CHAPTER TWO
LITERATURE REVIEW

2.0. Introduction

Investigating translation strategies is one of the current trends in translation research, though most studies deal with such translation strategies either from a process-oriented or product-oriented translation research. To bridge this gap, the present study accounts for studying translation process and product in order to provide a comprehensive image of students' behaviours in different stages of translation. The study account of translation process and product covers the psycholinguistic and linguistic areas of translation research. Such psycholinguistic and linguistic account enables the study to present a profound translation strategy analysis of culture-based texts.

The main concern of this section is to present two types of literature review: conceptual literature and empirical literature. The conceptual literature is basically devoted to TSs and TPs used in translating culture-based texts from English into Arabic. It accounts for issues, ideas, models concerning translating culture as a process and product. Besides, it presents TSs and TPs in terms of their scope, classifications and their involvement in curriculum development and teaching methods. The empirical literature deals with the previous studies on the use of TSs and TPs and the relationship of the study with such previous studies. The review ends with the unresolved issues that have generated the study research questions.

2.1. Importance of Translation

Long time ago, there was a need for translation due to the need of nations to contact and understand each other. In the recent years, the need for translation rapidly
increases because of globalisation and revolution of technology of communication. These changes bring nations closer to each other, which entails academic institutions to equip student translator with the required knowledge and skills required for translation profession.

In the Arab world, translation becomes an urgent need in all fields of life. Such a need is reflected in emergence of the translator training programmes at undergraduate and postgraduate levels at several Arab universities (e.g. Saudi Arabia, Syria, Morocco, Jordan, etc.) (Atari, 2005). Such development in translation education has been resulted in the upsurge of research into translation studies. However, most of the translation studies focus on translation as a product, while translation process is underestimated.

With respect to English-Arabic translation, translation benefits hugely from famous Arab and Western scholars such as Hatim and Mason (1993), Baker (1992), Ghazala (2008), Shunnaq(1993) and Dickins et al. (2002) whose works in English-Arabic translation are great contributions either in theory or practice. Their works facilitate the task of teaching translation, researchers and translators. In spite of that, their works are based on philosophical and philological discussion and they were developed chiefly on the basis of experience (Orozco, 2000). Such a situation entails development of the level of translation in the Arab world by following the empirical trend of research in order to improve the quality of translation training programmes.

2.2. Strategies: Meaning and Scope

‘Strategy’ is a broad term used in various fields. Originally, it is a Greek term ‘strategia’, which means ‘arts of leading army’ (Longman, 2002). This definition refers to techniques used for planning and conducting a war. Brown (1994) defines strategies as "specific methods of approaching a problem or task, modes of operation"
for achieving a particular end, planned designs for controlling and manipulating certain information" (p.119). Such definition shows that the term 'strategy' is a systematic method and planned task, which matches Opp-Beckman and Klinghammer’s (2006) definition in a sense that the term ‘strategy’ is “a tool, plan, or method used for accomplishing a task” (p.107). Wenden (1987) comes with a comprehensive definition of the term ‘strategy’, saying:

Strategies have been referred to as techniques, tactics, potentially conscious plans, consciously employed operations, learning skills, basic skills, functional skills, cognitive abilities, language processing strategies and problem-solving procedures. (p.7)

Thus, a ‘strategy’ is a set of techniques, tactics, skills, abilities and operations that are goal-directed, conscious, functional, cognitive and problem-solving. The aforementioned definitions are directed towards exploring the prominent features of the term ‘strategy’.

The terms ‘comprehension strategies’ and ‘production strategies’ are originated in Applied Linguistics. They are influential terms in second language acquisition. Undoubtedly, language is encoded differently from the way it is decoded. Therefore, the strategies of comprehending a language differ from those used for producing it (Nasi, 2011). Production strategies ‘involve learners’ attempts to use the second language knowledge they have already acquired effectively, clearly and with minimum effort’ (Ellis 1985, p.156). Accordingly, production strategies mean the effective use of acquired knowledge and skills to produce something while comprehension strategies are the effective use of acquired knowledge and skills to get comprehension. Thus, language use, therefore, is characterised by both production
and comprehension strategies, which operate when the learner employs available resources (ibid).

2.3. Strategies in Translation

As it has been mentioned earlier, comprehension and production strategies are taken from Applied Linguistics by translation practitioners to deal with translation process and product with slight differences in their naming. The comprehension strategy is called TS and the production strategy is called TP. Vinay and Darbelnet (1995) describe TPs as the linguistic shifts introduced by translators in changing ST items into TT items. They classified them as borrowing, literal translation, equivalence and adaptation. These are generally grouped into two general strategies: literal translation and oblique translation. (Ghazala, 2008).

As for TS, it is defined as a mental activity performed by a translator/interpreter allowing him/her to render a ST into a TT, using the resources of a TL. TS is interactive, which denotes the process of the interaction between translator’s mind and the TT and non-linear in a sense that it does not have a certain structure. It encompasses controlled and uncontrolled processes, and requiring processes of problem-solving and decision-making (Molina & Hurtado, 2002). Such definition means that TS aims to solve the translation problem and decide between alternatives.

Ivir (1987) cites a clear example in which he differentiates between TSs and TPs, saying that the translator's procedure or technique is when he or she chooses a particular procedure or a combination of procedures such as borrowing, definition, literal translation, substitution, lexical creation, etc. While the TS (process decision) is a result of more than one of the above mentioned factors. They concern the mental processes that aim at solving the whole translation problem such as avoidance, first
language transfer, using a dictionary and not an individual problem like "lexical, cultural problems in which a translator uses loan, literal translation, equivalence, adaptation, etc.". The detailed account of these terms is the concern of the following sections.

### 2.4. Translation Strategies (TS)

TSs are defined by Lorscher (1991, p.27) as “procedures that the subjects employ in order to solve translation problems”. He adds:

…accordingly, translation strategies have their starting-point in the realisation of a problem by a subject, and their termination in a (possibly preliminary) solution to the problem or in the subject’s realisation of the insolubility of the problem at the given point in time. Between the realisation of a translation problem and the realisation of its solution or insolubility, further verbal and/or mental activities can occur which can be interpreted as being strategy steps or elements of translation strategies (pp. 27-28).

The key phrase in this definition is ‘mental activities', which denotes the strategies that occupy the translator's mind, which aim at solving a translation problem.

In Krings' study of translation processes (1986, p. 268), he finds that there are four main sets of strategies involved in handling translation problems: “strategies of comprehension, strategies of equivalent retrieval, strategies of equivalent monitoring, strategies of decision-making and strategies of reduction”. He argues that a comprehension problem leads to a comprehension strategy, which is manifested in inferring meaning and use of reference books (e.g. dictionaries). In case of retrieval strategies, they refer to the recall of a known lexical item for appropriateness.
Monitoring strategies are employed to check items for correctness or appropriateness. Decision-making follows the previous strategies. It is particularly concerned with choosing between alternatives. The strategy of reduction is a specific one that refers to those cases where the translation problem can be solved only by means of formal or functional reduction. This case happens by replacing idiomatic or metaphorical phrases by un-idiomatic and non-metaphorical equivalents (Qassem, 2010).

The above strategies refer to the translator's own psychological and physical process. They are deliberate problem-solving activities when students are involved in translating process. In other words, the psychological processes reflect to what extent the difficulty hinders the process of translating. Within the context of solving one translation problem, students tend to employ more than one strategy such as searching memory, re-reading, repeating pronunciation of a problematic ST segment, giving alternatives or tentative meanings for it in either the ST or the TT. Thus, they infer a tentative selection of meaning choices and do immediate self-corrections (Deeb, 2005).

