Application of Multimodal Information Corpus Techniques in Legal English Teaching

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Multimodal information has gradually become increasingly involved in legal English teaching in China, as different media are increasingly used in the classroom. Multimodal information is so complex that it cannot be fully utilized by teachers. The use of the Multimodal Information Corpus (MIC) offers a feasible solution to the problem. This paper presents the design of applying MIC techniques to the teaching of legal English, including the principles, procedures and methods. This study focuses on processing of multimodal information which involves the collection, selection, compilation, integration and presentation of comprehensive information in the classroom context. The study shows that it is possible and, in fact, practical for teachers to manage multimodal information and measure students' ability reflected in the way they process such information in their legal English learning.

Keywords: multimodal information corpus techniques, legal English teaching, information processing, class modules, assessment

1 Introduction

Multimodal information refers to the information transmitted through various media and perceived by human beings through their sensory organs. The processing of this information includes the creation,

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transmission, transformation, presentation, reception and other uses of this information.

With the rapid development of technology, legal English teaching increasingly involves multimodal information processing, due to the use of videos, pictures, music, sound, scratches, films, slides and so forth. The forms of information created or transmitted by such means are various. In the legal English class, multimodal information either appears in teaching materials, in class activities, or in the assessment of learning. With the increasing awareness of teachers and students, some forms of information become significantly relevant whose functions, without an in-depth and systematic study, cannot be fully exploited.

To meet the need of processing multimodal information, the Multimodal Information Corpus (MIC), an integral part of the Corpus for the Legal Information Processing System (CLIPS) that is under construction with some basic functions having been realized, was created. The CLIPS was built with the mechanism underlying the Tree Model of Discourse Information (Du, 2007). This corpus can facilitate the processing of discourse based on the information analyzed and annotated. The CLIPS, with the MIC as a constitutive part, can also facilitate the processing of multimodal nonverbal information that has been discoursalized.

This paper focuses on the application of the MIC techniques to legal English teaching in the classroom environment. It introduces and explains some relevant critical concepts, presents the techniques that can be used, discusses the procedures, methods and skills for information processing, and analyzes the principles and problems in teaching legal English. It also discusses assessment of students' ability concerning multimodal information processing.

2 Relevant literatures

In the field of English for Specific Purposes (ESP), legal English is in a sense one of the most demanding, in that the teaching is costly, painstaking, complex, resource demanding and the learning is time consuming and intellectually challenging. In the context of second or foreign language teaching, the load is even more overwhelming. This is not only felt by teachers of legal English but also expressed by

researchers (see Budikova and Steflova, 2001; Deller and Price, 2007; Du, 2006; Liatukaitė, 2005; Weber, 1999).

When different languages and more cultures, especially legal cultures, are involved, teachers and students have to manage less familiar content and skills. They must base their practice on the language features, traditions, cultural particularities, legal principles and perplexing legal contexts that are pertinent. They have to fully master how legal English should function, in addition to the basic features of legal English recognized by researchers, such as Bhatia (1983), Krois-Lindner and Day (2006), Wydick (2005), Tiersma (2006) and Charrow and Charrow (1979). Educators make efforts to ensure that teaching can be effective, by employing, for example, teaching approaches and models like task-based, case-oriented, problem-oriented, video-based, and internet-based teaching and learning (see for example Heiner et al., 2004).

Legal English teaching and learning become even more complex when multimedia facilities are employed. This has been drawing increasing attention of teachers and researchers in the area of legal English teaching in China. The hits for relevant articles in the search of the China Integrated Knowledge Resources Database rise from 5 in the year 2005 to 18 in 2011. Some models of legal English teaching, which in particular deal with information processing involving multimodality (see e.g., Yuan, 2010) have been proposed. This reflects the increasing use of multimedia by legal English teachers.

Multimodal information processing refers to the processing of information involving more than one mode of communication, i.e., information picked up by human perception through different sensory channels. Studies under the umbrella term ‘multimodality’ are copious which cover various topical areas like music and sound (van Leeuwen, 1999), architecture (O’Toole, 1994; Pang, 2004: Stenglin, 2004), video texts (Baldry and Thibault, 2006; Iedema, 2001; Lemke, 2002); gesture (Thompson and Massaro, 1986; Martinec, 2000), digital media (O’Halloran, 2008) and corpus linguistics (Blache et al., 2009; Kipp et al., 2009).

Scollon and Levine (2004) note that “[A]ll discourse is multimodal. That is, language in use, whether this is in the form of spoken language or text, is always and inevitably constructed across multiple modes of

communication….” This point of view explicitly describes the relation between multimodality and discourse and implicitly emphasizes discourse information in communication.

