Chapter 5
Findings and Implications

5.0 Introduction

In chapter 4, a comprehensive analysis of the data related to the various stages of the study with respect to thinking and language abilities was presented. In this chapter, the findings of the study will be provided under two headings: thinking and language abilities. This would be followed by the description of the conceptual framework for teaching thinking as a distinct component in the ESL curriculum. Since the framework evolved from the current study, the pedagogical perspective with respect to the framework in practice will be explained with an example from the study. The chapter concludes with relevant implications for material developers and teachers.

5.1 Findings of the study

As explained in chapter 3, the primary objective of the study was to investigate how thinking can be taught as a distinct component in the ESL curriculum. This necessitated a research study that aimed at teaching thinking skills and dispositions. The study also investigated the impact of teaching thinking on language skills. Though Listening, Speaking, Reading, and Writing were used as a medium for teaching thinking, Writing formed the evidential representation for language development.

The data was collected from the written responses in the Pre-Intervention Assessment, the Assignment, and the Post-Intervention Assessment. Through the Pre-Intervention Assessment, the thinking skills and dispositions that the students need to be taught were ascertained. The Assignment was conducted to represent the learning processes in the Intervention process. The Post-Intervention Assessment was conducted to assess the changes that took place from the Pre-Intervention to the Post-Intervention. The data was analyzed using specific rubrics developed for each task.
The analysis of the data revealed the following findings, which will be presented under two sections: thinking skills and dispositions; and language skills.

5.1.1 Thinking skills and dispositions

1. The ability of the students to use a graphic organizer to represent the verbal information improved significantly. Before the intervention, they were not able to use the given graphic organizer or any other diagram. But, after the intervention, almost all the students were able to fill the information in the passage in the graphic organizer.
   An impressive development is that they have learnt to identify the key words and phrases that express the gist. Despite a few inaccuracies in grouping the words and creation of categories, they were able to give a language label which is a super-ordinate term for the words grouped under a category. Such creation of the superordinate term indicates that they were able to identify the relational roles of the elements in the passage. Such high-level thinking involves a cluster of skills which needs to be taught and practised consciously. They need to be taught to identify key phrases and words that convey the crux of information, to develop criteria based on which they create categories, and to present the information legibly.

   Though students expressed their inability to fill the information in a graphic organizer, the task with the graphic organizer stimulated students, besides offering practice in the development of their thinking skills related to organizing, categorizing, and presenting information.

2. It can be said that student ability to think critically improved considerably. Prior to the intervention, students were not able to think critically about the information given to them. They assumed the information given in the task to be true. They could not question the veracity of the statement made by people in different situations. They had difficulty in identifying the underlying assumptions. But, after the intervention, most of the students were able to identify the conclusions, premises, and the underlying assumptions. They began to look at the information critically and to mention the conclusion, premises and
assumptions explicitly. Most of them were able to find the possibilities other
than the ones mentioned in the task input. This significant improvement
indicates that the tasks in the intervention were able to stimulate and facilitate
the development of critical thinking skills among students.

To develop these critical thinking skills, it is important to teach
identifying conclusions followed by premises and assumptions. It is important
that teachers need to focus on one logical fallacy at a time, such as causal
fallacy. The rationale behind focusing on one fallacy is that the process of
identifying a fallacy varies according to the type. Tasks must be designed to
teach the targeted fallacy so that they can give focused practice in language
learning.

3. The ability of the students to systematically process the information improved
substantially, which improved the process of planning for the task performance.
This was evident in the organization of the given information using a graphic
organizer even though it was not required of them as part of the task
performance.
After the intervention, most of the students were able to develop criteria to
identify similarities and differences. The process of comparison and contrast
plays a crucial role in problem solving, decision making, and categorization
(Goldstone, Day, & Son, 2010). In the Pre-Intervention assessment, it was
observed that students were able to identify similarities and differences to some
extent. But after the intervention, their accuracy in terms of identifying an item
of information as a similarity or a difference increased noticeably. Further, they
were also able to identify many similarities and differences.

Most of the students were also able to distinguish between facts and opinions.
For example, many of them based the decision of buying a product on facts
rather than opinions. At the beginning of the intervention, they could not
differentiate between facts and opinions. This was evident in the responses
where some of the students did consider the information given by the friends
whereas some others used opinions as facts. After the intervention, in their written responses, many of them clearly mentioned that they did not want to consider the opinions of their friends. This also helped the students to distinguish between relevant and irrelevant information. In the post-intervention, the students wrote that the opinions of friends, while buying a product, were irrelevant. On the whole, most of the students showed perceptible progress in distinguishing between facts and opinions. The improvement was noticed in both the context-reduced discrete sentences and the context-embedded tasks in the intervention lessons.

Even though students have shown development with regard to the skills of decision making in the event of a buying decision, it cannot be concluded that they can make effective decisions in all situations. For such effectiveness, the students must be able to transfer this practice of skill to various academic and everyday contexts varying in complexity. Besides, these skills should also be used in conjunction with other skills depending upon task types.

