<td>2.83</td>
<td>2.78</td>
<td>2.83</td>
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</tbody>
</table>

Table 5.2 Level of the materials effectiveness evaluatorwise

U1 = Unit 1: Network topology  U3 = Unit 3: Troubleshooting
U2 = Unit 2: An IT specialist  \( \bar{X} \) = mean

Table 5.2 shows that the overall effectiveness of all three units rated by the three evaluators were at 2.83, 2.78 and 2.83 respectively. They unanimously agreed that the materials were very effective. Closely looking at the mean scores of each particular unit, all three evaluators tended to rate the effectiveness of the materials in a similar fashion. Unit 1 and Unit 2 received higher mean scores (2.83 or higher) than Unit 3 did (2.67). However, it was found that all of them have rated the materials at the ‘very effective’ level.

In addition to the rating scale, an interview with each evaluator was also conducted to obtain insightful feedback on different aspects of constructed materials: objectives, methodology, task sequencing, coherence, content authenticity and content as a source of language learning.
A) Objectives

All three evaluators agreed that the objectives of the developed tasks in all three units were stated in two ways: content objectives and language objectives. This reflected an attempt to view language as a tool for communication. One suggestion was, for example:

The task objectives should be formulated in a manner that the expected learning outcome is measurable. For instance, the objectives of Task 1.5 as well as Task 3.2 fail to show the expected level of performance. (Evaluator II)

B) Methodology

As regards the methodology adopted for the materials designed, all three evaluators accepted that the tasks realized the underlying principles of CLT, learner-centredness and CBI. Given below are the evaluators’ helpful comments on task methodology:

For the overall picture of the tasks in all three units, more meaning-oriented tasks are integrated. Though some tasks deal with vocabulary and pronunciation, games are used in those tasks, which can result in a positive learning environment. A variety of learning mode (individual, pair, group and whole class) is used. (Evaluator I)

Most of the tasks reflect salient aspects of CBI, CLT and learner-centered approaches in terms of meaning orientation, topic selection, a variety of learning modes and learning contextualization. However, it is found that some tasks seem to be teacher-led like Task 1.1, 1.2, 2.4 and 3.2 (Evaluator II)

It is good to incorporate the course content from the students’ field of study. This makes their language learning more meaningful. The utilization of the computer with Internet connectivity can capture students’ interest and allow them to have access to more learning sources. This will result in active learning. However, tasks involving linguistic system should be added with communicative activities. (Evaluator III)

It was found that the tasks were meaning-focused rather than form-focused. There was an attempt to create an enjoyable learning experience. Three types of games were used for the presentation of vocabulary and pronunciation
practice. A variety of learning modes and computers were used to accommodate the students’ learning preferences. Moreover, integration of IT course content made the learning situation more meaningful. However, some of the teacher-led tasks was adapted so that students take more responsibility for their own learning. This can be achieved with the self-access online programme for pronunciation practice in Tasks 1.1 and 1.2 or giving clear instruction for self-practice in pair and group works in Tasks 2.4 and 3.2.

C) **Content authenticity**

The evaluators fully agreed that the content integrated into the language task were relevant to the students’ field of study. Here are their views on the thematic content.

It is good to integrate course content in the language class. It provides a meaningful learning situation. (Evaluator I)

The utilization of the IT course content in the language task for IT students viz. ‘Network topology’, virus programme ‘Trojan Horses’ or working on IT instructions shows a great attempt of the materials writer to contextualize students’ learning. (Evaluator II)

However, one of the evaluators expressed his concern over the difficulty of the content.

The IT course content used can reflect the students’ academic needs and target situations. However, it may need some types of scaffolding during the learning process to facilitate their comprehension. (Evaluator III)

To provide scaffolding, visuals and discussion of difficult words prior to the main reading are employed to ease text difficulty. Moreover, collaborative learning is provided to reduce students’ anxiety.

D) **Language learning**

Similar to content authenticity, it received full support from the evaluators. They could supply ample evidence to demonstrate that IT course content could be appropriately utilized in the language task to promote language learning successfully.
Thematic topics can appropriately serve as tools for language learning. It appears that words drawn from the content can be used for pronunciation practice. Students learn more vocabulary and sentence structures through language game and communicative grammar activities. (Evaluator I)

The course content can be exploited for language learning in several aspects. Students can undoubtedly learn some new vocabulary. The content also provides students an opportunity to practise their speaking skills wherein they are required to give IT instructions. Additionally, a functionally linguistic pattern necessary for giving advice, like, ‘You need to/should…’ is acquired that enriches their level of language proficiency.” (Evaluator II)

IT content can be effectively used for language learning. The reading texts on ‘Network topology’ and ‘Trojan Horses’ allow students to practise some sub-reading skills: predicting, making inferences and referencing. Certainly, students learn some new vocabulary from the reading. (Evaluator III)

The above views showed that the course content could be used to promote language learning in terms of vocabulary, sentence structures, language skills and functions.

E) Task sequencing

Regarding the evaluators’ response to the rating scale on task sequencing, it was found that they all agreed that the organization of the task for the students to undertake was progressively more demanding. Following are their opinions:

Activities from reading comprehension to interaction involve students in language learning. In other words, they prepare students with reading activity to process information and then to produce the language. (Evaluator I)

Activities start from matching to discussing or from non-verbal to verbal responses. (Evaluator II)

Activities are sequenced from simple to complex. They start with dealing with pronunciation and words definition, reading comprehension and activities involving in analyzing and evaluating. It can be said they are arranged in terms of responses- non-overt to overt responses. (Evaluator III)
Tasks were sequenced according to the cognitive and performance demands made upon students. They were arranged from simple tasks like matching to more demanding tasks like discussion or role-play. That is, students were required to give non-overt to overt responses.

