



## THE INCORPORATION OF SUBJECT KNOWLEDGE IN TEACHING SCIENTIFIC TRANSLATION



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### ABSTRACT

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Scientific translation accounts for a big proportion of translation work currently commissioned by the industry. On the one hand, translation commissioners tend to rank specialized knowledge in a given subject area as more important than translation skills. On the other hand, the literature suggests that translator trainers rate subject knowledge as highly as linguistic skills. However, both the deductive and inductive approaches to teaching subject matter fail to prepare students for real-life translation work. Enlightened by the theory of social constructivism which sees learning as a social collaborative process, this paper discusses the importance of subject knowledge in translating science and technology and explores feasible ways to foster translation students' acquisition of subject knowledge in their learning of scientific translation. It is hoped that the study in this paper could shed some lights on further improvement of pedagogical practices in scientific translator education. □

**Contribution/ Originality:** This study contributes in the existing literature on translator training in the field of scientific translation. Enlightened by social constructivism, this study is one of very few studies which have investigated ways to incorporate subject knowledge in a student-centered class of scientific translation.

### 1. INTRODUCTION

China has a huge language services market. The *2016 Report on China's Language Services Industry* published by Translators Association of China reports that China's translation output to be about 282.2 billion Yuan in 2015. Business and technical translation accounts for the biggest proportion of translation work currently being commissioned by the industry (Kingscott, 1995; Venuti, 1995). To meet the growing demand for talents of scientific translation, nearly all universities that offer translation degree programs in China incorporate course units on scientific and technical translation, although not all students have the basic subject knowledge required for this genre of specialized translation. In contrast, translation commissioners tend to rank specialized knowledge in a given subject area as more important than translation skills. This scenario raises important challenges for teachers, as "it is practically impossible to offer training in a specialized field and in translation at the same time and within the time confines of a standard degree" (Kelly, 2005).

To help students produce high-quality translations of scientific texts, teachers need to find effective ways to incorporate targeted subject knowledge into their teaching of scientific translation. Some programs have tried to address this problem by delivering specialized translation course units in collaboration with the departments teaching the disciplines in question. Unfortunately, such opportunities may not always be available in every institution, or may not cover all the disciplines associated with the different areas of specialization represented in the translation curriculum (Sharkas, 2013). This paper explores feasible ways to foster translation students' subject knowledge in their learning of scientific translation from the perspective of social constructivism and hopes to shed some lights on further improvement of pedagogical practices in scientific translator education.

## 2. IMPORTANCE OF SUBJECT KNOWLEDGE IN TRANSLATING SCIENCE AND TECHNOLOGY

Knowledge is a familiarity, awareness, or understanding of someone or something, such as facts, information, descriptions, or skills, which is acquired through experience or education by perceiving, discovering, or learning. Subject knowledge is people's knowledge on a specific professional field, which is also termed as background knowledge, expertise (Reuber, 1997) extra-linguistic knowledge (Gile, 2009) non-linguistic knowledge or domain-specific knowledge (Alexander, 1992) in literature. In translation studies, this type of knowledge is included in translation competence models as the aim of translation programs is to develop and/or improve students' translation competence through more effective and efficient teaching and learning (Lee-Jahnke and Hannelore, 2011).

Subject knowledge is an indispensable factor of translation competence. The most popular translation competence model, PACTE model of translation competence, distinguishes between five different sub-competences (Beeby *et al.*, 2005) namely bilingual sub-competence, extra-linguistic sub-competence, translation knowledge sub-competence, instrumental sub-competence and strategic sub-competence. Extra-linguistic sub-competence in PACTE model pertains to the translator's encyclopedic, thematic and bicultural knowledge. As an interpersonal activity working on texts, the training of translators is believed to involve the creation of the following two-fold functional competence: The ability to generate a series of more than one viable target text for a pertinent source text; and the ability to select only one viable TT from this series, quickly and with justified confidence (Pym, 1991). Pym sees translation as a process of generation and selection, a problem-solving process that often occurs with apparent automatism on the basis of the translator's knowledge on grammar, rhetoric, terminology, computer skills, Internet savvy, world knowledge, teamwork cooperation, strategies.

Correct and readable translations come as the result of accurate comprehension of source texts. Without specific subject knowledge, it is impossible for the translator to figure out the exact meaning of scientific texts. The literature suggests that translator trainers rate subject knowledge as highly as linguistic skills: The translation of technical texts requires considerable specific knowledge, i.e. not only knowledge about linguistic rules and structures but also knowledge about the topic of the text to be translated. Knowledge of just one of these two aspects does not suffice to produce a correct translation (Galinski and Budin 1993:209, quoted in Kastberg (2002)).