4. The students wrote questions demonstrating their inquiring attitude in the Post-Intervention Assessment. In the Pre-Intervention, they did not find reasons in a situation that demanded inquiry. But after the intervention, most of them clearly wrote the questions that they would pose to find the reasons in a given situation. This improvement was witnessed even though they were not taught this disposition separately.

Similarly, the students were not able to consider multiple perspectives before the intervention. Almost all the students were able to think only from their point of view. They could not recognize the subjectivity involved in forming opinions. After the intervention, they seemed to have understood that there are multiple perspectives of a single issue, and it is very difficult to say, in many contexts, whether a course of action, etc, is right or wrong.
Nevertheless, it cannot be claimed that students will exhibit the same dispositions, *inquiring attitude* and *considering multiple perspectives*, in all situations. However, the tasks in the intervention raised their awareness with regard to the necessity of showing an inquiring attitude and the dangers of narrow-mindedness in considering others' views.

5. Before intervention, many students were not able to articulate their metacognitive thinking of task performance. Some of them distinctly wrote responses like *I don't know* indicating that they were not aware of questions related to metacognitive thinking. Almost all of them wrote only a sentence in articulating metacognitive monitoring and evaluating.

After the intervention, most of them were able to write more about their metacognition. They could express what words were difficult and easy for them or which task was most interesting to them. Besides, they mentioned that they were able to write sentences on their own indicating metacognition of their learning processes.

It can be inferred that awareness levels of the students about their thinking processes have increased and they have begun thinking about their thinking processes with respect to task performance. If such metacognitive thinking is transferred to other subject areas and everyday situations, they can become effective thinkers.

On the whole, it can be said that the intervention was effective in stimulating the thinking processes of the students. Through tasks that realize thinking skills and dispositions, they had the opportunity to metacogitate and learn about various thinking skills and dispositions. Within the purview of the intervention, they have demonstrated curiosity in learning to think, which resulted in significant improvement in their thinking skills and dispositions.

In this process, language was strategically used by the researcher in the intervention and students also got the opportunity to use specific language in the
5.1.2 Language abilities

1. The students began using complete sentences instead of incomplete sentences and phrases after the intervention. Moreover, it was quite obvious that the students began constructing their own sentences instead of copying the sentences from the input given in the task. Some of the students began using the words that were used orally by the teacher in the classroom interaction. Further, the written work of the students exhibited the use of more number of sentences after the intervention.

2. Many students were able to identify key words and phrases that express the gist of the given information. In addition to this, quite a few of them attempted to create language labels to represent a part of the information given. Creation of such category labels indicates improvement in language production.

3. An impressive improvement was that the students used a few interrogative sentences to demonstrate their inquiring attitude. Though these sentences had structural problems, the meaning in those sentences could be inferred without intelligibility being affected.

4. Most of the students began using the modal auxiliaries might and will. They also attempted to write its perfect conditional form have + verb III form, but they could not write the third form of the verb correctly. Instead of the third form of the verb, many students used other forms. Nevertheless, the number of sentences written by the students increased.

5. There was minimal incidence of errors related to subject-verb agreement. But with regard to the use of accurate verb forms, many students have shown little improvement.

6. Use of cohesive devices such as "because", "so", "and", and "but" were picked up by the students. The use of these was noticed not only in their written responses but also in their oral responses during interaction as well as classroom interaction. However, in the case of some students, incorrect
grammatical constructions were found in using the cohesive devices "so" and "because."

7. Use of more number of content words was also noticed but with spelling errors. This might be due to their inadequate exposure and attention to the orthography of the language.

8. With regard to spelling, the number of errors slightly increased in some of the tasks in the Post-Intervention assessment. The reason for this is that students began using more number of sentences in their responses. Further, more content words were used. As a result, the spelling errors increased. However, it is important to note that the students consciously attempted to write correct spellings. This was clear in their responses where they struck off the words to rewrite the correct spellings.

9. As for the punctuation, students showed marginal improvement in the use of full stops but with respect to commas, there was no adequate use of them in the written responses. With respect to capitalization, only a little improvement was noticed.

Thus, it can be concluded that

- it is possible to teach and learn thinking skills effectively;
- it is possible to teach thinking, i.e., thinking skills dispositions as a distinct component in the ESL curriculum;
- thinking skills can be taught to even the students with low levels of proficiency in L2. (Farrell & Jacobs, 2010);
- such type of instruction also encourages the students to gather information as a result of which a need for interaction and communication is necessitated. This results in the improvement in language learning;
- since thinking skills have an overlapping nature among them, teaching one skill might result in the development of another skill that might not have been considered for instruction;
- though general stages in the lesson plans can be drawn for the classroom processes, each and every skill needs to be approached through various types
of tasks and activities and hence an eclectic approach to teaching methodology needs to be adopted:

- appropriate thinking strategies should be used by the teacher to teach various thinking skills and dispositions;
- using the first language of the students results in high levels of reception from students, which can create a conducive atmosphere for learning and teaching; and
- the teacher needs to use the target language carefully so that the words, phrases, and sentences in the target language are used as tools for thinking.