Multimodal discourse analysis (O’Halloran, 2008; Page, 2009; Bednarek and Martin, 2010; Golumbia, 2011; Kress and van Leeuwen, 2001; LeVine and Scollon, 2004) is concerned with the combination of multimodality and discourse that involves linguistic and non-linguistic considerations, and disciplines like systemic functional linguistics (Halliday, 1994) and social semiotics (van Leeuwen, 2005) are incorporated. In the broad interdisciplinary context, especially with the interactive use of multimedia, multimodal discourse analysis faces all the more complex task of information processing.

Corpus studies concerning multimodality, such as Blache et al.’s (2009), reflect researchers and educators’ awareness of the new technological elements that should be built into corpus techniques. Among the many facets of multimodal corpus design, those dealing with graphics are in a sense typical in that they focus on basic techniques concerning visual message.

Bateman and Henschel (2002), Bernhardt (1985) and Thomas et al. (2010) all examine and discuss treatment of graphics. Bateman and Henschel (2002) focuses on XML realization of representing graphics and texts in corpus design. Bernhardt (1985) focuses on the interface between text and graphics. Thomas et al. (2010) propose a framework for annotating and presenting discourse that is signaled by graphics. Such studies all benefit multimodal discourse information processing.

Knight (2011) and Carter and Adolphs (2008) both study multimodal corpora by working on gestures. Carter and Adolphs (2008) investigate approaches that can help researchers “to review and analyse video, audio and textual records of naturally occurring communication” (*ibid*: 288). They suggest that:

> Communication processes are multi-modal in nature and there is now a distinct need for the development of corpora that enable the user to carry out analyses of both the speech and gestures of the participants in a conversation, and of how the verbal and non-verbal complement one another. (*ibid*: 275)

What the authors deal with are gestures in oral communication, with a corpus built and a set of tools developed. They not only focus on tagging of gestures, but also representation of the tagged data, which makes their research easily acceptable for application.

Studies on multimodal corpus techniques for language teaching, however, are relatively new (see Harris and Moreno Jaén, 2010), while those for legal English teaching in particular are rare since legal English teaching is a more specialized area.

3 Basic techniques of the multimodal information corpus

3.1 Categories of information

In the MIC, information is classified according to the physical forms, implicit functions and modes of perception. For example, videos, pictures, music and sound are discriminated according to their physical forms and the media they rely on; text, speech, dialog and signs are determined according to what functions they mainly have; whereas audio information, visual information, tactile information etc. are ascertained according to what sensory organs are mainly involved.

3.2 Multimodal information processing mechanisms

The processing mechanism of the MIC mainly deals with discourse information. That is, when discourse is processed, it is usually analyzed through the information, for instance, the macro information structure of the discourse, the micro structure of the information unit and the parameters that go along with the information (Du, 2007). While dealing with multimodal information, each information unit is considered a part of the discourse wherein it rests or the discourse the information unit is related to.

Take video information as an example. Two kinds of discourse are related, one being the truthful and parallel textual transcript of the video, the other the textual description of the video. Usually the latter is more useful if the description is duly detailed. In tagging, the discourse information structure is marked and the clip of the video corresponding to each information unit is annotated with the tags marking where the clip starts and ends. Thus there is the exact correspondence between the video and the discourse. Such data is stored in the corpus for later retrieval.

3.3 Retrieval of multimodal information

Multimodal information stored in the MIC can be retrieved through the parallel discourse attached to it. When a discourse is located, the searching engine will, as one of the steps, check whether a video clip is attached to it and thus facilitating the possible retrieval of the video clip as well. In retrieving a video clip, the parameters in the information unit of the discourse is obtained for determining the length of the clip. The message concerning the discourse information and the corresponding video clip is processed and activated for instant display.

The result of information retrieval is displayed in different forms, such as statistics, figures, information trees, aggregate datasheets, diagrams, texts, pictures, sounds and videos as a relevant medium is required and accessed. Parallel presentations of the multimodal information can be done when necessary.

4 Essential features of legal English teaching based on Multimodal Information Processing

4.1 Categories of information needed

Legal English teaching involves utilization of various media and modes of information. As the design of the class may require, legal English is learned through different presentations of information, including language features, knowledge of law, background materials, and especially relevant legal cases. Such information may have different forms. How the information is integrated into serial presentations needs the clear categorization and arrangement of the content.

4.2 Teaching process based on multimodal information processing

4.2.1 Teaching models based on discourse information

However, presentation of information should usually conform to the underlying principles of teaching. For case-based legal English teaching, for example, legal cases should form coherent scenarios exhibiting the underlying knowledge network that embodies the teaching aim (Du, 2006). Underlying the teaching activities is the discourse-centered axiom. Only with optimal discourse processing can activities be sufficiently fruitful.