It is clear now that TSs are related to the mechanisms used by translators throughout the whole translation process to find a solution to a translation problems. Hurtado and Alves (2009) describe strategies as the activities (conscious or unconscious, verbal or nonverbal) used by the translator to solve problems that emerge when carrying out the translation process with a particular objective in mind. To be specific, translators use strategies for comprehension (e.g., distinguish main and secondary ideas, establish conceptual relationships, search for information) and for reformulation (e.g., paraphrase, retranslate, say out loud, avoid words that are close to the original, use a dictionary). For the purpose of clarity, the TS will be materialized by using a particular translation TP such as formal equivalence, functional.
equivalence, literal translation etc. (ibid). Many models are proposed to study TSs as a part of process-oriented translation research, which is the concern of the following section.

2.4.1. Translation Process Models

This section is devoted to translation process in terms of scope and prominent models concerned. It is axiomatic that analysing translation process is a complex task due to inherent difficulties of indirect observation, different phases of the process, ‘complexity of the interwoven abilities’ and ‘forms of specialised knowledge’, which play an integral part in translation process (Hurtado and Alves, 2009). Translation process is based on the observation, analysis and explanation of the cognitive processes of the translators themselves. As Roger Bell (1991, p. 43) puts it:

Focus on the description of the process and/or the translator [. . . ] form the twin issues which translation theory must address: how the process takes place and what knowledge and skills the translator must possess in order to carry it out.

In the above lines, the author demonstrates that focusing on the description of the process or translator should be in terms of how the process takes place and what knowledge and skills required for translators to translate appropriately.

There are many models that attempt to analyse translation processes and account for their explanations. The models of Seleskovitch (2003 cited in Munday, 2003), Bell (1990), Wills (1996) and Kiraly (1995) draw on Psycholinguistics, Linguistics and Sociolinguistics to develop models that explain the translation processes followed by translator when translating. Lorscher (1991), Krings (1986) and Gerloff (1986)
models follow think aloud protocols (TAP\textsuperscript{2}) to investigate TSs employed by translators when translating. They attempt to gather observational data to explain the decision-making processes of translation by adopting TAPs, where the translator is asked to verbalise his/her thought processes. An extension for the former model is Jakobsen & Schou (1999) and Hansen (2006), who follow computational model of human translation, using novel technological tools, namely ‘Translog’ and eye tracking, which was developed at the school of Copenhagen to study translation process. The following sections are devoted to explain such models.

2.4.1.1. Interpretive Model

Translation is as an overlapping three-stage process for the Danica Seleskovitch and Marianne Lederer (2003 cited in Munday, 2008), which consists of reading and understanding, deverbali\textsuperscript{5}sation and re-expressions. They lay stress on the importance of linguistic competence\textsuperscript{3} and ‘world knowledge\textsuperscript{4} to read and understand the ST. They view sense as non-verbal synthesis resulting from understanding (Abir and Alves, 2009). For proponents of this model, the cognitive processing of the interpreter transfers through sense and not words. This model suggests the existence of an intermediate phase of deverbali\textsuperscript{5}sation resulting from the phase of understanding and the beginning of the phase of re-expression. In the re-expression, the TT is constituted and given form based on the deverbali\textsuperscript{5}sed understanding of sense.

\textsuperscript{2} The think aloud method consists of asking people to think aloud while solving a problem and analysing the resulting verbal protocols. This method has applications in psychological and educational research on cognitive processes.

\textsuperscript{3} The linguistic component needs to be understood by reference not only to explicit but also to implicit meaning in an attempt to keep the author’s intention without distorting (Munday, 2008).

\textsuperscript{4} The world knowledge, according to Lederer (2003), is de-verbalized, theoretical, general, encyclopaedic and cultural and activated differently in different translators and by different texts.

\textsuperscript{5} This phase plays a fundamental role in the scope Lederer’s model since re-expression is achieved through deverbali\textsuperscript{5}sed meaning and not on the basis of linguistic form, which can be observed in oral translation, (Hurtado and Alves, 2009)
Munday, (2008) comments on such a model saying that in some ways, this model might appear quite similar to Nida’s model of analysis: transfer and restructuring. However, rather than placing the emphasis on a structural representation of semantics, the interpretive model stresses the deverbalised cognitive processing that takes place. He criticises such model saying that deverbalisation is really underdeveloped theoretically because of difficulty of observing such a process. He adds “If it occurs in a non-verbal state in the mind, how is the researcher going to gain access to it’ (ibid p.64).

2.4.1.2. Kiraly’s Sociological and Psycholinguistic Model

As for Kiraly’s Sociological and Psycholinguistic Model (1995), it views translation as a social (external) and cognitive (internal) activity. He presents two models for translation process: social model, based on Firth’s theories and cognitive model, which draws on Psycholinguistics. In Kiraly’s social model, the translator is considered an active participant in three interrelated situational contexts, namely: ST, TT, and a particular context related to the translational activity. The last situational context is located between ST and TT, which is of internal and mental traits and so it cannot be observed directly.

2.4.1.3. Wills’ Model

Wills (1996) considers cognitive psychology the most appropriate framework for the study of translation as a cognitive activity. He draws on the distinction between two complementary types of knowledge, namely declarative knowledge (i.e. knowing what) and procedural knowledge (i.e. knowing how). According to Wills, translation is a knowledge-based activity and, as with all kinds of knowledge, it requires the acquisition of organised knowledge. In order to explain
the organisation of this type of knowledge, Wills draws on schema theory\(^6\). Schemas are cognitive units, hierarchically structured, which support the acquisition of knowledge. As such, the central task of cognitive approaches to translation is to investigate the ways schemata operate and the type of interaction observed in knowledge-related schemas (Munday, 2008).

Building on Corbin (1980), Wills recognises six phases in the decision-making process: identification of problems, clarification (description) of problems, search and retrieval of relevant information, problem-solving strategies, choice of solution, and evaluation of solution. Wills points out that, particularly in the scope of translator training, one must investigate processes of cognitive simplification, (i.e. the process of simplifying a complex problem to make it more compatible with the translator’s processing capacity). Thus, one can consider cognitive simplification as a tool to reduce inaccuracies (ibid).

\subsection*{2.4.1.4. Think-aloud Protocol Model}

As for Lorscher (1991), Krings (1986) and Gerloff (1988), they follow TAP to explore the TSs followed by translators while translating. They empirically classify TSs. Their classifications exhibit the same features but they are different in terms of naming and order in some stages. Their models comprise ST comprehension and TT production strategies. Examining the above models shows that Krings' model (1986) has a succinct and clear organisation of the strategies employed by student translators while translating. See Table (1) below.

\footnote{Piaget (1952) defined a schema theory as ‘a cohesive, repeatable action sequence possessing component actions that are tightly interconnected and governed by a core meaning. It states that all knowledge is organized into units. Within these units of knowledge, or schemata, is stored information.}
Table (1) Krings' Model of Translation Strategies (1986)

<table>
<thead>
<tr>
<th>No</th>
<th>Strategy and Sequence</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>The subjects’ explicit statement of problems</td>
</tr>
<tr>
<td>2</td>
<td>The use of reference books (i.e. dictionaries)</td>
</tr>
<tr>
<td>3</td>
<td>The underlining of source-language text passages</td>
</tr>
<tr>
<td>4</td>
<td>The semantic analysis of source-language text items</td>
</tr>
<tr>
<td>5</td>
<td>Hesitation phenomena in the search for potential equivalents</td>
</tr>
<tr>
<td>6</td>
<td>Competing potential equivalents</td>
</tr>
<tr>
<td>7</td>
<td>The monitoring of potential equivalents</td>
</tr>
<tr>
<td>8</td>
<td>Specific translation principles</td>
</tr>
<tr>
<td>9</td>
<td>The modification of written target-language texts</td>
</tr>
<tr>
<td>10</td>
<td>The assessment of the quality of the chosen translation</td>
</tr>
<tr>
<td>11</td>
<td>Paralinguistic or non-linguistic features (i.e. groaning and sighing)</td>
</tr>
</tbody>
</table>