Informed by the study and supported by the findings, a conceptual framework has evolved for teaching thinking as a distinct component in the ESL curriculum. The following account will provide a detailed description of the framework as well as an example to explain how the framework functions in practice.

5.2 A Conceptual Framework for Teaching Thinking as a Distinct component in the ESL Curriculum

It is almost a cliché to say that the world today is immensely complex. Human beings, as social animals, have also been responsible for creating many problems. Man’s thinking has always been challenged by these problems. Problems were, are, and will be there. In solving these problems, making complex decisions, and coping with the uncertainties of an expeditiously changing world, young minds need to be equipped with necessary thinking skills and dispositions.

It is true that no educator would deny the significance of teaching students how to think. The problem is how it should be done. Based on the current research study, a conceptual framework is developed to explain the process of including thinking as a distinct component in the ESL curriculum.
Fig. 5.1

A Conceptual Framework for Teaching Thinking as a Distinct Component in the ESL Curriculum
The framework (See fig. 5.3), which addresses ESL teachers, has 7 stages, and these stages are described hereunder.

Stage 1. Problem Identification
Stage 2. Exploration
Stage 3. Language of Thinking
Stage 4. Materials & Methods
Stage 5. Teaching Thinking
Stage 6. Assessment
Stage 7. Resolution

The process that takes place through these stages is described hereunder. Throughout these stages, the principles for teaching thinking laid down in chapter 3 (see section 3.7.1) should be observed.

Stage 1: Problem Identification

The first stage in the process of teaching thinking in the ESL curriculum is the identification of a problem. A problem here takes many forms. It could be an ethical or moral dilemma, a challenge for which a creative solution is expected, an uncertainty that demands making informed projection and planning, a situation where a decision needs to be taken, a historical or a classical paradox, a logical fallacy, a problem in learning, a puzzle, etc.

Teachers may also identify situations where students are observed committing logical mistakes. These may include false beliefs or superstitions too. On observing or being informed of the students’ dialogue with their fellow students, teachers, and parents, teachers can find many problems in students’ thinking processes. They might be struggling with several confusions, ambiguities, dilemmas, doubts, etc. Further, students are also exposed to several situations where their parents have to think deeply to solve various problems. All such problem situations that need efficient thinking to arrive at a solution could be the beginning point in the design of a unit or a lesson. Since teaching thinking is recommended to be embedded into the ESL curriculum as a distinct component, teachers could glean the problem situations from the existing
lessons in the language course books too. In fig. 5.3, it can be observed that various synonyms of *Situations* are given. They are listed only to represent the broad spectrum of strategic situations that need thinking. They overlap in meaning and no hierarchical order is intended.

The problems can be presented to the students through various modalities such as stories, case studies, pictures, videos, discussions, etc.

**Stage 2: Exploration**

The next stage involves identification of the thinking skills, strategies, and dispositions that can be helpful in solving the problem or strategic situation. Enlisting and identifying the thinking skills and strategies involved in a specific problem can also be helpful in the assessment stage.

But, this is quite a laborious task for teachers since the literature related to thinking skills can be found mostly in psychology and philosophy. Keeping this in mind, a list of all the thinking skills and dispositions that can possibly be taught in the ESL curriculum was provided in chapter 2 (See table 2.1) for quick reference. Teachers might use the list to focus on the skills, strategies, and dispositions that can be helpful in tackling with the strategic situations. They might also read in-depth, in addition to the information provided in the second chapter, to understand the cognitive processes or procedural components of each skill or strategy. It is important to note that there are some skills, the operational steps of which can be found in the literature whereas in the case of some other skills, they cannot be broken down into sequential steps. Similarly, a disposition is not a skill. It is an attitudinal tendency or inclination to be sensitive to the need for the application of one's conscious thinking to attain a thinking goal. Therefore, arriving at concrete procedural components of thinking dispositions and some thinking skills might not be possible. However, some strategies and techniques can sensitize students to the need for conscious thinking.
Stage 3: Language of Thinking

When teachers arrive at the thinking skills and dispositions that have the potential to address the strategic situation, the next step would be to sequence them in such a way that cumulative learning is possible. This means that the skills learnt in unit 1 should be used in unit 2. However, teachers need not expect that all the units must be linked skill-wise to the previous unit. This is virtually not possible because the thinking skills that we know are not an end in themselves. Cognitive and educational psychologists and philosophers are always at work informing us of the need to recognize new thinking skills from time to time depending on the changes that take place in society. Thinking skills are not uni-dimensional. There are different ramifications of thinking. These several dimensions do not yield themselves to rigid sequencing of all the thinking skills. Nevertheless, it is quite possible to identify a cluster of thinking skills that have a hierarchical nature within that cluster, and cumulative learning can be promoted within the cluster.

While sequencing the skills and dispositions, teachers need to identify the language of thinking. This means that they need to identify those words in L1, which are synonyms to the skills or dispositions. Use of L1 in referring to the skills is strongly suggested, especially in the case of regional medium students, since they can easily assimilate them.

Furthermore, teachers should also ascertain all the specific words and phrases in L2, which govern the thinking processes in performing the specific skill that is narrowed down for teaching. These key words in L2 should be emphatically used by the teacher and the students in strategic interactions in the classroom.