F) Coherence of tasks within the unit

The evaluators agreed that the tasks were coherently structured within the unit. They expressed their opinion on the coherence of the tasks in the following ways:

The organization of the tasks within a unit is inter-linked. Prior to the reading task, some difficult words are drawn from the reading text to discuss in the warm-up activities. Subsequently, the follow-up activities are closely linked to the reading task. (Evaluator I)

Activities in each unit build on those, which go before. (Evaluator II)

Another evaluator was also asked to articulate her view on task coherence. She indicated it in the following way:

The preceding task leads to the next task. Task 2.1 ‘Surfing the Net’ leads to the following tasks, in which students practise writing instructions in an imperative sentence structure and then practise giving the instructions orally. A similar pattern is found in Unit 3 (Evaluator III)

The tasks thus focused on different language skills, i.e. writing and speaking, in this case.

G) Suggestions for possible modification

Results of materials evaluation revealed that the developed materials were found effective in terms of methodology and very effective in terms of their objectives, sequencing, inherent coherent, content authenticity and content as a source of language learning. However, in addition to this, some suggestions for modifications were also provided to maximize the opportunity to promote students’ learning. Those points are presented below.
i) In Task 1.1 and 1.2, it would be appropriate and interesting to have more additional exercises on pronunciation practice and phonetic symbols particularly if it was from online sources. Online practice could greatly facilitate students’ learning. They could access an online exercise and practiced on their own repeatedly.

ii) If possible, it would be good to expose students to various forms of the monolingual dictionary; hard copy, CD-Rom or online so that they became familiarized with and know how to get information from those sources.

iii) Some additional exercises that allowed students to use the words in a meaningful situation should be included in Task 1.3. The presentation of IT words should be provided in their context.

iv) For reading activity in Task 1.4, students might find it more interesting to read texts online instead of reading a hard copy.

v) All new IT ideas derived from Task 2.2 should be published in the form of poster and displayed for more information sharing which would be instrumental in enhancing the confidence of the students.

vi) The given statements/situations in Task 2.4 should be more IT-oriented so they can practise receiving and giving some IT related instructions as well as speaking skills.

vii) Tasks in Unit 3 tended to be a teacher-oriented type. Thus, more space should be created for students’ initiation.

viii) Activities in Task 3.1 were organized around reading skills whereas the objective of the task was to develop the speaking ability. The activities, thus, did not seem to be able to lead to the accomplishment of the stated learning objective.

ix) It would be more interesting if students were allowed to read online texts about various types of a virus programme. This could create an additional exercise that led to a discussion on the distinguished features of the virus programme.
5.1.2 Conclusion

It could be concluded that the evaluators’ points of view illustrated above, recognized the prominent features of the constructed materials. Their view could be summarized as follows:

A) Contextualization: Materials contextualized students’ learning. They realized and drew upon students’ content familiarity. IT course content was suitably integrated in the materials.

B) Meaning orientation: Students could use language in a meaningful manner. Most of the activities were carefully designed in a way that language was used as a communicative tool to convey meaning, through different modes, i.e. listening, speaking, reading and writing.

C) Realization of objective needs: The integration of course content in the language materials could demonstrate the materials writer’s attempt to facilitate the students to achieve their academic goals as well as to appropriately deal with their target situations.

D) Realization of subjective needs: Thematic topics were drawn based on students’ interest. This could attract students’ attention to actively participate in the learning process. In addition, a variety of learning modes was included in the materials. At least two types of learning modes were used in each task to facilitate individual learning preferences. A positive learning environment was promoted with the help of games. Three types of games: a card game and two board games were included for pronunciation practice, vocabulary and sentence structure drill. This could help them learn language in a relaxed and enjoyable manner.

E) Authentic materials: On one hand, authentic materials could be applied to the use of course content. On the other hand, it meant the use of various sources of information that was not specially prepared for the language class. Both types of materials could effectively expose students to genuine discourse naturally used in the area of IT.
5.2 Results of retrospective evaluation

As mentioned in the preceding section, the effectiveness of the developed materials was analyzed based on the information gathered from two types of evaluation: predictive and retrospective evaluation. This section will discuss the results of retrospective evaluation to clearly understand how the developed tasks work in the actual classroom. It was important to note that a complete set of constructed materials contained three units of 13 tasks, which lasted 20 hours. However, the allotted time to carry out the main study was the first half of the semester (9 weeks or 18 hours). It was thus possible to implement only 2 units or 10 tasks of the constructed materials (15 hours).

Though ten tasks were implemented in the main study, only two tasks (Tasks 4 ‘Network topology’ and 7 ‘Surfing the Net’) were critically analyzed. This was because they were considered the main inputs of the respective unit while the remaining tasks were regarded as warm-up or follow-up activities (See 3.3.2 B for details of retrospective evaluation). It is expected that the insights/experience gained from the trialling of the two tasks will illuminate other tasks.

As stated earlier in Chapter 3, the retrospective evaluation of communicative tasks considered three types of information: (1) how the tasks performed (2) what learning took place as a result of performing the task and (3) how the teacher and learners felt about the tasks. Thus in this present study, the main purpose of the trialling was to address the following questions:

1. Can the materials foster students’ high order thinking skills?
2. Do the tasks enhance content learning?
3. Do the tasks enhance language learning?
4. How do students feel about constructed materials in terms of difficulty and interest?

During the course of instruction, qualitative and quantitative data relating to the above questions were gathered through classroom observation, teacher’s field notes, video recording, students’ reflection and teacher-observer conference. The language teacher and an observer were asked to reflect on such issues as students’ participation, the extent to which the task could facilitate their learning, task
difficulty, the extent to which the task was successfully implemented and some suggestions for modification (if any). Moreover, the language teacher-observer conference was held to discuss those issues. In this study, since the researcher took part in the trialling as a language teacher, it was necessary to video record the classroom dynamics for detailed analysis. In addition, immediately after the completion of each task, students were also asked to provide feedback on their learning experience in terms of knowledge they gained from the task and their perception of the content difficulty and interest of the tasks in the form of a questionnaire (See Appendix G for a students’ reflection sheet). This kind of feedback served as another type of evidence to demonstrate the extent to which students benefitted from the materials.

It is also crucial to note that the study, given its limited timeframe, could only demonstrate some indicators of on-the-way achievement, rather than evidence of actual learning. A long-term study is required to establish how these indicators can be claimed to be evidence of learning. This is beyond the scope of the study. Trialling tasks can only draw evidence of how students are on track.