2.4.1.5. Computational Model of Human Translation

Computational model of human translation develops TAP Model, bringing technological innovation model in translation, which results in increasing the level of accuracy of conducting translation research. The common methods of research in translation were TAP, translation task and questionnaire, which are taken from Psychology and Educational Science. Translation researchers criticise such methods for the lack of their replicability\(^7\) that aims at consistency of results. The development of technology adds various methods that can be used in research on translation and improve the quality of research in translation; among them are Translog and eye tracking, etc. Orozco (2000) states that ‘Translog’ software is a method of data collection that are developed by translation researchers at Copenhagen Business school by Lykke Jakobsen (1998), Schou (1999) and Hansen (2006), which records\(^7\)

\(^7\) Repetition of a scientific experiment or trial to obtain a consistent results (Concise Oxford English Dictionary, P.1219, 2008).
the keystrokes made by the translator on the keyboard. Besides, Eye-trackers (O’Brien 2006) records the focus of the eye (and, therefore, presumably, the brain) on the text. Hurtado and Alves (2009) state that researchers follow these instruments because of feasibility of refining experimental designs and replication of studies; thus allowing for validation or falsification of previously findings.

2.4.1.5.1. Translog

As it was stated earlier, Translog is a software programme developed by Jakobsen and Schou in (1999) and improved in 2012 at Copenhagen Business School. It is suitable for editorial practices, e.g. the distribution of online revision during drafting phase and end revision during post-editing time (Jakobsen, 2011). It consists of two versions: Translog user and Translog supervisor. As for Translog user, it has two windows: one for a ST and the other is blank so that students can translate on it while looking at a ST window (Translog Manual, 2012). While the students translate, the Translog supervisor records all the students’ activities such as keystrokes, pauses, deletions, additions, using online dictionaries and encyclopaedia, etc. (Munday, 2008). The output of Translog contain both the process and product data that emerge during a translation session (Carl and Jakobsen, 2009). To be specific, Translog records three types of data: task time (skimming time, drafting time and post-editing time), keylogging and translation unit (TU), which are the concern of the ensuring lines.

2.4.1.5.1.1. Task Time

The software records the distribution of time during different stages of translation, namely skimming, drafting and post-editing.
2.4.1.5.1.1.1. Skimming Time

It is the translator's reading of the ST before he or she starts the drafting process. The duration of such a phase differs from a translator to another. To be specific, the translators differ in their reading behaviours when translating a text: systematically read the whole ST before they start drafting, skim the text very briefly, read the first couple of phrases or sentences before starting to type or simply they go straight ahead with TT production (Jakosen, 2011).

2.4.1.5.1.1.2. Drafting Time

It is the time of actual translation in which a new text is created. It represents the production of the TT, which was recorded by the software via clicking alphabetical and numerical characters, punctuation marks, mathematical symbols and the like (Translog Manual, 2012).

2.4.1.5.1.1.3. Post-editing Time

It is the last process of translation, which starts when drafting process ends. The software has the property of recording such period of time, which is called post-editing. Post-editing has an important role in shaping the final version of the TT (ibid).

2.4.1.5.1.2. Keystroke Data

In Jakobsen's words, 'keystroke data provides a detailed overview of the entire typing process by which translation comes into existence' (2011, p. 37). It enables researchers to study cognitive phenomena such as chunks based on the distribution of pauses and writing-related phenomena such as edits and corrections. Carl and Jakobsen (2009) found that reading disfluencies might be due, for instance, to unknown or unusual words, awkward, confusing or complicated sentences.
Difficulties in text construction are visible in keyboard patterns such as pauses, deletion, correction patterns, lexical substitution, movement of textual elements, etc.

Pauses as reflected by keystrokes represent the time where no keyboard action takes place. They represent the span of time in which new chunk of meaning is mentally constructed (Carl and Jakobsen, 2009). Pauses determine precisely the expression that stops the process of translation and prevent the students from translating the item directly. Such pause is important for researcher in a sense that it reveals the areas that constitute comprehension and production problems for the students. To be specific, long pauses show long reading pattern at the onset of translation, which indicate the students' cognitive difficulty in comprehension of such terms.

Pauses are indicators of cognitive efforts in translation process research (O’Brien, 2006). In cognitive psychology, it is assumed that longer pauses reflect effortful cognitive processes than shorter ones. Jakobsen (1998) argues that a pause length of (1) second is enough for observation of delay (1998) while Rydning (2002) sets (5) second pause as an indication of delay, which is more appropriate to be symbol of cognitive processing.

2.4.1.5.1.2.1. Total User Events

Total user events include all types of keystrokes such as text production, text elimination and miscellaneous events. To be specific, it shows students' deletions, additions, corrections and looking for online assistance (Translog Manual, 2012).

2.4.1.5.1.2.2. Text Production

It is the typing of TT which is represented by clicking punctuation marks and alphabetical and numerical characters. Through recording of text production, it can be
judged whether the students use addition or omission in translating the text. Besides, recording text production keystrokes reveals the degree of the speed of translation by dividing text production keystrokes into drafting time (ibid).

2.4.1.5.1.2. 3. Text Elimination

Deletions show editorial practices that happen to a text for correction purposes. The use of deletions reflect students' difficulty in the process of comprehension and production. It demonstrates the online revision (i.e. students translate and edit a text at the same time) (ibid).

2.4.1.5.1.2.4. Miscellaneous Events

Miscellaneous events are navigation keystrokes, which are either mouse activity or cursor navigation. These types of events show students' look for online help such as search engines, online dictionaries, encyclopedia and making edits such as copy, paste, cut, etc. (ibid)

2.4.1.5.1.3. Translation Unit

Translation unit (TU) is defined as a span of time in which one or more keystrokes occur without a pause. It is the fluent translation of a chunk without stop, which shows the translation time and fragmentation of translation production. TU demonstrates whether students translate at textual, sentence or word level. Besides, it reveals whether the students translate meaningful units or separated items. Disfluencies or fluencies of translations reflect students' ease or difficulty of translation. High number of production units show translation hindrances and cognitive efforts in the process of translation (Jakobsen, 2011). TU or segment, is defined by Alves and Goncalves (2003, pp. 10-11) as 'segments of the source text, independent of specific size or form, to which the translator’s focus of attention is directed'. This definition shows that TU is a segment in constant transformation that
changes according to the translator’s cognitive and processing needs. Besides, it reflects the students' attention to a certain linguistic unit at one time, which demonstrated whether the direction of attention is at either meaningful units or separated items.

2.4.1.5.2. Eye Tracking

The standard version of the Translog is accompanied by eye-tracking device. An eye tracker is a device for measuring eye positions and eye movement (i.e. the process of measuring either the point of gaze (where one is looking) or the motion of an eye (relative to the head)) (Munday, 2008). They are used in research on the visual system in Psychology, Cognitive Linguistics and Translation. There are a number of methods for measuring eye movement. The most popular method uses video images from which the eye position is extracted. Scientifically speaking, there are five eye movements used to reposition the fovea; among them are saccadic (i.e. rapid irregular movement of the eye), divergence (i.e. used to focus the pair of eyes over a distant target, which results in depth perception) and fixations (Dutchowski, 2007). Other movements such as adaptation and accommodation refer to non-positional aspects of eye movements (i.e., pupil dilation, lens focusing) (ibid).