Thus, both the key words in L1 and L2 need to be used by the teacher deliberately so that they are better registered in the minds of the students. If teachers need to use L1 more in this regard, they might eventually get the students to use L2 key words and phrases substituting their L1 counterparts.

Teachers need to use their discretion to decide on the extent of L1 use based on the language profiles of the students.
Stage 4: Materials and Methodology

After arriving at the specific thinking skills, strategies and dispositions to be taught and identifying the language of those thinking skills and strategies, decisions should be made related to materials and methodology. As laid down in the principles of teaching thinking in Chapter 3, an eclectic approach should be adopted in materials and methodology because any single approach cannot be adequate to deal with the multi-faceted and multi-dimensional nature of thinking. In the creation of materials, Listening, Speaking, Reading, and Writing form the means as well as the end. In teaching thinking, language becomes the mode through which thinking is taught. The students learn language by using it. They will be taught language skills implicitly. But they are taught the language of thinking (stage 3) explicitly.

While the input could take the form of reading, etc., other modes should also be considered—songs, videos, pictures, and any other creative stimulus. Though it is desirable that authentic materials should be developed, it might not be possible in the case of a few highly abstract thinking skills. In such case, teacher may resort to hypothetical examples and situations to realize those thinking skills and dispositions.

Likewise, a multimodal approach is suggested in deciding on the methodology for teaching thinking. For instance, whereas in the case of critical thinking skills, a dialogic approach is highly suggestible, in the case of complex thinking skills, teacher modeling of the skill can be useful. Cooperative activities like role-play, project work, etc., should also be used. Simply put, teachers need to be open-minded to blend approaches, methods and activities in teaching thinking.

Stage 5: Teaching Thinking

Following the decisions on methodology and preparation of materials, thinking needs to be taught explicitly. Explicitness is essential because thinking is abstract in nature. Many of our thoughts are difficult to articulate. Teaching thinking explicitly can facilitate the articulation of clusters of abstract ideas. To help students modify their cognitive process, they need to have the linguistic labels to refer to those cognitive processes. Another justification for explicitness is the development of
metacognition. If students have to talk about metacognitive thinking, they need to know the language labels to refer to cognitive processes.

Most importantly, to facilitate the transfer of these thinking skills to other subject domains and everyday life, it is essential that students engage in metadiscussion of the skills, strategies, and dispositions. This transfer is a major objective of teaching thinking and so, it is depicted emphatically in the framework (See fig. 5.3).

At every stage in teaching thinking, teachers need to seize the opportunities where student attention can be drawn to the use of the skills and dispositions in various situations. Materials should be designed in such a way that the tasks and exercises should facilitate and give opportunities to the teacher to link the thinking skills to other subject domains. This does not mean that the language teacher should teach other content subjects. The aim should be to enable students to see the application of thinking skills in other subjects by taking one or two examples from other subjects and to explicitly mention that students should use these skills in other subject areas and everyday situations.

In this process, teachers need to explore to find out various strategies that exist not only in ELT literature but also in other fields such as psychology and philosophy. A comprehensive review of a few strategies was done in chapter 2 for teacher reference. Apart from these, there are many strategies and techniques that can be utilized in teaching thinking.

In chapter 3, the principles to be observed in teaching thinking were laid down. Once the teaching begins, teachers can understand the gaps or problems in their decisions in the previous stages. They might resort to fine-tuning their choices with regard to the selection of situations, skills and strategies: and in the identification of relevant language and decisions on materials and methodology. Therefore, teachers should go back to the previous stages, if necessary, and repeat the processes to achieve the desired objectives.
Stage 6: Assessment

As far as the assessment is considered, teachers need to ascertain whether students have learnt the skills that were taught. At the same time, they should also ensure that the language of thinking is picked up by the students. Therefore, assessment includes both language skills, and thinking skills and dispositions. However, there are two possibilities here. Teachers might choose between assessing 1) only thinking skills and dispositions and 2) both language skills and thinking skills and dispositions. Since in an achievement test, thinking, as suggested here, is assessed alongside LSRW, teachers might choose to evaluate their language in LSRW and only thinking skills in Thinking part of the assessment. Nevertheless, the key words and phrases that govern the thinking processes must be assessed as part of Thinking assessment. This implies that, in assessment too, thinking needs to be recognized as a distinct component.

Subsequent to teaching thinking, language teachers need to make decisions related to the assessment system. There are various types of assessment systems and instruments that can capture the thinking abilities of students. They can be formative and summative assessments. In formative assessment, if teachers identify gaps in their teaching or learning, they can give additional practice or conduct remedial classes for improvement. While formative assessment can help teachers reconsider their teaching, summative assessments can demonstrate student learning.

Various types of testing instruments were reviewed in chapter 2. Teachers might choose to use any of them depending on the skills and dispositions they would decide to teach.