In order to develop a deeper understanding of issues relating to the research questions, analysis of performance is made on the basis of information gathered from video recording, classroom observation, teacher’s notes, teacher-observer conference and students’ reflection. In this section, four aspects are discussed taskwise:

- Fostering the students’ high order thinking skills
- Enhancement of content learning
- Enhancement of language learning
- Perception of constructed materials in terms of difficulty and interest

The results of ‘Network topology’ trialling are first discussed followed by those of ‘Surfing the Net’.
5.2.1 Results of Task 1: Network topology

A) Fostering students’ high order thinking skills

This trialling task focused on reading comprehension. The way the task fostered students’ high order thinking skills was analyzed in terms of the questions posed to the students and the activities they did during the course of instruction. Based on the video, it was found that the questions asked by the language teacher contained different levels of thinking skills. However, at this point of analysis, it would exclusively focus on certain types of questions and activities involving the students at higher levels of thinking. The analysis would be presented in three stages: pre-, during and post reading.

i) Pre-reading: The primary aims of the session were to draw students’ attention and to activate their relevant prior knowledge (if any) about the topic ‘Network Topology’, which they were going to read in the main task. The session began with a whole class discussion with the help of some pictures of WAN/MAN/LAN and cabling structure of the network topology. The teacher tried to differentiate between the computer network and the network topology. The discussion did not intend to be a thorough explanation of the reading. It was to briefly introduce the new topic and some new vocabulary.

At this preparation stage, some of the questions posed to the students comprised:

1. What do these pictures represent?
2. Is this WAN/MAN/LAN?
3. What are the differences of WAN/LAN?
4. What are the differences in these two pictures?
   (The teacher showed pictures of the Star and Ring.)
5. What is it like in shape? (a picture of Ring topology)
6. What about this? (Bus, Star and Mesh topologies)
7. How many types of topology are there?
8. What do you understand by ‘topology’?
9. What do you understand by ‘mesh’?
It was noticed that question no. 3 and 4 required brainstorming and reasoning. They encouraged students to analyze the differences of the two pictures. This type of questioning was classified into ‘Analyzing’, i.e. higher level thinking in the taxonomy while the first two questions aimed to retrieve the students’ relevant knowledge from long-term memory and fell into the lower level of ‘Remembering’. Generally, the aim of the pre-reading task was to prepare the students for the cognitive and linguistic demands of the main task. Questions nos. 5-9 were, thus, asked to introduce some new vocabularies or terminologies.

**ii) During reading:** This involved doing a ‘Jigsaw’ reading activity. Students were assigned to five groups; the number of groups was dependent upon a number of topics/passages the students were going to read. One group received and worked on one particular topic while others focused on other topics. Here, they worked in so-called ‘expert’ groups in which each member of the group had the same reading topic. It was the group’s responsibility to ensure that every single member clearly comprehended the reading in terms of both vocabulary and content. More importantly, they were asked to reach group consensus on the respective issues for discussion and had to explain it to the members of other groups. After that, they were expected to be ready to form new groups, in which there was at least one representative from the ‘expert’ groups. Each member of a new group had to teach the rest of the group about what s/he had learnt. Here, they also involved themselves in a discussion to complete another two activities: a *True or False* and carefully compared the components of the topology in terms of the type of devices, configuration, cost, break in connection or failure of the system.

At this stage, convincing evidence involving students at higher order thinking skills was recognized. That is, the issues for discussion entailed students to think critically and supply reasons for the consequence of the given conditions. This type of activity could be categorized as ‘Analyzing’, a higher level thinking ability. Presented below are those issues in the form of questions for respective topics:

- What if there is a failure in the backbone? (Bus)
- What if there is a failure in any node? (Bus)
• What if there is a failure in any node? (Ring)
• What if a hub is removed from the network? (Star)
• What if a node is removed from the network? (Star)
• What if there is a failure in the backbone? (Tree)
• What if there is a failure in a single hub? (Tree)
• What if one link becomes unusable? (Mesh)

iii) Post-reading: Students also involved themselves in the discussion to carefully differentiate components of the topology in terms of a type of devices, configuration, cost, break in connection or failure of system. Apparently, this type of activity fell into the ‘Analyzing’ level.

In summary, it could be clearly stated that the above discussion on questioning used by the language teacher and activities students engaged in during the course of instruction provided convincing evidence to support that the task could cognitively engage the students at higher levels of thinking taxonomy.

B) Enhancement of content learning

Effective learning can take place when the teacher can encourage learners to be cognitively involved in the learning process they have to think through and articulate their own learning. This implied that the thinking process could potentially affect learning. If that is the case, the discussion in the previous section could provide clear evidence that successful completion of the activities resulted in a certain amount of content learning. Based on the information derived from the observation and video recording of the classroom dynamics, it was found that there had been ample evidence to illustrate that students actively engaged in the learning activities. The following section discusses how the task enabled students to enhance their content learning.

Some of details of how students learnt more course content follow:

i) The teacher had access to a group of six students working on Ring topology to monitor whether the students were able to learn any course content from the reading text. Given below is the extract of the teacher-student exchange. As the students’ language proficiency was at the ‘beginner’ level of language proficiency,
the exchange is in their language-Thai. Subsequently, it was translated into English by the researcher.