2.5. Translation Procedures

TPs refer to what happen to a text (textual solutions to the problem encountered during translation). Scholars prefer to call them procedures or techniques to distinguish them from strategies. They are linguistic decisions employed when solving a particular translation problem. TP is an important part of procedural knowledge (i.e. knowing how). They include the use of simple techniques and skills. They describe the product obtained and can be used to classify different types of translation solutions. By way of illustration, there are several translation methods that
may be chosen, depending on the aim of translation techniques: interpretative-communicative (translation of the sense), literal (linguistic transcodification), free (modification of semiotic and communicative categories) and philological (academic or critical translation) (Hurtado and Alves, 2009). Accordingly, the TPs affect the translation product (i.e. linguistic solution). Chesterman (1997, p. 92) argues that production strategies refer to 'how the translator manipulate the linguistic material in order to produce appropriate target texts'. Such production procedures describe types of linguistic behavior when formulating TT as syntactic, semantic or pragmatic levels. Many scholars provide classifications of the procedures that are followed as solutions to translation problems. At local level, Ghazala (2008, pp. 195-206) theoretically classifies TPs when translating culture form English into Arabic:

a. Cultural equivalent: The use of the TL expression that has the same context of the SL expression, e.g. 'a fox is not taken twice in the same snare' is translated as "لا يلدغ المؤمن من جحر مرتين", meaning ‘believer is not taken twice in the same snare’

b. Cultural correspondence: In this procedure, the English cultural term has exactly and literally the same correspondence in Arabic, e.g. 'to hit two birds with one stone' is translated as "يضرب عصفورين بحجر", which has the same literal meaning in English.

c. Accepted translation: It is a type of standard translation, e.g. 'the target justifies the end' is translated as "الغاية تبرر الوسيلة", which has the same literal meaning in English.
d. Naturalisation: In this procedure, the terms is originally English, but converted into Arabic and adapted to Arabic grammar, spelling and pronunciation, e.g. democracy is translated as "ديمقراطية".

e. General sense: In this procedure, the translator ignores the cultural charge of the SL because there is no cultural equivalence in the TL such as 'congress', which is translated as "مجلس النواب", meaning 'house of parliament'.

f. Transcription: It means transference of English words into Arabic alphabet such as 'cricket' and 'jeans'. They are translated as "لعبة الكريكيت" and "جينز" respectively.

g. Literal translation (of meaning): It is the literal translation of the meaning of words, e.g. 'house of commons' and 'passion fruit'. They are translated as "مجلس العموم" and "الفاكهة الحزينة" respectively;

h. Translation couplet (combining two procedures): The use of two procedures such as addition and transliteration (or literal translation) as in 'internet' and 'acid rains'. They are translated as "شبكة الإنترنت" and "مطر أسيدي" in turn.

i. Translation triplet (combining three procedures): In this technique, the translator uses three procedures in translating a certain term, e.g. 'pasta dish' is translated as "طبقة معكرونة الباستا".

j. Classifier: It is a more recurrent and important procedure. In this technique, the translator explains or modifies the term such as 'baseball', which is translated as "لعبة البيسبول".

k. Neutralisation: functional /descriptive translation: It is a type of deculturalisation. The cultural term is normalised in the TL. It takes the form
of paraphrasing such as 'downing street'. It is translated as "الحكومة البريطانية", meaning ‘British Government’

1. Componential analysis: It is a kind of analysis of the semantic components of words such as 'high tea'. It is translated as "وجبة الشاي: حبيبة مطبخة - بسكويت - كاتو - شاي", meaning ‘tea meal’

m. Paraphrase: It is a short explanation such as 'ham', which is translated as "شرائح فخذ الخنزير", meaning ‘slices of pork gammon’

n. Translation label: It is opposite of standard translation in a sense that it is a temporary translation such as TV, which is translated as "الرائي", meaning ‘seer’

o. Deletion: It is a type of omitting a part of the meaning such as 'Christmas', which is translated as "عيد الميلاد" and 'German measles', which is translated as "الحصبة".

p. Glossary, Notes and Footnotes: In this procedure, the translator uses three procedures to explain a vague term such as ‘kilt, which is translated as "سترة يلبسها الرجال والنساء في اسكتلندا", meaning ‘garment worn by men and women in Scotland’. He (ibid) organises them in order of preferences, which means that the best procedure is the first and so forth.

Rababah (2008) empirically classifies TPs employed by students when translating general written texts from English into Arabic as:

1. Approximation

In this procedures, students use synonyms to replace a SL item with a TL item, extending the use of a certain language item in order to compensate for
communication breakdowns (overextension). For example, students use ‘stay away from’ instead of ‘avoid’ and ‘break down’ instead of ‘collapse’.

2. Circumlocution

It is the paraphrase of the message without consideration for the style of the SL item. In other words, the message is restructured without doing text analysis, which results in a weak version of the original message.

3. Message abandonment/reduction

It is a message reduction due to skipping a word or words. When learners lack a target language item, they reduce the message by using the minimal number of words. The reduction procedure may be due to comprehension and production problems.

4. Literal translation

It is a word for word translation of ST without consideration to the syntactic and semantic differences between SL and TL. Rababah (2008, p.104) defines literal translation as ‘transfer of the native Arabic language system to target language’. The most prominent reasons of transfer are subjects’ limited vocabulary and lack of exposure to the TL.

At world level, Cintas and Remael (2007) propose a more clear-cut set of procedures when translating culture. They classify TPs into loan, calque (i.e. literal translation), explicitation, substitution, transposition (i.e. the cultural term is replaced by a cultural term belonging to another culture), lexical recreation (i.e. creation of a neologism), compensation, omission and addition.

Mailhac (1996) suggests 16 parameters that a translator can consider in choosing the right TP for translating cultural references. He provides a comprehensive list of
parametres, making a good use of translations theorists' factors of translating culture, namely Newmark (1988) and Ivir (1987). They can be reduced to four as sated by him:

1. Purpose of the text

The intention of the writer should be detected by translator in terms of communicative functions in order to reflect the writer's intention in his or her translation. If the purpose of the text is ignored, the SL meaning will be distorted.

2. Role of the cultural reference

Here, the translator needs to do analysis at lexical level to find out the cultural loaded words and recognise their role in the ST and boundary of their meanings.

3. Pragmatic coherence

Context guides a translator to detect the meaning of words, phrases and sentences in a text. Therefore, a translator should consider the context when looking for TSs and TPs. Using TPs out of context may result in deviation from the SL meaning. Recognising the context shows the translator the areas that entail explanation, omission, explicitation, cultural equivalent. Accordingly, it enables the translator to compare between the SL and TL context and choose the right decision.

4. Readership knowledge of the source culture

The translator's selection of a certain TP should be based on the TL readership knowledge of the SL culture. The question of 'who is my reader' is crucial in deciding on this or that procedure. Newmark (1988) recognizses three types of TL readers (i.e. expert, educated generalist and uninformed), whom a translator needs to address in her or her translation. Mailhac (1996) argues that the less informed the reader, the greater the amount of information required.
Based on the theories and models introduced in the previous sections, the differences between TSs and TPs become evident. Linguistics and text-linguistics oriented translation research focuses on product while researchers influenced by Psycholinguistics and Cognitive Science investigate the mental operations during the translation process (Gambier, 2010). Consequently, TSs are based on psycholinguistic perspective of translation process while TPs are based on linguistic perspective of translation product.

2.6. Culture and Translation

There is a consensus among translation theorists such as Catford (1965), Nida (1964), Newmark (1988) and Bassenett and Lefevere (1990) on the importance of culture in translation. Therefore, they lay stress on incorporating cultural dimension in translation teaching and training. Culture and language work together and so it is difficult to separate them since they are interrelated. Culture makes up the acquired customs, habits, experiences and rules, which differ from one society to another and language is an area in which all these differences are evident (Qassem, 2010). To quote Nord (1996, p. 11):

A translation theory cannot draw on a linguistic theory alone… What it needs is a theory of culture to explain the specificity of communicative situations and the relationship between verbalised and non-verbalised situational elements.