With regard to the assessment of dispositions, teachers need to observe the thinking behaviours of the students in day-to-day performance in the classroom and school. They need to be appreciated for demonstrating effective thinking. Using questionnaires is another way of assessing thinking dispositions. But, the information from the questionnaires is not highly reliable because answering those questionnaires demands deep metacognitive thinking from the students. However,
performance tasks can be very useful in capturing the thinking dispositions of students.

**Stage 7: Resolution**

As a result of consistent and conscious efforts of teachers and students together, the students should be able to devise plans, find solutions, make decisions, propose resolutions, develop criteria, make predictions, set priorities, etc. Informed by the assessments, teachers can understand whether the students are exhibiting effective thinking behaviours. Based on their observations along with the performance assessments, they can repeat the processes in the previous stages. A careful review of the teaching process can reveal the flaws committed, if any, in a specific stage, and teaching can be started from that stage in the next unit or as part of remedial classes.

### 5.2.1 The conceptual framework in action

In the above section, we have seen various stages in the conceptual framework for teaching thinking as a distinct component in the ESL curriculum. Now, we will put the framework into perspective by providing an example from the current study. As an example, we will take up the decision making situation (see the buying situation in task 3(A) in the Pre-Intervention).

**Stage 1. Problem Identification**

A problem that was taken up in the current study was a decision-making situation (Task 3(A) in Pre-Intervention Assessment) (See Appendix 2), where students have to engage in complex thinking if they have to make an effective decision. The students were presented with a situation where they were to choose one of the mobile phones. Buying a phone is not a simple decision if we want to get the product that is economical and best suitable for us. Besides, there are many types of phones in the market with multiple features.

This situation was taken based on the researchers' initial interaction with the students who showed enthusiasm in the conversation about mobile phones. But, they were unaware of how they should choose a phone out of the many that exist in the
market. In this way, a problem that was supposedly faced by the students was identified in the interaction.

Once the problem or the strategic situation has been identified, the next step is to find out the thinking skills that are involved in solving or tackling that situation. This stage of exploration demands teacher efforts.

Stage 2. Exploration

With regard to the buying situation mentioned in stage 1, the students were presented with the information of two mobiles, and opinions of some of the people who had the knowledge of those phones (See Task 3(A) in the Pre-Intervention). The students were to choose one of the phones. The following thinking skills were involved in making that buying decision:

- ability to identify similarities and differences between the items (to be bought);
- ability to make an external representation of the information;
- ability to distinguish between facts and opinions;

However, it should not be misunderstood here that all the decision making instances would involve only these skills. Depending upon the nature of the decision to be made, many other thinking skills and strategies might be necessary to make an effective choice.

Further, an important point to be noted here is the overlapping nature of various skill categories listed in table 2.1 in chapter 2. Though the task above represents a decision making situation, there are some skills in this task that do not figure under Decision Making category as mentioned in table 2.1 in chapter 2. This means that in a real-life situation, various thinking skills and dispositions across the categories operate complexly and simultaneously. Nevertheless, the purpose in categorizing thinking skills and dispositions is to assist teachers and teacher educators to enhance their precision and focus in teaching them.
Stage 3. Language of Thinking

After arriving at the thinking skills and dispositions involved in a problem or strategic situation, the next step is to sequence them for cumulative learning and ascertain the language repertoire that plays a key role in the use of those skills and dispositions.

To put it in perspective, let us get back to our example of the decision making task. As we have ascertained the thinking skills involved in choosing one of the mobiles, the skills were sequenced in such a way that cumulative learning would be possible. Therefore, **identifying similarities and differences** were taught in Lessons 2 and 3 followed by **categorizing** and **representing** in Lessons 4 to 6. **Identifying similarities, identifying differences, categorizing,** and **representing** were taught consecutively because identifying the characteristics, similarities, and differences can help in organizing the information. Only when one is able to categorize the information can one attempt to represent the information using a graphic organizer.

Further, **distinguishing between facts and opinions** was taught before **distinguishing between relevant and irrelevant information.** To distinguish between relevant and irrelevant information, one needs to understand whether a statement is an opinion or a fact.

However, the skills **distinguishing between facts and opinions** and **distinguishing between relevant and irrelevant information** were not taught immediately after Lesson 6 because these two skills did not have a logical connection with the cluster (skills in Lessons 1 to 6) mentioned above. Moreover, before discussing facts and opinions, it was thought that teaching students to find out the assumptions was necessary so that they would begin to think critically about the information given. Therefore, Lessons 7 and 8 (**identifying conclusion, premises, and assumptions**) were taught before teaching the skills **distinguishing between facts and opinions** and **relevant and irrelevant information.**

Thus, as mentioned earlier, thinking skills can be sequenced within a cluster when it is not possible to sequence all the thinking skills hierarchically. Moreover, it is essential that sequencing should primarily be done based on thinking skills because ordering the Lessons based on both language and thinking is not possible. Hence, the
cumulative learning that is under discussion is primarily related to thinking skills and dispositions.

As for language learning, specific key words and phrases in L1 and L2 in using thinking skills need to be emphatically used by the teacher and the students. For instance, in our example of decision making situation, the L1 equivalents of the words facts and opinions, are vaasthavalu and abhiprayalu respectively. The key words, phrases, and expressions in L2 were ascertained as mentioned in the following table.