1 T: What is the pattern of the signal?
2  S₁: Circular
3  T: Yes, it has a circular pattern. Anything else?
4  Ss: (no reply)
5  T: Is it clockwise/anti-clockwise?
6  S₁: Both, two of them.
7  T: Two of them?
8  S₁: Yes. (S₂-₃ nodded in agreement)
9  T: And? What happens if one node fails to operate?
10 S₁: In clockwise pattern, if one node fails to operate, the entire system collapses.
11 T: And, what about anti-clockwise?
12 S₂: In anti-clockwise, there is a ‘repeater’.
13 T: ‘A repeater’? What is it?
14 S₂: It will help maximize the signal.
15 S₁: The signal moves backward.
16 T: I see, and then?
17 S₂: If any node fails to operate, the signal moves backward.
18 S₁: The signal will move back and forth among the workable nodes.
19 T: Oh, yes. The repeater helps to clean and free the signal from any background noise happening while travelling down the wire, then sends the refreshed signal to the link.
20 S₁: Yes. (S₂-₆ nodded in agreement)
21 T: You mean if it’s clockwise signal, the entire network collapses when one node doesn’t function properly. To function properly when any nodes fail to operate, it needs a repeater to reverse the signal back and forth among the workable nodes.
22 S₁-₂: Yes. (S₃-₆ nodded in agreement)

¹ These categories are from Mehan (1979) discussed in Section 3.3.2 B of Chapter 3.
Notes on transcript

Turn 1 The teacher started by directing her question to the group members (Product elicitation). Here, she did not designate any students to answer, as she did not like to force the individual to speak when s/he was reluctant.

Turn 2 Voluntarily, S₁ responded to the teacher’s question.

Turn 3 The teacher gave feedback to the group by modeling a full sentence. Then she asked an open-ended question (Product elicitation).

Turn 4 No reactions were forthcoming from the students.

Turn 5 The teacher sustained the discussion by asking more specific information (Choice elicitation).

Turn 6 S₁ (the same student) supplied the answer.

Turn 7 The teacher sought confirmation with a yes/no question (Choice elicitation).

Turn 8 S₁ confirmed his answer. S₂-₃ gave non-verbal responses by nodding in agreement.

Turn 9 The teacher asked an inferential question to see whether the students could make inferences from what they read. (Process elicitation).

Turn 10 S₁ supplied his analysis based on the given text.

Turn 11 The teacher asked further question for comprehension check (Product elicitation).

Turn 12 S₂ (another student) voluntarily made his first attempt to supply an answer.

Turn 13 The teacher asked for clarification in order to help students elaborate more information (Product elicitation).

Turn 14 S₂ answered the teacher’ question.

Turn 15 S₁ provided additional information.

Turn 16 The teacher accepted the answer and asked for additional information (Product elicitation).

Turn 17 S₂ provided additional information.

Turn 18 S₁ elaborated on the information.
Turn 19  The teacher sought confirmation from the students by summarizing information (Choice elicitation).

Turn 20  $S_1$ agreed with the summary. $S_{2-6}$ gave non-verbal responses by nodding in agreement.

Turn 21  The teacher sought confirmation from the students by summarizing information (Choice elicitation).

Turn 22  $S_{1-2}$ agreed with the summary. $S_{3-6}$ gave non-verbal responses by nodding in agreement.

The extract was characterized as sequences of questions and answers, questions asked by the teacher and answers provided by the students. It contained 22 turns: ten from the teacher and twelve from the students. The teacher used questioning strategy as a means of knowledge elicitation. It was found that the teacher used three types of elicitation to understand how the students comprehend the given text: 4 Choice elicitation (agree or disagree), 5 Product elicitation (factual information) and 1 Process elicitation (opinion or interpretation) (See Mehan, 1979 for types of elicitation). It was beneficial to note that the function of Turns 19 and 21 did not conform to their grammatical forms. The teacher used summary statements while their implicit meanings were questions. In other words, the teacher received ‘answers’ when she did not ask what was conventionally called questions. Here, the students’ responses could be ‘yes/no’. They were thus regarded as Choice elicitation.

During the course of interaction, the teacher did not designate any students to answer her questions because she did not like to force them to speak when they were reluctant. Though the group consisted of six members, only two students voluntarily gave verbal responses while the other group members sincerely followed the discussion. Based on the video, it could be noticed that they made some gestures that they were thinking along while they were listening like looking at the teacher when she asked questions and their peer answering the questions. They sometime gave non-verbal responses: nodding in agreement. Of 12 turns took by the students (2, 4, 6, 8, 10, 12, 14, 15, 17, 18, 20 and 22), two turns (15 and 18) were initiated by the students while the rest of them were the results of the teacher’s
elicitation. The reason for not initiating turns to a certain degree is a result of the cultural factor. For the normal Thai classroom setting, the students wait for the teacher to designate turns before expressing their opinions; therefore, voluntary sharing was not often found in the classroom discussion. Personality could be another reason responsible for their silence. Some students were too shy to voice their opinion publicly. They needed to be ‘pushed’ by the teacher.

In conclusion, questioning strategy was used to monitor the extent to which students could comprehend the reading text. Questions eliciting both factual and inferential information were posed to the students. It was found that they could respond most of the questions correctly. This proved that they gained a certain degree of content knowledge.

ii) Students had to form new groups that comprised at least one representative from the ‘expert’ group. At this stage, every single group member was required to share their knowledge previously learned with the members of a new group. In other words, a particular member working on Bus, Star, Ring, Tree and Mesh topologies was required to share their knowledge previously learned with the members of a new group. Doing this, they could combine all pieces of information in order to have an overall understanding of the network topology. To successfully complete this activity, students needed to first have a clear understanding of what they read. For this matter, the classroom observer stated the following.

For overall picture, most of the students make effort to share what they have learned from the previous groups. They do a good job for sharing information with their peers. Some of the questions are asked by their peers. For example, a member from the Star group was asked ‘what does it mean by central hub and secondary hub?’ This question was clearly answered with the help of the picture of Tree topology.

From this reflection, it could be said that most of the students actively participated in the classroom process and gained some new knowledge from the reading activity. More importantly, it allowed every single member of the groups to perform an active role as a contributor and receiver of knowledge to complete the task. However, the teacher noted that not every single student was able to clearly
share his/her assigned topic. Group members needed to access some websites to learn more information and complete the follow-up exercise.

iii) Another claim for content learning to be made here was when the students engaged in the ‘True or False’ exercise. It consisted of both inferential and factual statements. Out of ten statements, eight (no. 1,2,4,5,7,8,9 and 10) were inferential and two (no. 3 and 6) were factual. Given below in Table 5.3 are the ‘True or False’ statements included in the exercise.