Nord’s words show the necessity of building a translation theory on the theory of culture, ascribing such necessity to the peculiarity of communicative situations of every society.
There is a need here to define the concept of culture to show its boundaries. Finkel (1962 cited in Ranzato, 2013) argues that cultural terms stand out from the common lexical context and they distinguish themselves for their heterogeneity. Therefore, they require a special attention in order to be decoded. Vlahov and Florin (1969, p. 438 cited in Ranzato, 2013) define culture precisely as:

words (and composed locutions) of popular language which constitute denominations of objects, concepts, which are typical of a geographical environment, of a culture, of the material life or of historical-social peculiarities of a people, a nation, a country, a tribe, and which thus carry a national, local or historical colouring; these words have not precise equivalents in other languages.

Mailhac (1996) defines culture on the basis of distance between the SL and TL. He stated that a cultural reference is any SL reference that is distant from TL culture, characterized by opacity for TL reader, which induces a comprehension problem for him or her. Based on the above definitions, the implicit meaning of cultural elements constitutes a difficulty for a translator in their interpretation. Besides, the cultural elements' interpretation differ from a translator to another since there is no fixed rules to say this is the right strategy and that is not. Therefore, the focus will be on clear and approximating translation (Ranzato, 2013).

Gonzalez & Scott-Tennen (2005) define culture as expressions denoting any material, social, religious, and emotional manifestation that can be attributed to a particular community. Cultural references are problematic for translators in the process of comprehension and production because they differ from one language to another. Baker (1992, P. 21) calls them 'culture-specific concepts'. She explains them saying:
the source-language word may express a concept, which is totally unknown in the target culture. The concept in question may be abstract or concrete; it may relate to a religious belief, a social custom, or even a type of food. (ibid)

Olk (2013) defines cultural references functionally saying that they are names of objects and concepts in source culture that do not exist in a target culture, which have different denotation (i.e. literal meaning of the word) or connotation\(^8\) from lexical equivalents available in the target culture. Qassem (2010) classifies cultural references into social culture, political culture, material culture, religious culture and idiomatic expressions. To conclude, culture refers to a system that organises people's traditions, customs, behaviors and emotions. Accordingly, culture makes up the acquired customs, habits, experiences and rules, which distinguish one society from another (Brown, 1994).

2.6.1 Translation Problems and Culture

Having introduced the basic knowledge that the topic of the study is based on, it is crucial to discuss cultural translation problems to clarify its boundaries. As it has been stated earlier, culture constitutes problems for both novice and professional translators due to the lack or absence of exposition to the culture of the TL. In most cases, it is possible for second language students to master the structure of the TL, but it is rare to master the expression of the TL especially in a foreign language setting (i.e. classroom) (Qassem, 2010). Cultural differences between the SL and the TL may cause more severe complications for the translator than do differences in language structure. The degree of difficulty vary in scope depending on the cultural and linguistic gaps between the two (or more) languages concerned (Nida, 1964).

\(^8\) It is people's strong, weak, affirmative, negative or emotional reaction to words
A translation problem is defined as anything in a text that does not translate straightforwardly. In this study, it is defined largely in the context of effortful cognitive activity, delay in translation and unacceptable translation. Translation problems are given various titles in the literature such as challenges, pitfalls, difficulties and problems (Deeb, 2005). Newmark (1980) also uses problems and difficulties together, without differentiating between the two labels. The focus of this study is on the process and product difficulty.

Nord (1991) distinguishes between the terms 'translation problems and 'translation difficulty. She defines translation problem as an objective hindrance that encounters the translator due to the differences between languages and cultures concerned. It remains a problem for all translators regardless of whether it is solved or not. However, the term difficulty concerns the competence of the translator and the mental process that the translator employs to solve the translation problem as a whole. She means by the term 'difficulty' the mental activities that occupy the mind of the translator while translating a text such as hesitation, using a dictionary, etc. In this study, Translog and questionnaire are used to reveal the students' difficulty in the translation process. The product problems will be revealed through students’ translation of the translation task. Such product problems will be reflected in their selection of TPs. The study does not just adopt distinction between 'translation problem' and translation difficulty' on the basis of terminology, but on the practical basis of classifying the problematic areas in the translation process and product.

The definition of translation problems adopted in this study has more than one dimension: difficulties, which are likely to occupy the mind of the trainee student while carrying out the task of translation, i.e. consciously perceived problems. It refers to translation process, which would potentially involve hesitation, searching
memory, using context, revision, re-reading, using online assistance such as
dictionaries and websites. Besides, the product problems result in unacceptable
translation as reflected in students' use of TPs.

As for cultural translation problems, scholars introduce comprehensive
definition of cultural problems saying that they are "the problems that arise from the
differences in norms and conventions between the source and the target culture, e.g.
text-type conventions". Aixela (1996, p. 58) defines cultural translation problems
more accurately saying:

Those textually actualised items whose function and connotations in
a source text involve a translation problem in their transference to a
target text, whenever the problem is a product of the nonexistence of
the referred item or of its different intertextual status in the cultural
system of the readers of the target text.

Aixela's definition denotes the main cause of translation problems: the differences of
connotations and functions of expressions from one language to another because of
nonexistence of these items or their different intertextual status in the TL. These
definitions show that expressions of languages are based on certain conventions,
which differ from one language to another. These differences entail a translator to
have knowledge of language use of SL and TL in order to render the SL meaning into
the TL appropriately (Qassem 2010).

Scholars have different classifications of cultural element, though they are
interrelated. Newmark (1988, p. 94) categorises cultural elements in his book 'A
Textbook of Translation' into ecology (flora, fauna, hills, winds, plains); material
culture (food, clothes, houses and towns, transport); social culture (work and leisure); organizations, customs, activities, procedures, concepts (political and administrative, religious, artistic); gestures and habits. Ivir (1987, p. 35) classifies culture into three categories:

1. Behaviour: customs, habits, dress and food;
2. Product: literature, folklore, art, music; and
3. Ideas: beliefs, values and institutions.

Figure (1) Ivir's classification of cultural elements

Exercising the aforementioned classifications shows that they are overlapping and each classification has a different organisation. Such a different organisation of the overlapping classifications demonstrates interesting and profound aspects of cultural differences between languages of different cultures.

2.7. Translation Curriculum Development

Curriculum includes knowledge, skills and values students learn in their schools, universities, etc. It includes what experience should be provided to bring about intended learning outcomes and how teaching and learning in schools and educational systems can be planned, measured and evaluated (Richards, et al. 1985).
There is a need here to differentiate between syllabus design and curriculum development in order to determine their boundaries. ‘Syllabus’ is a specification of the content of a course of instruction and a list of what will be taught and tested (Nunan, 1988). In other words, it includes the taught and practiced skills in the course, functions and topics. ‘Curriculum development’ is more comprehensive than syllabus design. It includes the processes that are used to determine the needs of a group of learners, develop aims and objectives for a programme, determine an appropriate syllabus, course structure, teaching method, and materials and evaluate the programme that result from these processes (ibid). Richards et al. (1985) define curriculum development as:

a) the study and development of the goals, content, implementation, and evaluation of an educational system. In language teaching, curriculum development includes: a. the study of the purposes for which a learner needs a language (needs analysis)  b. the setting of objectives, and the development of a syllabus, teaching methods and materials c. the evaluation of the effects of these procedures on the learner’s language ability (p.37).

This definition is comprehensive as it shows the boundaries of the curriculum and illustrates all the processes of teaching and learning that the curriculum includes, all the way from setting the goals to evaluating the effect of the curriculum on the whole process of teaching and learning.