<table>
<thead>
<tr>
<th>Thinking Skill</th>
<th>Language of Thinking (L1)</th>
<th>Language of Thinking (L2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Identifying similarities</td>
<td>saaroopyathalu</td>
<td>and; both; both of them; similarly, likewise, in the same way, like, etc.</td>
</tr>
<tr>
<td>Identifying differences</td>
<td>thedalu</td>
<td>But, on the one hand..on the other hand, contrastingly, whereas, etc.</td>
</tr>
<tr>
<td>Distinguishing between facts and opinions</td>
<td>Facts: vaasthavalu</td>
<td>Facts: No specific words</td>
</tr>
<tr>
<td></td>
<td>Opinions: abhiprayalu</td>
<td>Opinions: I think, In my view, To me, As for me, As far as I am concerned, and adjectives that express one’s emotions.</td>
</tr>
<tr>
<td>Distinguishing between relevant and irrelevant information</td>
<td>Relevant: sambandhamugala;</td>
<td>Varies from context to context</td>
</tr>
<tr>
<td></td>
<td>irrelevant: sambandhamleni</td>
<td></td>
</tr>
</tbody>
</table>

Table 5.1 Language of thinking

It should be observed that in the case of the last skill, it is difficult to identify a specific set of words or phrases in L2. Finding relevant or irrelevant information is a matter of understanding language at discourse level rather than word level. Likewise, for some of the skills, it is difficult to ascertain the language labels as in the case of facts.

All the collated language expressions in L1 and L2 need not be used, rather, the teacher should use the words and phrases that suit the student level. For instance, in the current study, the expressions as far as I am concerned, to me, and other expressions were not used since the students had low levels of language proficiency.
The preparation of a list of key L1 and L2 language expressions should lead teachers to decide on the materials and methodology for teaching thinking.

Stage 4. Materials & Methods

In the intervention lessons, various types of materials and methodology were used. There were tasks for which the students were to write short paragraphs. Besides there were multiple choice and short answer questions.

The following table describes the materials and methodology used in the teaching of the skills in the decision making situation.

<table>
<thead>
<tr>
<th>Thinking Skill</th>
<th>Materials</th>
<th>Methodology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Identifying similarities</td>
<td><em>A handout with a few sets of things to be compared.</em> Discrete sentences or phrases were expected as answers.</td>
<td><em>Teacher modeling, thinking strategy</em> SCUMPS, individual work; Pair Work; and Discussion</td>
</tr>
<tr>
<td>(Lesson 2)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Identifying differences</td>
<td><em>A handout with a few sets of things to be contrasted.</em> Discrete sentences or phrases were expected as answers.</td>
<td><em>Teacher modeling, thinking strategy</em> SCUMPS, individual work; Pair Work; and Discussion</td>
</tr>
<tr>
<td>(Lesson 3)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Distinguishing between facts and opinions</td>
<td><em>A handout with (I) 25 statements, (II) Situations with multiple questions, (III) Writing factual descriptions based on two sets of two pictures</em></td>
<td><em>Individual Written work; Discussion</em></td>
</tr>
<tr>
<td>(Lesson 9)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Distinguishing between relevant and irrelevant information (Lesson 10)</td>
<td><em>A handout with (I) Situations with multiple choice questions, (II) Situations for identifying irrelevant information, (III) Situations for identifying irrelevant information</em></td>
<td><em>Pair Work, Discussion</em></td>
</tr>
</tbody>
</table>

Table 5.2. Materials and methodology in teaching thinking

Methodology included using of a few thinking strategies such as SCUMPS and KWL, teacher modeling, Socratic discussion, pair work, group work, and elicitation.
After the preparation of materials and decisions on methodology, teachers proceed to teaching thinking.

Stage 5. Teaching Thinking

About the material: and methodology related to the decision making situation that we took as an example, identifying similarities and differences were taught using sets of objects (See Lessons 2 & 3 in Appendix 3). The teacher modeled the thinking skills using the thinking strategy SCUMPS to help the students compare and contrast. Later, they were paired to write the similarities and differences in discrete sentences.

Likewise, for teaching distinguishing between facts and opinions, the students were taught the meaning of a fact and an opinion followed by a few statements which should be identified as a fact or an opinion. Later, they were given two pictures based on which they should write 10 sentences—5 opinions and 5 facts. After this the students were asked to write a factual description based on the two pictures.

With regard to the transfer of thinking skills, in Lesson 2, the items—the numbers 4 and 9 and a square and a circle—have the potential to transfer the skill of comparing to learning in mathematics since their properties were discussed. As a result, they had the opportunity to think about the above sets of things in unusual ways. Similarly, in Lesson 3, the items crab and fish and artery and vein have connections with biology whereas president and queen and democracy and dictatorship have the potential to facilitate the transfer of thinking skills to social studies. In Lesson 9, part II is related to politics and other parts are directly related to everyday contexts.

The researcher used these opportunities to inform and encourage students that the skills mentioned above will be used in many contexts in their academic and everyday situations.