## 3. ENLIGHTENMENT FROM SOCIAL CONSTRUCTIVISM □

Translator training across the world is organized around a 3-p model consisting of three steps, namely presentation, practice and production (Tomlinson, 1998). The teacher first *presents* to the students the translation techniques to be discussed with translation examples. Then the students *practice* the related translation skills by doing some translation exercises. Finally, the teacher concludes the session by giving out home assignments and asking the students to *produce* a translation as part of the continuous assessment for the course. Unfortunately, the 3-P model of translation teaching fails to develop robust translation competences among students. In China, teachers and researchers in recent years have been reflecting on the problems of the traditional teacher-centered,

transmissionist way of translation teaching and struggling to find innovative theories to guide translator education, which leads to the popularity of social constructivism in translation teaching in China.

As a philosophy of learning, constructivism sees learning as an active process instead of passive acceptance of knowledge. People construct understanding and knowledge of the world by living through and experiencing things and reflecting on such experiences. Social constructivists, moving a step further, view learning as a social collaborative process. Learning does not take place only within an individual. Learners, as unique individuals with idiosyncratic needs and backgrounds, construct knowledge through interactions with their peers, the teacher as well as the tasks. It is in the real context reflective of the real world that learners discover concepts, principles, and facts for themselves and it is because of such a focus on learning that learners are motivated and ready to take responsibility for their own learning (Lantolf, 2000).

Scientific translation does cover a diffuse range of topics. Insofar it is impossible for teachers to cover background knowledge on all these topics. One feasible way to solve this problem is to encourage students to acquire related subject knowledge on their own through documentary research, which would help students develop their translation competence as well. In light of social constructivism, group documentary research assignment after class can improve not only students' extra-linguistic sub-competence but also their instrumental sub-competence and strategic sub-competence.

#### 4. WAYS OF INCORPORATING SUBJECT KNOWLEDGE IN TEACHING OF SCIENTIFIC TRANSLATION

Considering the importance of related subject knowledge in the translation of scientific and technological texts, in light of the social constructivism theory, the author of this paper practices the following method in her teaching of scientific translation. The general procedure of teaching and learning of scientific translation is as follows.

First, at the end of each class, inform students of the subject of the next translation task and ask them to do a documentary research after class on the related subject to acquire some fundamental knowledge on it. The related subject knowledge expected to be mastered by students is divided into several aspects in an outline of research provided by the teacher. The 20-student class is divided into 5 groups of 4 students and each group is responsible for a certain aspect of subject knowledge. The division of research work can help students to make in-depth research in limited time and cultivate their teamwork spirit. Each group is required to make an oral presentation of the research findings with PPT written in both English and Chinese.

Second, before translating the material on a certain subject in class, each group presents its research findings in Chinese orally and answers other students' questions. If group members can't answer a certain question, all students in the class are allowed to search online for the answer. A brief comment will be made by the teacher for each group's presentation.□

Third, the students begin to translate the material in class.

Fourth, each group presents its translation and explains why the translation is like this. The teacher highlights the words, sentences and other important details that deserve special attention in translation and students of each group exchange their ideas on the translation. After a consensus is reached on the translation of the material, the teacher gives a comment on students' translation and note the students' related translation methods or skills applicable to the translation material at the end of the class.□

At last, to encourage reflections among students, each student is required to submit a 500-word written report on the translation task using the following questions as a guide:

- (1) What were the primary aims and purposes of your documentary research?
- (2) What method or source of information did you use in your documentary research?
- (3) What difficulties did you encounter in the documentary research and translation process? How did you overcome them?

- (4) What were the major findings of your documentary research?
- (5) How did the findings of your documentary research contribute to your understanding of the translation material and accuracy of translation?
- (6) What method or skill of translation did you learn from this task?

Something needs to be noted in using the above method. On the one hand, the teacher needs to control the time for group presentation of research findings, the in-class translation of the material, the in-class discussion on the translation of certain details and the teacher's comment on group performance. On the other hand, the teacher needs to motivate students effectively to do sufficient research on related subject knowledge and participate in in-class discussion actively. Social constructivism praises a student-centered class for a better learning, but the teacher is meanwhile expected to play a supporting and facilitating role in the process of learning. The teacher's capability of motivating students and facilitating their learning is important for the effects of this method of incorporating subject knowledge in teaching scientific translation.