Nunan (1988) provides a clear distinction between curriculum and syllabus saying that curriculum covers all the activities and arrangements made by the
There is a limited literature on the field of Translation Studies regarding curriculum issues in the Arab world. At international level, there is an increasing number of literature on curriculum development in translation, though it is not sufficient. Published literature that relates curriculum theory to translator education is sparse (Calvo, 2011). Much of the literature on translation pedagogy discusses isolated aspects of translator and interpreter training from the instructor’s personal viewpoint, e.g., use of note-taking skills in consecutive translation, diagnostic, structure of introductory course in simultaneous interpretation, which demonstrates ‘the lack of comprehensive discussion of curriculum issues that are grounded in educational theory’ (Sawyer 2004, p.26).

Many translation programmes in the Arab world follow theory-based curricula while they do not state that. They say something in their objectives about the practice on paper but the reality is something else. Calvo (2011) and (Jonnaret, et al. 2007) find that many translation programmes include practice as a learning goal on paper, but the actual situation of practice is very limited. In theory-based curricula, the programmes function as a ‘menu for learning,’ taking the form of an organised body of subject matters or modules. The theory-based curriculum appears in the form of a list of subjects and separated curricular elements leading to loose picture of the course (ibid). Indeed, it exhibits knowledge fragmentation, lack of integrated approaches and absence of real interdisciplinarity.

Due to the emergence and influence of revolution of technology and social driven market forces, newer curriculum paradigms have been defined, where the focus is on context and practice. Besides, the curriculum development has been given
priority over curriculum design in a sense that curriculum development is a permanent process that needs to be checked and developed, not only an abstract product or programme on the paper (ibid). In such a new curriculum development, translation programme, training courses, teachers and students have a new and efficient role. To be specific, the training courses are integrated and comprehensive, which result in orientated programme rather than prescriptive. Teachers are expected to have sound training in teaching and learning strategies and demonstrate interest in improving their practices (Jonnaret, et al. 2007). The students are at the centre of learning process (i.e. learner-centered teaching). Curriculum practice and implementation aim at significant, transferable and durable learning on the part of the students instead of covering the syllabus or course content, (Calvo, 2011).

Responding to student’s needs entail the recent educational systems to follow a more practice-oriented trend when examining and designing curricula. The focus of such practice-oriented curriculum is on the acquisition of competencies and skills (Jonnaret, et al., 2007). Figure (1) below demonstrates the differences between theory-based and practice-based curricula in terms of objectives, characteristics, contents and product.
Fig. (2) above demonstrates that building competencies, namely declarative knowledge (i.e. knowing what) and procedural knowledge (i.e. knowing how) are at the heart of practice-based curriculum while the theory-based curriculum lays stress on knowledge, memory and theory at the expense of skills, practice and competencies. The recent trend of designing curriculum replaces objective-based curriculum with competence-based curriculum. Competence trend within Translation Studies has tended to be applied as a means to address curricular needs (Morón, 2009 cited in Calvo, 2011).

Choosing curricular objectives entails previous analysis of the needs and conditioning factors of the institution. Biggs (2005, p. 132 cited in Calvo, 2011) argues that there should be "coherence between educational needs, projected learning outcomes, institutional resources and social needs". Within the field of Translation
Studies, only a few authors actually pay attention to curricular contextualization and deliberation before proceeding to the application of competence models. Kelly (2005) emphasises the importance of the reflection upon and analysis of the context in which trainers work prior to addressing curriculum design proposals. Kelly (2005, p.22) cites seven factors that should be considered in contextualization of a translation curriculum:

a) Social needs  
b) Professional standards  
c) Industry’s needs and views  
d) Institutional policy  
e) Institutional constraints  
f) Disciplinary considerations  
g) Student/trainee profiles.

Designing translation curricula according to previous perspective will provide a thorough and profound picture of the curriculum setting. In meeting the aforementioned factors in contextualization process of curriculum, the students’ competencies will be developed and the changing demands of the market could be addressed.

Without appropriate curricular contextualization, we expect reality to adapt to our drafted plan and not the other way around, which might happen in several translation programme all the world around. Reviewing literature and curricula in different countries and contexts shows that there are only few cases in which an appropriate background and context adaptation study are previously carried out (ibid).

The raising questions is: what are the nature of situations and the needs of the curriculum going to be implemented? When developing translation curricula, the
theory should be integrated with practice not combined as separated items. In other words, curriculum objectives should be worded in terms of skills and competence model as integrated scheme not as separate notions; otherwise interesting aspects such as progression and interdisciplinarity are frequently missing (Kelly, 2005).

Sanchez (2007, P.76) sets many questions as guidelines to help and encourage translation trainers and trainees, programme administrators, course designers and examining bodies to reflect on them:

1. What do we actually do when we translate?
2. What do we need in order to be able to translate?
3. How much do we need to learn to be able to translate?
4. What specific objectives and goals must be set in terms of learner needs to go from novice to professional?
5. How should progress be measured on the way from novice to professional?
6. What course books, works of reference (dictionaries, grammars, thesaurus, etc.), computer hardware and software are needed to obtain objectives and goals?
7. How much time can learners afford, are willing to or able to spend in their journey to go from novice to professional?

Examining Sanchez' questions shows that he focuses on translation processes, translation skills, setting objectives in terms of learners’ needs, assessment tools, course books and related references in developing translation curricula and programmes. In case of practically considering such questions, it is expected to develop a successful curriculum that possesses the potentials to address the students' and stakeholders' needs.
2.8. Translation Competence

Translation competence can be defined as the ability to deal with texts, which means the translator's ability to render a ST appropriately into a TT. For Pym (1992, p. 281), translation competence is:

The ability to generate target text series of more than one viable term and the ability to select only one target text from the series quickly and with justified confidence and to propose this target text as a replacement of source text for a specific purpose and reader.

Both of the aforementioned definitions describe the competence as the ability that needs skills. There is a need here to distinguish between bilingual competence, which developed from acquiring or learning two languages and translation competence in which students are trained and taught translation as theory and practice. In the case of the former bilingual competence, the ability of the student to understand and produce a foreign language text does not necessarily enable him or her to translate from a language to another. It can be said that bilingual competence is a prerequisite for translation competence, but it is not the whole thing (Qassem, 2010). Many aspects of translation need special attention such as "knowledge of the TL and the SL linguistic systems, knowledge of their cultural aspects, textual production skill..." as well as awareness of how to manipulate language idiomatically (Deeb, 2005, p. 33). This ides means that bilingualism is not sufficient in the process of translation; there should be specialised training courses in translation.

As for PACTE (2003), translation competence is defined as ‘the underlying system of knowledge and skills needed to be able to translate’, which shows that TPs and TSs are central to translation competence since skills are at the heart of translation.
competence. In PACTE’s model (2003, pp. 208-209), translation competence comprises six sub competencies:

a) Bilingual sub-competence. Predominantly procedural knowledge required to communicate in two languages. It comprises linguistics, pragmatic, sociolinguistic, textual, grammatical and lexical knowledge.

b) Extra-linguistic sub-competence. Predominantly declarative knowledge, both implicit and explicit. It comprises general world knowledge, domain-specific knowledge, bicultural and encyclopaedic knowledge.

c) Knowledge about translation. Predominantly declarative knowledge, both implicit and explicit, about translation and aspects of the profession. It comprises knowledge about how translation functions and knowledge about professional translation practice.

d) Instrumental sub-competence. Predominantly procedural knowledge related to the use of documentation resources and information, and communication technologies applied to translation (dictionaries of all kinds, encyclopaedias, grammars, style books, parallel texts, electronic corpora, search engines, etc.).

e) Strategic sub-competence includes procedural knowledge to guarantee the efficiency of the translation process and solve problems encountered. Strategic sub-competence functions to plan the process and carry out the translation project (selecting the most appropriate method). It is also responsible for evaluating the process and the partial results obtained in relation to the final purpose, activating the different sub-competences, compensating for any shortcomings, identifying translation problems and applying procedures to solve them.
f) Psycho-physiological components. Different types of cognitive and attitudinal components and psycho-motor mechanisms, including cognitive components such as memory, perception, attention and emotion; attitudinal aspects such as intellectual curiosity, perseverance, rigour, the ability to think critically, etc.; abilities such as creativity, logical reasoning, analysis and synthesis, etc.