Stage 6. Assessment

As for the assessment of the decision-making task, separate rubrics were created since the skills involved should be the base for the assessment of student performance. Hence, graded descriptors were developed based on the procedural
components of the skills involved in the task. The written responses of the students were evaluated quantitatively, which was followed by a comprehensive qualitative analysis.

**Stage 7. Resolution**

The analysis of the students' responses to the decision making task revealed that the students showed improvement in organizing the information.

As for the skill of identifying similarities and differences, most of the students were successful. This might indicate that the students need to be given tasks, in further intervention, which can be more complex in terms of identifying similarities and differences. Complexity in thinking might be enhanced in the tasks by including components in the input which requires the use of more number of thinking skills. Simultaneously, linguistic complexity can also be increased by including higher levels of vocabulary, complex sentence structure, etc. Though increase in linguistic complexity requires intensive cognitive processing, it is not the same as the complexity in thinking that is discussed here. It is possible to enhance complexity in thinking keeping linguistic complexity at low levels. To increase the complexity in thinking, the features of a task (See 3.7 in chapter 3) might be observed in the preparation of materials.

With regard to the skill of distinguishing between facts and opinions, the students were able to find out the irrelevant information by not considering the opinions of the friends signifying that they based their decision on facts rather than opinions. While most of the students appeared to have improved, a very few of the students were still using opinions of friends to make a decision. This suggests that facts and opinions should again be taken up for further practice.

In the above sections, we have discussed the theoretical framework for teaching thinking in the ESL curriculum and a practical example depicting how the framework is used. The findings of the study and the theoretical framework discussed above offer the following implications for syllabus designers, material developers and teachers.
5.3 Implications for syllabus designers and material developers

- Syllabus designers ought to include thinking skills and dispositions in the syllabus documents. Since teachers' awareness levels of thinking skills and dispositions could be low, description of the skills and dispositions might be provided in the documents.

- Material developers need to explore ways to integrate thinking as a distinct component in the ESL curriculum. Though discrete thinking skills might be targeted one at a time, it is essential to deliberate on how these thinking skills get integrated in complex thinking tasks involving problem solving or decision making.

- The texts may be taken from several genres in which case specific language skills can also be focused. The principle of multimodality should be observed in designing materials since thinking is multi-faceted and multi-dimensional.

- The degree of authenticity seems to be directly proportional to students' willingness to think. Hence, use of authentic materials is highly recommended. However, as suggested earlier, the notion of authenticity should not deter material developers in designing tasks for some of the thinking skills and dispositions since they are highly abstract.

5.4 Implications for teachers

If teaching thinking has to be effective, the onus, to a large extent, is on teachers. Teacher abilities and willingness to teach thinking cannot be understated. Since the proposition in this study is to teach thinking as a distinct component in the ESL curriculum, it is difficult for an average teacher to appreciate the necessity and importance of such teaching. In fact, language teachers need to add another dimension to their current language teaching. This means that they need to add new knowledge about thinking skills and dispositions, and how they should be taught in the ESL curriculum. While the current study is an attempt in asserting such a possibility, knowledge of teaching thinking skills and dispositions should be a part of language teacher development programmes. The study carries the following implications for ESL teachers in teaching thinking.
• Teachers need to be observant of various problems people face in making decisions and solving problems. They should also compile, from print and electronic resources, various situations of erroneous thinking people engage in and become victims of in their everyday situations.

• In addition to reviewing the literature about thinking skills and dispositions, teachers should learn about various thinking strategies and techniques that can be used in teaching thinking.

• Thinking needs to be taught as explicitly as possible. Students need to be informed that “learning to think” is an important goal of their education and how it will be useful in their real life. Further, in the teaching of a particular skill, the purpose of the skill should be clearly informed along with the name of the skill.

• Teachers need to model thinking processes, that is to say, they should make thinking processes explicit or visible with the help of graphic organizers or other forms of representation. They should articulate their cognitive processes as clearly as possible, especially when teaching low-achieving students. Such practice appears to be unusual, but on closer observation, it aligns with the principles of reflective teaching.

• Teachers need to foster a climate of openness through eye contact, attentive listening, and keen observation. They need to value differing opinions of students, and they should be carefully judged so that students would not be discouraged to think confidently. In other words, teachers should encourage and accept student autonomy and initiative.

• A culture of collaborative and cooperative learning should be fostered since development of thinking abilities is fundamentally rooted in social interactions. Dialogue can help students understand their thinking processes as well as those of their peers and teachers.

• Teachers need not be constrained by any single method or approach. Rather, they should blend methods and materials to teach thinking effectively.

• Careful use of language has the potential to scaffold student thinking processes. Using L1 to cue and support thinking process needs to be seen
positively. Indeed, using L1 is virtually inevitable when teaching the regional medium students. However, the L1 support structure should be carefully substituted with L2 over a period of time. Similarly, by using L2 linguistic cues (and, or, but, after, because, etc) students can learn to identify related ideas in a sentence, and between the ideas (addition, comparison, contrast, sequence, or causality) (Costa & Marzano, 2001). They need to emphatically use specific words that govern thinking processes in such a way that they become the tool for expressing and modifying thought processes. In other words, teachers need to use cognitive terminology such as classify, analyze, assume, predict, create, conclude, etc.