<table>
<thead>
<tr>
<th>State</th>
<th>True or False and correct the statement if it is false.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>T The entire network shuts down if there is a failure in the backbone.</td>
</tr>
<tr>
<td>2</td>
<td>T Bus topology needs less cable length than Mesh topology.</td>
</tr>
<tr>
<td>3</td>
<td>T Every computer in Ring has equal neighbour to form a ring.</td>
</tr>
<tr>
<td>4</td>
<td>F One node in Ring serves as a terminated end.</td>
</tr>
<tr>
<td>5</td>
<td>F The network topology in which devices are not linked to each other and where hub acts as a central controller is bus.</td>
</tr>
<tr>
<td>6</td>
<td>F A Hub is also called a signal regenerator.</td>
</tr>
<tr>
<td>7</td>
<td>F Tree topology is a combination of Ring and Star topologies.</td>
</tr>
<tr>
<td>8</td>
<td>T Tree topology allows expansion of the existing network to arrange the network to meet organization needs.</td>
</tr>
<tr>
<td>9</td>
<td>T Mesh topology involves minimum cabling.</td>
</tr>
<tr>
<td>10</td>
<td>T If one computer in mesh topology faces a problem, the network still works.</td>
</tr>
</tbody>
</table>

Table 5.3 ‘True or False’ statements

To successfully complete this exercise involves complex thinking and real decisions based on concept comprehension.

iv) In addition, immediately after the completion of the task, a questionnaire was administered to the students to obtain their perception of the learning activities in terms of content learning. Students’ reflection was given in their language, Thai, to ensure that they were able to precisely articulate their actual perceptions of their content learning. Given below is some of their feedback.

I know more words of IT devices. For example: node (computer) = a point at which two lines or systems meet or cross, repeater = a device used to clean and free the signal from any background noise, concentrator (hub) = a central controller of the Star topology.

I was assigned to read a paragraph on Bus topology. It uses a single cable or backbone to connect to all devices between two
terminators on the two ends. When this backbone fails to operate, it will cause failure of the entire network.

I learn more IT terminologies and can explain the differences of Tree and Bus topologies. If one node in the Ring fails to function properly, it won’t affect the entire system. In Bus, if the backbone doesn’t work properly, it affects the operation of the entire network.

To conclude, in addition to the cognitive process the students involved in, the section provided concrete evidence of the students’ actual learning. This included the teacher-student exchange, the observer’s opinion on the students’ learning behaviors while they were working in groups, clear comprehension of the reading text as well as the students’ reflection on their own content learning.

C) Enhancement of language learning

The specific objectives of the tasks were that students should be able to compare the differences between two types of the network topology and to talk about the types of topology. Apparently, the primary focus of the task was to develop students’ content knowledge. Language objectives thus became secondary. In this task, no linguistic element was explicitly taught. However, researchers in second language acquisition believe that students can unconsciously acquire some incidental English through language exposure as already discussed in Section 2.5.2-Learning and production. Moreover, many studies focusing on reading comprehension also validate students’ language gain. For this task, two plausible circumstances of incidental English acquisition were included.

i) During the reading task, students were required to make sense of the assigned topic, articulate their gained knowledge as well as successfully complete the activities. Concept comprehension and production of knowledge thus could be convincing evidence that English learning has taken place.

ii) Different students might perceive the reading activity in different ways according to their background and learning experience. It was thus possible that the students would acquire different aspects of the language consciously or unconsciously. To raise their language learning awareness, the students were
requested to reflect on their language learning immediately after the completion of
the task. Given below is some of their feedback.

I learnt more vocabulary and could only use some of the simple
sentences to talk about it like, it’s easy for cabling, or it’s more
expensive than star.

Here were my new words:
to terminate = to end, to make something end
to regenerate = to grow strong again
a node = a computer
a repeater = a device for regenerating signal
a neighbor = a thing that is standing next to another thing

I knew more IT terminologies such as “topology” which meant the
structure of network cabling. Or backbone = a main cable
connected to all computers

To sum up, two situations of English acquisition were the successful
completion of the activities during the learning process as well as students’
reflection on their own language learning.

D) Students’ perception of the task: Network topology

Immediately after the task completion, students were asked to provide
feedback on how they perceived the constructed learning task. Two types of
perception included in the questionnaire were the perception of task difficulty and
task interest. The results are discussed below:

i) Students’ perception of task difficulty

As graphically shown in Figure 5.1, it demonstrated that a quarter
of the students (25%) indicated they found no difficulty to deal with the task
whereas some of them (13%) found the activity was too difficult to comprehend.
However, majority of the students (63%) demonstrated that they did the activity with some difficulty. Apart from rating the task difficulty, the students also provided some feedback. In order to ensure that students were able to articulate and reflect clearly their actual perception of the content, they were asked to provide comments in their first language. Some of them are as follows:

Those who learned with no difficulty pointed out,

I didn’t think it’s tough for me because I used to study electronics and took some courses in computer sciences. Though there were lots of unknown words, I could eventually figure them out.

I was assigned to focus on Ring topology. I didn’t know all the words. I looked up some words in the dictionary and guessed its meaning from the given picture.

Contrarily, those who found it too difficult commented,

Much of the vocabulary seemed to be new to me. I knew only a few words. Fortunately, working in groups can help me learn some new words.

I didn’t know even a single word on the assigned reading paragraph. One of the group members explained it to me.

However, the majority of the students claimed that it was slightly difficult. Here are some of their reflections

Yes, I think it is quite difficult if I have to work alone on this reading. It is slightly easier to work in a group. We assign all of the group members to look up the unknown words in the
dictionary. The given picture can also make it more comprehensible.

Luckily, one of our group members has some background about the reading text and explains it to us in Thai. Though we didn’t have much difficulty in comprehending the reading, we still need some time to comprehend those English questions.

To sum up, the majority (63%) agreed that they performed the task with some difficulty. This indicated positive results of the trialling task. Krashen states, ‘we acquire by understanding language that contains structure a little beyond our current level of competence (i + 1)’ (1982: 28). When i represents students’ current competence, then input should be at ‘i + 1’. Students could use the existing knowledge to figure out the unknown parts. Therefore, it could be claimed that the task was suitable to this group of students, which consequently resulted in task satisfaction. Moreover, with reference to the students’ reflection, it was apparent that learner factors such as prior learning experience or background knowledge students bring to class could be a rich resource for them to make sense of the new knowledge. Those with computer science background might not encounter difficulty to deal with the assigned reading passage.