All these sub-competencies are inter-connected and together constitute what we refer to as translation competence. The most relevant competencies to this study are strategic competence, instrumental competence and cultural competence. The strategic competence includes TSs and TPs since it accounts for manipulating translation process and product. The instrumental competence is related to the topic of research since part of TS come under the use of online tools. As for extra-linguistic competence, it is related to the study in a sense that such competence is devoted to the importance of cultural dimension in translation.

There is a need here to use translation competence to inform curriculum development. Calvo (2011) argues that expert knowledge should be projected onto curriculum objectives which will define the elements of curricular content. Such a trend is based on the strong influence from the profession. It stresses the key practice-based factors, which will guarantee curriculum development or implementation success. This general notion of translation/translator competence is then further divided into a series of specific sub-competences including (1) source language textual competence, (2) target language textual competence, (3) decision-making skills, (4) cultural knowledge and intercultural skills, (5) general and specific computing skills, and (6) general information handling and information skills (ibid). Such sub-competencies respond to the need of translation profession that requires translators to have a good command of integrated translation skills.
2.9. Previous Studies

Generally speaking, empirical-experimental research in translation started in the early 1980s, following TAPs, which was based on Ericsson and Simon (1984), Krings (1986), Gerloff (1986), Lorscher (1991), Kussmaul (1995), etc. Some studies added other techniques of data collection, such as questionnaires, video, interviews, etc. such as Krings (1986), Kiraly (1995), etc.

TAPs have been used in translation process research for varied case studies involving different types of subjects (language students, translation students, bilinguals, professional translators and other language professionals) and different topics such as aspects of problem-solving, decision-making, role of creativity, etc. (Hurtado and Alves, 2009). However, TAPs proved to be problematic in translation process research for many different reasons. The subjects say what they believed to have happened during the translation process and not necessarily what actually occurred. The subjects also knew that they were being observed and performed two tasks simultaneously (translation and verbalisation). Additionally, TAPs do not provide access to unconscious or automatic processes. However, due to the lack of other tools for data collection, TAPs remain the main source of process-oriented information until the 1990s (ibid).

In the mid-1990s, empirical-experimental research had a new phase in which researchers look for systematic accounts of translation processes and translation competence. They aim at replication of experiments in an attempt to provide stronger claims for generalization (Munday, 2008). This second phase placed emphasis on multi-methodological perspectives, namely triangulation, which builds on research carried out in the social sciences and other disciplines (Cohen and Manion 2000). The main instruments used in the mid-1990s were TAPs, interviews, questionnaires, etc.
Due to the spread of computers in the late 1990s, researchers tended to use software programmes in conducting their studies in translation. The breakthrough came from Copenhagen Business School Denmark, where Jakobsen (1999) designed a novel technological tool in process-oriented translation research, called Translog. It was a radical change in translation research in a sense that it ensures replicability, objectivity and validity. Translog consists of two components: supervisor and a user component. The two components complement each other and allow for creating experimental designs, replaying logged information, providing recording retrospective protocols and generating 'xml' or 'csv' files, which can be used for statistical analysis of logged data (Munday, 2008).

The use of eye-tracking is the latest trend in translation research. It is a data elicitation tool capable of tapping into reading processes (O’Brien 2006). To be specific, it has the capacity of recording the eye movements during reading process. By means of such software, it is possible to analyse the recordings of gaze patterns provided by eye trackers and synchronize eye tracking data with keystroke data, which will be accessible in xml or cvs formats for subsequent statistical analysis in the new version of Translog (Munday, 2008). The new version of Translog, called Premium Edition, will fully integrate eye-tracking information with the logging of text production. Note that eye-tracker is so expensive and entails high training in its use and so it is not widely used by researchers.

Other research strands in process-oriented translation research were based on modern techniques used to investigate brain activation. Such strands use modern techniques in neuroscience in investigating process-oriented translation research such as functional magnetic resonance imaging (FMRI) such as (Buchweitz, 2005) and electroencephalography (EEG) such as (Kurz, 1993).
Regarding the studies related to the research area of the thesis, many empirical studies investigate translation process and product, but independently and most of them were conducted at international level.

Gopferich (2015) investigated the translation competence of professional and student translator. She found that professional translators outperform student translators in strategic competence, though both have problems in comprehension and production problems. She also detected that evaluation competence in both groups did not seem to have developed to a satisfactory degree, which can be seen from the relatively large number of decisions, which led to unacceptable solutions. She found that strategic sub-competencies develop gradually from simple to complex sub-competencies as in the case of receptive and production competence.

Qassem and Vijayasarathi (2015) investigated the problematicity of translating cultural idiomatic expressions from English into Arabic, using a translation task (authentic texts of cultural idiomatic expression) and a questionnaire. They found the students' excessive use of dictionaries to translate the culture idiomatic expressions from English into Arabic, though their translations were not acceptable. They ascribed such unacceptable translations to the students' inability of using resources available to them in translation process and their lack of training in the use of translation strategies and techniques.

Yanmei and Mingemei (2014) investigated the differences of strategy pattern in Chines-English translation with different expertise: novice, advanced student translator and professional translator. Through using TAPs, Translog data and interview, they found that the translators’ immediate reaction to the problem is divided into three patterns: intuitional scheme (i.e. guess), analytical scheme (i.e. context and searching memory) and instrumental scheme (i.e. dictionaries). Besides,
they found that professional translators relied on analytical scheme such as context, using memory, editing, etc. while student translator tended to rely on external strategies such as dictionaries and guessing to solve translation problems.

Qassem (2014) empirically investigated the Arab students' hindrances in translating political culture from English into Arabic, using a translation task and questionnaire. He found that the students encountered a considerable difficulty in the process of comprehension and rendition of political terms and expressions into Arabic. He ascribed such comprehension and production problems to the students' insufficient knowledge of English political culture and their lack of analytical and production skills.

Olk (2013) explored the cultural reference TPs from a quantitative perspective, aiming to provide a framework of quantitative analysis for cultural reference TPs. He empirically classified TPs used in translating cultural references into 'transference', 'transference + explicitation', 'transference + explanation', 'neutral explanation', 'omission' and 'cultural substitution'. He found that the student translators relied heavily on 'transference' (i.e. literal translation). He ascribed the students' dependence on literal translation to their focus on retaining the SL meaning at the expense of considering the readership knowledge of the SL culture, which reflects the students' insufficient knowledge and skills in using TPs.

Carl et al. (2011) studied the translation processes used by professional translators and student translators, using Translog and eye tracking. They found that such translation processes were classified into 1. initial orientation (i.e. reading through the text before translating, skim the ST rapidly before translation, read the first couple of words or sentences and then presses the first key and or head start (i.e. start translating right away), translation drafting (i.e. actual translation) and post-
Besides, they found that professional and student translators exhibited different translation behavior: professional translators tended to be characterized by head starting and end revision (i.e. post-editing) while student translators frequently perform systematic initial orientation (i.e. skimming) and online revision (students revise the text during the drafting phase).

Carl and Buch-Kromann (2010) explored the translation process treated by professional translators and student translators using, ‘Translog’ and ‘eye tracking’. They found that student translators spent more time on skimming than professional translators while professional translators used more time for post-editing than students. Besides, student translators could produce accurate translations as professional ones but they need more time, which means that professional translators produce texts more fluently and quickly than students.

As for Bahumaid (2010), he investigated the level of postgraduate students’ competence in translating culture-specific expressions from English into Arabic. He found low level of the students’ performance in translating cultural expressions. He ascribed such low level to informants’ inadequate knowledge of English culture, inappropriate use of dictionaries and inability to use TPs. He classified the students’ errors into over translation, omission, non-sense and errors of incorrect meaning.