With time passing by, by using the above method, students' progress in making effective documentary research in limited time, in cooperating and coordinating with others, in applying translation skills and methods to their translation activity and most importantly in the accuracy of their translation could be observed clearly. □

## 5. CONCLUSION

The ideal non-literary translator is often defined as a sort of a combination of the subject matter expert and the trained translator. However, it is impossible in reality to make such a unity of translation and subject matter knowledge and competencies come into existence in one person through a time-constrained training course. Kastberg (2009) summarized two prototypical approaches to teaching subject matter: one deductive, the other inductive. In training courses that adopt the deductive approach, students receive lectures on the domain-specific basics of technical and natural sciences from which they are expected to derive the knowledge needed to understand and subsequently translate any given text within the technical domain. The inductive approach exposes students to a catalogue of technical disciplines at the expense of a holistic perspective of the deductive approach. These two approaches, as Kastberg argued, may fail to prepare students for real life translation work as the subject knowledge incorporated in translation teaching could be too professional and lack future practical value.

Social constructivism advocates that knowledge cannot be taught but must be constructed by the learner, which gives scientific and technical translation teaching two important insights into the teaching of subject matter knowledge. The first is that no matter what subject matter is taught and no matter how skilful and pedagogically it is presented, the students may not learn what they are intended to learn. The second insight is that knowledge cannot be seen as something detached from the knower. Therefore, the focus of attention in incorporating subject knowledge in scientific translation teaching should be shifted from the "body of knowledge" to the "the program of activities from which such knowledge or skills can possibly be acquired".

The method discussed in this paper highlights the importance of self-learning, cooperative study, and problem-solving capability. By encouraging students to do relevant documentary research on the subject matter, to present and discuss their research findings in class and to write reflective journals when the translation task is completed, this method of introducing subject knowledge into scientific translation teaching helps improve students' capability of acquiring needed subject knowledge for translating scientific and technical texts, and enhance their multi-faceted translation competence. □

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## REFERENCES

- Alexander, P.A., 1992. Domain knowledge: Evolving themes and emerging concerns. *Educational Psychologist*, 27(1): 33-51.  
[View at Google Scholar](#) | [View at Publisher](#)
- Beeby, A., R.M. Fernández, O. Fox, I. Kozlova, W. Neunzig, M. Presas, P. Rodríguez-Inés and L. Romero Ramos, 2005. Investigating translation competence: Conceptual and methodological issues. *Meta: Journal of Translators*, 50(2): 609-619. [View at Google Scholar](#) | [View at Publisher](#)
- Gile, D., 2009. Basic concepts and models for interpreter and translator training. Amsterdam/Philadelphia: John Benjamins.
- Kastberg, P., 2002. Information and documentation management in the training of technical translators as opposed to teaching technical science. *LSP and Professional Communication (2001-2008)*, 2(1): 57-65. [View at Google Scholar](#)
- Kastberg, P., 2009. Personal knowledge management in the training of non-literary translators. *Journal of Specialized Translation*, 11: 88-102. [View at Google Scholar](#)
- Kelly, D., 2005. A handbook for translator trainers. Manchester: St Jerome.
- Kingscott, G., 1995. The impact of technology and the implications for teaching. In: C. Dollerup and V. Appel (Eds.), *Teaching translation and interpreting 3*. Amsterdam: New Horizons, John Benjamins. pp: 295-300.
- Lantolf, J.P., 2000. Sociocultural theory and second language learning. Oxford: Oxford University Press.
- Lee-Jahnke and T. Hannelore, 2011. rendsetters and milestones in interdisciplinary process-oriented translation: Cognition, emotion, motivation. In Martin Forstner and Hanna Lee-Jahnke (Eds), *CIUTI-Forum 2010. Global governance and intercultural dialogue: Translation and interpreting in a new geopolitical setting*. Bern, Oxford and Wien: Peter Lang. pp: 109-52.
- Pym, A.A., 1991. Definition of translational competence, applied to the teaching of translation. In Mladen Jovanovic (Ed.), *Translation: A creative profession: 12th World Congress of FIT. Proceedings*, Belgrade: Prevodilac. pp: 541-546.
- Reuber, R., 1997. Management experience and management expertise. *Decision Support Systems*, 21(2): 51-60. [View at Google Scholar](#) | [View at Publisher](#)
- Sharkas, H., 2013. The effectiveness of targeted subject knowledge in the teaching of scientific translation. *Interpreter and Translator Trainer*, 7(1): 51-70. [View at Google Scholar](#) | [View at Publisher](#)
- Tomlinson, B., 1998. *Materials development in language teaching*. Cambridge: Cambridge University Press.
- Venuti, L., 1995. *The translator's invisibility: A history of translation*. London and New York: Routledge.

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