In addition, the input factor like pictures or diagrams also eased the difficulty of the reading passage. Nunan (2001: 98-99) states, “The amount of support provided to the listener or reader will also have a bearing on textual difficulty. A passage with headings and sub-headings which is supported with photographs, drawings, tables, graphs and so on should be easier to process than one in which there is no contextual support.” The given pictures of the network topology in the reading passage enhanced to a certain degree the students’ reading comprehension.

The activity type is also of equal importance. Group-work activity enhanced peer collaboration and better learning. In most of the learning contexts, groups comprised mixed-ability learners. The interaction with more competent peers during a group work could lead to faster cognitive development. Therefore, paying attention to varying aspects associated with the learner, input as well as activity tended to induce great effectiveness of the developed material.
ii) Students’ perception of task-interest

Figure 5.2 demonstrated students’ responses on the level of task-interest. All the students (100%) agreed that the task was interesting, albeit to different degrees: the majority (79%) mentioned ‘very interesting’ while a small proportion (21%) mentioned ‘interesting’.

![Level of Task-Interest](image)

A closer look at the students’ reflection revealed that the reading task was of their interest. Some students commented:

- I like this topic. It can help me learn some more IT content area.
- I could learn any topic as far as it related to IT content.
- Some of the students also expressed their views on other aspects of the classroom:
  - I like working in a group, but the way in which we were assigned to groups was confusing.
  - I felt comfortable working with peers in a group.
  - It would be good if the teacher spoke English slightly slower. I could not follow it.
  - I felt comfortable working with friends in a group.
  - I like working in a group rather than individually. I could consult my friends to make sure that we have same understanding. That makes me more confident.
We had to work on lots of difficult vocabulary. Anyway, working in groups helped us to finish the assignment faster.

I like working in groups, but this task took too long. I needed a break.

Working on an activity with a span of two hours was too long for me.

With respect to these responses, it provided the materials writer-teacher significant feedback in relation to classroom management, students’ learning preference, timeframe of the activity and the teacher’s language use to better accommodate students’ learning styles/preferences. Most of the responses were positive towards the trialling task and learning/teaching condition. Only two students (6%) commented on the time factor. Here, it is necessary to note that the language class was minimally scheduled for two hours a week and it is also common to all general subjects i.e. Math, Social Studies, or Sciences. Two one-hour tasks were thus combined. This was practically possible because all of the tasks within a unit were inherently linked.

For this task, satisfaction in terms of difficulty and interest, majority of the students (63%) agreed that the trialling task was not too difficult to deal with. All the students unanimously agreed that it was interesting. At this stage, it was, therefore, appropriate to conclude that the trialling task could satisfy students in terms of its difficulty and interest.

In summary, it could be claimed that

- There is strong evidence to support that through the use of various questions and learning activities students were engaged in higher levels of thinking.
- The cognitive ability the students applied to complete the learning activities could effectively enhance course content learning in the trialling task. The concrete evidence of this actual learning could be found in the extract of teacher-student interaction, the observer’s opinions on the students’ learning behaviors while they were working in groups, clear comprehension of the reading text as well as the students’ reflection on their own content learning.
• The trialling task could enhance a certain degree of language acquisition. Convincing evidence for incidental English acquisition provided the ample evidence of task completion during the learning process as well as the students’ reflection on their own language learning.

• The task could satisfy the students in terms of difficulty and interest. Majority of the students agreed that the trialling task was not too difficult to deal with. Moreover, all the students unanimously indicated that it was interesting.

5.2.2 Results of Task 2: Surfing the Net

A) Fostering students’ high order thinking skills

The focus of this trialling task was to develop students’ new IT skills. That is, they should be able to comprehend IT instructions and gain IT skills accordingly. Students were exposed to online authentic materials and were allowed to choose their own interesting topics (IT instructions). While students were engaged in the learning process, it revealed that the task could promote the students’ high order thinking skills were sought. The analysis would be discussed in three stages: pre-, during and post reading.

i) Pre-reading: Students’ background knowledge of some IT instructions was activated. They were given a worksheet containing four simple IT instructions and were asked to match topics with its instructions. The instructions were considered very basic for them. However, when they were presented in English, the students took longer to comprehend and complete the activity than it was expected. The aim of this activity was to familiarize students with words as well as the instruction format used in IT manuals. Based on the video at this stage, the student-teacher exchange focused on key words to help them make sense of the instructions, revolving around the questions at the ‘Understanding’ level.

ii) During reading: Students were assigned to computers with Internet connectivity. They had access to a site dedicated to IT instructions. Here, they visited http://www.computeractive.co.uk/workshops/. It offered a large number of step-by-step guides. In pairs, they were allowed to select preferred topics that were new to them because the task aimed to enable them to gain new IT content and skills. They were advised not to work on lengthy instructions and to visualize each
step and practise instructions. If they found any difficulty with IT terminology they could consult the ‘Jargon buster’ available at the site. It was found that they were really focused on searching for information. Only a few student-student interactions were initiated. Simple questions viz. ‘What do you think about this topic?’; ‘What topic did you choose?’; ‘How many steps are there?’ or ‘What does this mean?’ were repeatedly asked to different students.

At this stage, students sincerely focused on searching, making decisions and used online dictionary to comprehend the selected instructions. As the students were required to clearly comprehend the chosen topics as well as practise following steps of the instructions, they mainly engaged at the ‘Understanding’ and ‘Applying’ levels of thinking skills.

ii) Post-reading: Students focused on performing the IT skills to demonstrate their comprehension of the chosen instructions. Apparently, this type of activity subscribed to the ‘Applying’ level.

In summary, it appeared that the IT contents were appropriately integrated in the language activities of the trialling task. However, the aim of the task was to principally develop students’ IT skills. Therefore, it mainly engaged students at the ‘Understanding’ and ‘Applying’ levels rather than the higher order thinking skills.