4.2.2 Discourse Information Processing influenced by teaching models
Teaching models and principles have an impact on both teaching and learning activities. If, for instance, the teaching is case-oriented and an interactive teaching model is dominant, clips of video or films may be used. The information is mainly audio and visual and students will be required to process such information and manifest their understanding or operational ability. When multimodal information is involved, both the students and the teacher are required to decipher whatever is conveyed, either for presenting the idea or making pertinent responses.

With the change of the teaching model, modes of information may alternatively become dominant. Thus the presentations and responses should be attuned thereto. The teacher is responsible for leading the class towards the optimal processing of information and for evaluating dynamically students' reaction.

Whatever the teaching models employed, some modules of teaching are basic, for example, preparation either before or in class, delivering the lecture, assessing the achievements, and organizing class activities, as is shown in Table 1.

Table 1 Class Modules

Preparation	***Lecture***	***Assessment***	***Activity***
Identifying	Presentation	Production	Presentation
Collecting	Monitoring	Processing	Q and A
Classifying	Guiding	Reponses	Discussion
Compiling	Adapting	Scoring	Concluding
…	…	…	…

The preparation module comprises identifying teaching objectives, content coverage and all other factors that will have an impact on teaching. Is also includes collecting, classifying and compiling relevant materials, such as court decisions, casebooks, law reports, court observation reports, and so forth. Lecture is mostly teacher-centered, with the teacher's presenting, monitoring the progress and guiding the students which necessitate adaptation to the instantaneous requirement. Assessment covers the production, processing information, responses and necessary scoring of the achievements. Students will also evaluate

the teacher's performance in class. Activity is more inclusive, but it mainly refers to the interaction between students and between students and the teacher. This includes presentation of opinions, questions and answers, discussions in whatever form, and conclusions that are possibly drawn.

Such modules are not clear-cut. They may, with the progress of class communication, get interlaced, and the serial orders may be various. For instance, when lecturing, the teacher may need a brief discussion on a concept. He would also have to evaluate students' responses before he moves on with his lecture.

When multimedia are involved in class and the teaching is significantly interactive, the modules may be more complicated. Each module will involve interactions between the teacher and the students, and different modes of information will have to be processed by participants, as shown in Figure 1.

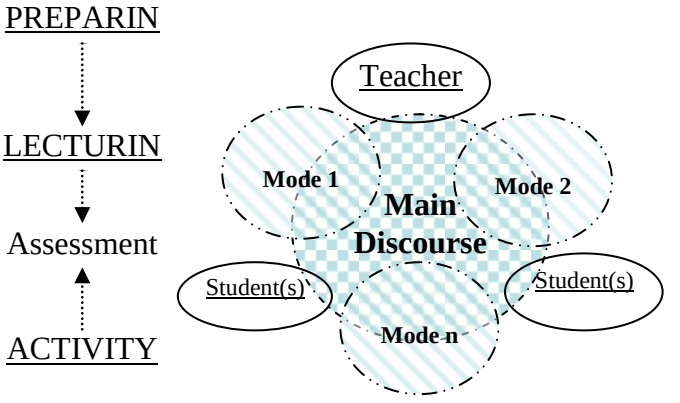

Figure 1 Information Management in Class

Main discourse refers to what the teacher uses as the principal material, such as the text. The teaching is supposed to be based on the main discourse around which other modes of information center. Participants tend to implicitly or expressly discoursalize nonverbal information, i.e., convert information into discourse, and integrate different discourses and attune them in conformity with the ideas in the main discourse. In this way, participant's information processing can be more easily monitored with reference to the main discourse. Such efforts can be

explained within the framework of discourse information theory (see Du 2007, 2010; Chen 2011a, 2011b, 2011c; Zhao 2011). According to the theory, a discourse has a hierarchical information structure, with the kernel proposition developed by the subordinate information units that are represented with 15 interrogative words such as “Who”, “How”, “Where”, “When”, among others. In addition, relevant multimodal information, when discoursalized, can be mapped to the structure of the main discourse. As a result, all the information clustering around the main discourse can be sorted out, which facilitates the measurement of information processing. As for the modules, one thing of note is that assessment/evaluation is always reciprocal, with the teacher’s more prominent than the students’.

4.3 Pre-treatment of multimodal information

Awareness of multimodal information helps a full-scale exploitation of resources. The use of information requires the pre-treatment of the information that comes on hand. If the media used in a class happen to be various, the significance level of each kind should be first determined, so that more resources can be allocated to the most significant. The pre-treatment of information varies with the information type but the preliminary step is discoursalization. Discoursalization may be explicit or implicit. When it is explicit, the processor analyzes, interprets and finally transcribes the nonverbal information into verbal text. Sometimes the processor implicitly deals with the nonverbal information impromptu, as if it were in a transcribed text.

4.4 Difficulties in using comprehensive information

Still, difficulties are not infrequent, such as where to get the resources, what to select, how to compile, and how to integrate and present comprehensive information.