- Teachers should encourage student inquiry by asking thought-provoking and open-ended questions and encouraging students to ask questions of each other. In such a process, students need to be given ample wait time or thinking time to allow them to think. This is highly significant in view of the individual differences of students' abilities.

- Teachers need to ensure that students' thoughtful behaviours are appropriately appreciated and celebrated.

- Since one of the major goals of teaching thinking in the ESL curriculum is transfer of thinking skills to other subject domains and everyday life contexts, teachers should utilize every opportunity in the classroom to emphasize the use of thinking skills and dispositions in various situations. They can facilitate transfer with comments like "This will be helpful in your real life in (so and so situations)........", "you can observe this strategy whenever you make a decision in your life."

- As far as the assessment of thinking skills is concerned, though performance tasks are a better type, various alternatives can be tried out. Brookhart (2010) suggests that even carefully prepared multiple-objective questions can also elicit higher level thinking among students.
5.5 Limitations and recommendations

The following are suggested as recommendations for further research.

- In the current study, the instruction in thinking skills and dispositions was carried out only for about 8 weeks. Since improvement in thinking, especially dispositions, takes relatively long time, it is suggested that future studies may consider longer periods of intervention.

- Further, thinking skills and dispositions might be taught as a distinct component in the existing ESL course books. This means that taking cues from the existing lessons and units, lessons in thinking can be developed and taught in conjunction with the existing schedule for language teaching.

- In addition to performance tasks, other forms of assessment may also be tried. Assessment types such as multiple-choice questions may also be used to capture thinking skills and dispositions. This might be useful in the case of huge samples.

5.6 Topics for further research

- In the current Indian context, a research investigating the awareness levels among English language teachers about the importance of developing thinking skills and dispositions may be carried out.

- To facilitate teaching thinking, researchers can review various cognitive theories to inform the teaching community of the procedural components of various thinking skills and strategies.

- Research studies should be taken up to explore various thinking strategies in other fields such as cognitive psychology, philosophy, and decision-making.

- It is suggested that along the lines of the current study, a few studies can be conducted to find the impact of teaching thinking on Listening, Speaking, Reading, Writing, Grammar, and Vocabulary independently.

- Since the conceptual framework provided in the above sections is the result of the current study, it needs to be tested across various levels and age groups of students studying in regional and English mediums.
• Brief research studies can also be undertaken with a special focus on only one of the dimensions or categories of thinking, which was listed in chapter 2. Researchers might focus on teaching critical thinking, creative thinking, problem solving, decision making, metacognition, or thinking strategies vis-à-vis language learning.

• A review of thinking styles and patterns of great and successful thinkers in various fields may be done to develop the repertoire of thinking strategies that can help teachers use them in teaching thinking.

• A study might also be conducted to document the language labels that govern key thinking processes orientated towards pedagogy of thinking. This study might be conducted focusing on a specific set of thinking skills aiming to explore language at the words and phrases level.

• Research Studies might be taken up to explore the explicit teaching of thinking dispositions.

• While the self-assessment questionnaire is one of the ways to assess thinking dispositions of students, various other ways might be explored to assess thinking dispositions of students not only in the classroom but in general behaviours of students in the school premises. Further, other types of tools might be developed to make assessment of thinking dispositions reliable.

• Research studies might also be carried out building the theoretical knowledge for teacher development with regard to teaching thinking in the ESL curriculum.

5.7 Conclusion

The goal of improving student thinking is a major responsibility of schools, yet, teaching thinking in the ESL curriculum alone is not sufficient to reach the goal. Nevertheless, as language teachers, we cannot shirk the duty of developing thinking abilities of our children, explicitly or implicitly, within the purview of language teaching. It is unrealistic to conceive that teaching thinking in the ESL curriculum is enough to learn all the other subjects. But, teaching thinking in the ESL curriculum has the potential to positively impact the way other subjects are learnt. It follows from
the study that teaching of thinking skills and dispositions explicitly help students become more skilled at thinking than they normally are likely to become. By working to this end, language teachers can help students to enhance their English language proficiency also. Therefore, we ought to begin to recognize and say that thinking is a part of the ESL curriculum. Now, English language teachers ought to teach 'T' in addition to LSRW—L-S-R-W-T (Listening, Speaking, Reading, Writing, and Thinking)

As T.S. Eliot says in Little Gidding, "What we call the beginning is often the end and to make an end is to make a beginning. The end is where we start from." We need to reflect on our teaching with regard to the development of student thinking. All of us need to ask ourselves—

- Do I believe that thinking is my responsibility as a language teacher?
- Do I believe that thinking can be taught?
- Do my students and I discuss our thinking in the classroom?
- Do I ask my students to think in the classroom?
- Can I name any thinking skill?
- Does the ESL coursebook I use have enough potential to develop thinking of students?
- Are my students aware that thinking is a major instructional objective?
- Is adequate instructional time devoted in my classroom to develop thinking?