B) Enhancement of content learning

The situations of actual content learning could be validated in two ways: the ability to successfully perform the task and students’ reflection of their own learning. The former will be discussed first.

i) Students were strongly recommended to select the topics new to them to ensure that new knowledge learning was established. It is appropriate to note that as initially planned, it was pair work. However, some students preferred to work individually because they had different topics of interest and there were enough computers available. Some topics were chosen by more than one pair/individual. This was because some of the preferred topics were quite lengthy and could not have been completed in the two-hour class; therefore, they were recommended to choose the same or shorter topics. However, those pairs/individuals
worked separately. Here are some of the topics of IT instructions the students worked on.

1. Share photos between computers with Picasa (3 pairs)
2. Create a photo slide in Windows Vista (2 pairs)
3. Use Office 2003 to open 2007 documents (2 pairs)
4. Customize items in the Windows start menu (2 pairs)
5. Adding photo borders (2 pairs)
6. Master the shutdown options in Windows 7 (1 pair)
7. Introduce color to your old photo (1 pair)
8. How to design icons for Windows (3 individuals)
9. Add shortcuts to right-click menu (2 individuals)
10. Find and delete unwanted files on your PC (1 individual)
11. Take control of your mouse buttons (1 individual)
12. Manage files and folders with Explorer++ *
13. How to edit video using YouTube *
14. Style documents with the Format Painter *

Note: * represented the topic originally chosen but changed to another one.

The ability to successfully perform the IT instructions was seen as strong evidence to support students’ active participation, which consequently resulted in content learning. Here, it was found that 60% of the students could successfully perform the task within class time. The reason that 40% of the students could not complete the task within the given time was because there were some technical problems like incompatible computer configuration or downloading software. Three pairs of students (18%) who originally chose topics 12, 13 and 14 had to change their topics 2, 3 and 4 respectively while the other three pairs remained working on the originally chosen topics. Finally, they could catch up with their peers in the following class.

ii) In addition, immediately after the completion of the task, a questionnaire was administered to the students to obtain their opinion on learning activities in terms of content learning. Reflections were given in the students’ first language, Thai, to ensure that they were able to precisely articulate their actual perceptions of their content learning. Given below is some of their feedback.

I worked on Adding photo borders. I could use it for adding photo border and changing its line weight.
Normally, we cannot open *Word 2007.docx* files on the computers with Word 2003. This instruction (*Use Office 2003 to open 2007 documents*) helped me shoot the problem.

Google Picasa could help me share photo with friends easily.

*Customize items in the Windows Start menu* gave me another way to display folders on the Start menu in Windows.

To conclude, students could learn some new IT ideas from the trialling task. Successful IT task performance could be convincing evidence to demonstrate their content learning. Moreover, the students’ reflection could also provide supporting information about students’ content learning.

**C) Enhancement of language learning**

Similar to the previous task, vocabulary or any other types of linguistic elements were not explicitly taught. For this task, two circumstances for the incidental English acquisition were realized.

i) It was believed that students could acquire some incidental English while they were focusing on the content of IT instructions published in English. If they could successfully perform the IT task, it could indicate that students’ incidental English acquisition process was activated.

ii) Students’ reflection concerning their own language learning provided another type of evidence of incidental English acquisition. The students indicated that they learned new language items. Given below are some of their reflections:

There were a lot of familiar words commonly used in the IT class. We weren’t able to use them in a sentence but the task showed us how to use those words in sentences.

I knew how to use some English, but it was difficult to speak it out.

I knew how to use some sentences in English: ‘*Highlight those files*’, ‘*Switch to ... folder*’. But I was not very confident to speak it out.
Today, I learnt how to say ‘Perd Net’ (=Launch a web browser) and ‘Click Save ‘Tee klong’ (= Click Save at the dialogue box.).

I learnt to say ‘Locate the file just downloaded.

I worked on ‘Create a photo slide in Windows Vista. Here were some words/sentences I learnt: Navigate to the subfolder/photo, Start the slideshow, Organize the photos in ..., Current slide and It reaches the end.

It can be concluded that the ability to comprehend IT instructions published in English could be clear evidence to assert that the students acquired some incidental English. This claim gained support from the students’ reflection on their own language learning. They learned different words/sentences from the task. Many students addressed their language learning in almost a similar way, that is, ‘I found many familiar words that are commonly used in content classes’, ‘I never have any opportunity to use English for communication’ or ‘This class provided the opportunity for me to communicate in English’. However, they might need some more time to develop their confidence to articulate their knowledge in the English.

D) Students’ perception of the task: Surfing the Net

Immediately after the task completion, students were asked to provide feedback on how they perceived the learning task. Three types of perception included in the questionnaire were the perception of learning enhancement, task difficulty and task satisfaction. The results are discussed as follows:

i) Students’ perception of task difficulty

As shown in Figure 5.3, the majority of the students (82%) demonstrated that they did the activity with some difficulty. Five of them (15%) indicated they found no difficulty to work with this task whereas only one student (3%) found the activity very difficult.
In addition, the students also provided some feedback on task difficulty as follows:

It was not too difficult. I looked at the picture to make sense of each given step.

In the form of a paragraph, it looked difficult because it’s quite lengthy. When I broke it into sentences, it was much easier to make sense of it. Many words were very familiar.

I chose *Sharing photos with Picasa*. The programme needed to be downloaded and installed. It was like downloading any other programme.

It was not very difficult but lengthy. What I chose had fourteen steps.

Each step was clear. I read and guessed the meaning from the given pictures.

The vocabulary was quite difficult. Most of the topics were lengthy. It took a lot of time to comprehend it.