Angelone (2010) studied the phases of translation process employed by translators. He found three steps that a translator took as he or she solved problems throughout the text: problem recognition, solution proposal and solution evaluation. In problem recognition, the translator identified the areas of difficulty in the text, which exhibited keyboarding pauses and mouse repositioning. Following problem recognition is the solution proposal step, which consists of strategy planning and/or application. The translation solution in Angelone's phases of translation is manifested
in reading potential options, typing multiple solutions, or verbalising potential options. The final step is solution evaluation in which the translator assesses the generated text.

Qassem (2010) investigated the cultural translation problems encountered by third-year students of English (English-Arabic). The findings of the study revealed that the students had severe cultural problems in translating culture from English into Arabic. These problems were classified into the cultural references, which were classified further into social culture, political culture, religious culture and material culture and idiomatic expressions, which were classified further into culture-specific idioms and proverbs. These problems were manifested into several types of errors: omission, deviation, modification, selection, avoidance and addition. He found that the students committed errors because of the students' lack of knowledge of English and its culture and their lack of knowledge of translation strategies.

Carl and Jakobsen (2009) conducted a study on translations of English texts into Danish, using eye-tracking and Translog. They studied reading and typing behaviour in a translation context, using Translog to register three translation sessions and present a comparative study of the three translations for the same English source text into Danish. The goal was to detect typical patterns of fluent and disfluent reading and writing and to link these patterns to properties of the ST and the produced TT. Two types of user activity data were studied, namely eye movements and keylogging, which illustrated the phenomena of text perception (eye) and text generation (keystroke) during the translation process. They found that keyboard activities could be instrumental in classifying reading and translation behavior and can determine what constitutes fluent reading and translation and when reading difficulties occur. Based on the study findings, they concluded the following:
a) Understanding user activity data (i.e. eye movements and keylogging) will assist in understanding how human and machine translation processes are mapped and integrated.

b) A better and more formalised way of understanding the underlying human processes, new technologies and novel ways of using existing technology could emerge that tighten the integration of speech recognition and automated translation aids into the translation workflow.

Rababah (2008) investigated communication strategies used by students of translation in translating texts from Arabic into English. He found that the most frequently used TPs were approximation (i.e. use of synonym to replace the target language item which results in overextension), circumlocution (i.e. restructuring the message, which results in a weak version of the original message), reduction and literal translation without consideration to the syntactic and semantic differences between the SL and TL. He ascribed such problems to the subjects’ limited vocabulary and lack of exposure to the TL use in communication on the one hand and the students’ lack of knowledge of translating strategies and techniques on the other. He recommended that translation programmes should help students to develop their competencies particularly strategic competence.

Sharmin et al. (2008) investigated the distribution of students' attention when translating from SL to TL. He found that novice students struggled with ST comprehension since all the students' attention is absorbed by reading and understanding the ST, which delays the TT production. He concluded that extensive reading behaviour signals more serious translation problems.
Sanchez (2007) conducted a comprehensive study on proficiency guidelines to determine the levels of communicative translation competence in translation training. The result was a five level scale: novice, apprentice, competent, proficient and expert translator. Such a five level scale was classified according to four competencies: translational communicative competence, transfer competence, strategic competence and cultural competence. He recommended that such competencies should be reflected in curriculum of translation programmes, namely objectives, contents of translation courses and methods of teaching.

O'Brian (2006) analysed pauses in post-editing in machine translation, using choice network analysis method and Translog. She found that long pauses were indication of cognitive effort in translation. She also found that there was no correlation between the occurrence of pauses and product quality.

Buchweitz and Alves (2006) studied the process of translation of two groups of participants with different academic and professional experience, aiming to measure the cognitive adaptation in translation of such two groups, using Translog data. Results revealed that translation from the first language into the second language was more time-consuming and broke down the process into more text segments for both groups.

Atari (2005) investigated Saudi students’ strategies in translating from English into Arabic. TAP was the sole technique for soliciting the data. It was found that the strategies of ST and TT monitoring at the word or sentence level were employed most frequently (i.e. language-based strategies) while text contextualization, inference and reasoning were the least frequently used (i.e. knowledge-based strategies). Hence, he recommended to train student translator to use TS practically rather than theoretically.
Mailhac (1996) explored the question of procedures for the translation of cultural references in an attempt to improve the formulation of cultural reference TPs. He classified TPs into two levels: those which apply to the text as a whole, and those which are used for individual cultural references. The textual procedures were categorised into cultural transplantation and exoticism with minimum or maximum presence of the translator while procedures for translating individual cultural references were categorised into exoticism, cultural borrowing, calque, communicative translation and cultural transplantation. He suggested that such TPs should be used according to 16 parameters, among them: purpose of the text, selected text procedures, cultural reference role, cultural transparency, contextual information, pragmatic coherence, the TL readership's knowledge of the source culture, etc.

Lorscher (1991) investigated the TSs used by student translators to solve problems during translation process. Oral translation task and TAP were the tools of the study. He found that students’ translation problems were classified into realising translation problem, verbalizing a translation problem, search for a (possible preliminary) solution to a translation problem and a solution to a translational problem.

Krings (1986) conducted a study on TSs used by foreign language students in translation process, using TAPs, translation task and questionnaire. The main focus of the study is the identification of translation problems and TSs on the basis of TAPs. He found that the strategies employed by students were classified into strategies of comprehension (inferencing and use of reference works), equivalent retrieval (especially interlingual and intralingual associations), equivalent monitoring (such as comparing ST and TT), decision-making and reduction. He was criticised for his use of small sample (i.e. 8 students).
2.10. Relationship of the Study with Previous Studies

The study is of novel trend in its accounts for translation process and product. To the best of the researchers’ knowledge, no single study at local or international level accounts for the analysis of translation process and product in translating culture-based texts. The study draws on the latest area of research in the field of process-oriented translation research, following a computational model of human translation, namely Translog to investigate TSs. However, there are areas of investigations in the study that relate to the studies at international and local levels. Gopferich (2015), Yanmei and Mingemei (2014) Angelone (2010), Carl et al. (2011) and Carl and Buch-Kromann (2010) and Sanchez (2007) O’Brien (2006) account for the translation process, using technological tools namely Translog, eye tracking. The main concern of the aforementioned studies is to reveal how the students translate.

In the same vein, but using traditional tools, namely questionnaire and translation task, the study relates partially to Krings (1986), Lorscher (1991) and Atari (2005) in investigating the mental strategies employed by translators in the process of translation, though the study do not use the same instrument used by such studies (i.e. TAP).

As for product oriented translation, the study relates to Olk (2015) and Rababah (2008) in empirically investigating the cultural translation procedures (i.e. linguistics shifts) employed by the students when rendering the ST into TT.

Regarding the account of cultural dimension, the study is relevant to Qassem (2014), Qassem and Vijayasarathi (2015), Bahumaid (2010), Qassem (2010) and Mailhac (1996) in investigating the cultural dimension and demonstrating the areas of its problematicity. The study is different from such studies above in its integrated
investigation of translation process and product when translating culture-based texts from English into Arabic.

2.11. Conclusion

Having discussed TSs, TPs, different models of translation process and product and relevant studies to the area of this research, the scope of the study became evident and the relationship between TSs and TPs was theoretically established. As for the TSs, they deal with the mental activities that occupy the translator’ mind during translation process while the TPs account for the linguistic changes in the final version of the TT during translation product. TSs and TPs are the target of the study due to their major role in training student translators to deal with translation process and product. Studying the translation process and product together presents a clear picture of what skills (i.e. knowing how) and knowledge (i.e. knowing what) the translator needs in the process and production of a ST into a TT. Finding what hinders students in different stages of translation assists in providing remedies and satisfactory solutions.