Interestingly, from the feedback it was found that many students (50%) specified the usefulness of pictures provided at each step of the instructions. They effectively facilitated students’ comprehension. Similarly, students also indicated that many words found in the instructions were commonly used in their course content class. Those included *download/upload, install, launch a web*
browser, type, choose, save, images, share files/photos and locations, etc. This made the instructions comprehensible. It could be probably claimed that though the instructions were new to the students, it was not too difficult for them to deal with them because of pictures and word familiarity. Consequently, it positively resulted in task satisfaction.

ii) Students’ perception of task-interest

Figure 5.4 demonstrates students’ feedback on the level of interest. All the students (100%) unanimously agreed that the task was interesting. Almost two-thirds of the students (61%) specified the ‘very interested’ category while the rest of the students (39%) chose the ‘interested’ category.

![Level of Task-Interest](image)

Figure 5.4 Level of task-interest

A closer look at the students’ reflection revealed that the task was of their interest. Below were some opinions about the task.

- It was good. I could choose any topic I like.
- It was good to use computers in this activity.
- I like this activity because I like working online. I could spend a lot of time working online.
- Working online made the activity interesting.
- It was good. When I want to get some new ideas, I can visit the site again.
Regarding the students’ responses to the interest of the task, it was found that over two-thirds of the students (76%) mentioned the utilization of the computers and working online in the language class. The same is true about the selection of topics. Though one-third of the students complained about the length of the content, according to the video it was found that they worked sincerely. They spent most of the class time (two hours) on task. It would be appropriate to conclude that the task was interesting and meaningful because of the utilization of the computers with Internet connectivity as well as the incorporation of the course content. Consequently, this conclusion asserted the significance of course content integration in the language classroom.

In summary, for the task ‘Surfing the Net’, following comments can be made.

- It appeared that the IT contents were appropriately integrated in the language activities of the trialling task. The aim of the task was to principally develop students’ IT skills through IT instructions. It was found that the task type could only involve the students at lower order thinking skills, ‘Understanding’ and ‘Applying’. However, it was suggested that the IT students usually engaged in the tasks involving giving and writing instructions. It is, therefore, necessary to include this task type in the language materials.

- Students learnt some new IT ideas from the trialling task. Successful IT task performance was verifying evidence that the content learning could actually take place. Students’ reflection is another type of information that supports the situation.

- It was possible that the students did not know all the words in the reading texts. Exposure to IT instructions published in English improved opportunities for incidental English acquisition. The efforts made to comprehend the instructions could result in students’ language and content learning as well as consequent IT skills. This gain received support from students’ reflection on their own language learning. However, they might need some more time to develop their confidence to articulate their knowledge in English.
• The task could satisfy students in terms of difficulty and interest. Use of relevant pictures and word familiarity were the key factors that could effectively ease task difficulty. Similarly, utilization of computers and their own choice of topics made the task more interesting and meaningful for the students.

5.2.3 Conclusion

Retrospective evaluation of CBI materials for IT students revolved around the implementation of the constructed materials in the actual language classroom. The results of the task implementation delineated four aspects of the constructed materials in relation to the abilities to foster students’ high order thinking skills, to enhance content knowledge and language proficiency as well as to satisfy students in terms of difficulty and interest. Here, it is appropriate to summarize the overall results of the task trialling once again in Table 5.4.

<table>
<thead>
<tr>
<th>Task 1</th>
<th>Task 2</th>
<th>Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>✔</td>
<td>✗</td>
<td>Fostering students’ high order thinking skills</td>
</tr>
<tr>
<td>✔</td>
<td>✔</td>
<td>Enhancing content knowledge</td>
</tr>
<tr>
<td>✔</td>
<td>✔</td>
<td>Enhancing language learning</td>
</tr>
<tr>
<td>✔</td>
<td>✔</td>
<td>Students’ satisfaction in terms of difficulty and interest</td>
</tr>
</tbody>
</table>

Table 5.4 Overall results of the trialling tasks

A) Fostering students’ high order thinking skills

Task 1: Network topology: The use of questions and learning activities during the course of instruction provided strong evidence to support that the task could cognitively engage students at higher order thinking skills.

Task 2: Surfing the Net: It appeared that the IT contents were appropriately integrated into the language activities of the trialling task. The focus of the task is to practise specific skills: giving and following IT instructions. It was thus found that the task involved the students at lower order thinking skills, namely, ‘Understanding’ and ‘Applying’ levels, which tends to be most common classroom phenomena for technical students. It is also acknowledged that not all tasks need to be at higher levels of thinking.
B) Enhancing content knowledge

Task 1: Network topology: The cognitive ability the students applied to complete the learning activities could effectively enhance course content knowledge in the trialling task. Concrete evidence for this actual learning could be found in the extracts related to teacher-student interaction, the observer’s opinions on students’ learning behaviors while they were working in groups, clear comprehension of the reading text as well as students’ reflection on their own content learning.

Task 2: Surfing the Net: Students learnt some new IT ideas from the trialling task. Successful IT task performance provided evidence about the content learning that actually took place. Students’ reflection is another type of information that supports this.

C) Enhancing language learning

Task 1: Network topology: The trialling task could enhance a certain degree of language proficiency. Convincing evidence for incidental English acquisition was the successful completion of the task during the learning process as well as students’ reflection on their own language learning.

Task 2: Surfing the Net: Though there were a lot of words the students commonly used in their content class, it was possible that the students did not know all the words in the reading texts. Exposure to IT instruction published in English improved opportunities to incidental English acquisition. Efforts made to comprehend the instructions resulted in students’ language and content learning as well as consequent IT skills. This gain received support from the students’ reflection on their own language learning. However, they might need some more time to develop their confidence to articulate their knowledge in another language.

D) Students’ perception in terms of difficulty and interest

Task 1: Network topology: The task could satisfy the students in terms of difficulty and interest. Majority of students agreed that the trialling task was not too difficult to deal with. Moreover, all the students unanimously indicated that it was interesting.
Task 2: Surfing the Net: The task could satisfy students in terms of difficulty and interest. Reference to relevant pictures and familiarity of words were the key factors that could effectively ease task difficulty. Similarly, the utilization of computers and their own choice of topics made the task more interesting and meaningful.

To conclude, the above description was the summary of the results of retrospective evaluation in relation to the four research questions. It could be stated that the task implementation in the actual classroom potentially demonstrated evidence of on-the-way achievement. This yielded positive results of the effectiveness of the constructed materials.