1) The sources of information are so various that without experts’ pre-treatment, ordinary users may feel at a loss where to find appropriate information. The search may be too time-consuming and painstaking so it would discourage users. Where copyright is concerned, ordinary users may have no experience to handle it appropriately as required.

2) Even experienced teachers may have difficulty in selecting appropriate materials to be incorporated into their course. Their preparation and compilation of the materials are often instinctive, sporadic or experience-based, lacking examination by peers or supervision by experienced teaching staff. Once prepared, the comprehensive information is inflexible and cannot be easily updated, since the improvement is often costly.

3) The multimodal information integration process is complex. It requires the teacher's acute understanding of the teaching objectives, principles, focuses, reactions of the audience, among many others. Such consideration and management necessitate powerful assistant tools that can allow efficient adaptation of comprehensive information.

4) Usually multimodal information has to be presented forthwith so that it can in essence be incorporated into the content of teaching. Manual operation of comprehensive information often frustrates teachers. In contrast, instant or even simultaneous retrieval of information with powerful software and hardware can guarantee more fluent and coherent presentation of information.

5 Management of multimodal information in interactive teaching

5.1 Preparing course stuff

With the MIC, preparation for classroom teaching is easy to handle. The procedures and specific methods pertinent to multimodal information processing are as follows: 1) Clarification of teaching aims; 2) Determination of basic points and content coverage; 3) Selection of information types; 4) Analysis of logical relations between types of information; 5) Arrangement of serial placement of information; 6) Determination of presentation scheme; and 7) Creation of the template for instant retrieval and presentation of information.

Clarification of the aims is based on the syllabus of the course. The aims should be specific and operational, according to which basic points and content coverage can be decided. Selection of information types is in line with the teaching model adopted, with some types dominant while others subsidiary. Logical relations are considered for serial placement of information which in turn facilitates presentation arrangement. When all these are in place, the template can be created.

Creation of the template marks the end of the preparation. The

template is like a circuit or an operation board with all the elements integrated whose interrelations are logically built and explicitly displayed. Often, the template is in the form of a hyperlink page and, when necessary, has its super-ordinate or subordinate pages. In class, this template serves as a map, providing timely guidance and instant access to the pertinent content stored in the corpus, at a click of the mouse.

5.2 Lecturing

The teacher's lecturing should be well planned and inherently procedural when multimodal information is involved. The following rules of thumb help explain the requirements concerned.

1) The template is kept handy all the time in class.
2) Lecturing should be as smooth, authentic and suitably temporal as in a normal class.
3) Distracting information should be under strict control to prevent overloading.
4) Where necessary, repetition should be facilitated.
5) Branching of information should be followed by instant backtracking.

The template can provide the blueprint of the teaching session since it includes all the hierarchical information needed in the session. While reading the template, the teacher can also locate himself/herself and has a good command of the interrelationships between various elements of the teaching resources involved. This helps the teacher to have an authentic teaching pace which will approximate normal teaching to the best.

When multimodal information is used, one thing that puzzles the teacher is overloading of information, that is, too much information may come to hand at the same time. The teacher thus has to guard against overuse of information which may distract the focus of teaching.

To facilitate students' ease of understanding, repetition is often helpful. This actually often happens in an ordinary class where the teacher may shift his emphasis on points deemed necessary.

Backtracking refers to returning to the previous point of departure where the branching off began. This, according to discourse information theory, means after providing details, authors or speakers

tend to iterate the upper level information, highlighting the focal point.

5.3 Class activities

The management of class interactions is another challenge for the teacher due to the involvement of various forms of information. With the corpus-based technique, the results of interactions can be collected conveniently. This necessitates the following considerations.

1) How to manage the interactions;
2) How to elicit interactive reactions;
3) How to categorize information produced;
4) How to store the information produced.

Class interaction, when under control, can go along the path designed by the teacher. But over control may harm students' initiatives. The teacher's timely guidance rather than control is often desirable. Guidance is given as regards to the form of information anticipated, for example, whether the interaction can produce information that is in conformity with the information type in focus. When the interaction goes astray, the teacher has to redirect the students' action.

Active reactions are usually expected of students. But with multimodal information used, students may feel puzzled as to what to do, how to react, and what information should be used. The teacher's guidance here, such as confirmation, negation, acceptance or denial, will be of great necessity. Such are about the direction to which students' efforts are targeted. With these directions clearly set, specific details of instruction concerning the desired information the teacher wants can be offered.

The information collected in class has to be processed by the teacher instantly. While processing such information, the teacher has to first categorize it based on its accessibility, relying on his facilities at hand. The categorization is in accordance with the main discourse he disposes. If he highly evaluates a kind of information, it is usually most pertinent to the main discourse and best serves the teacher's teaching purpose. The least pertinent the information is to the main discourse, the least attention and effort the teacher will pay to it.

Storing the information produced impromptu in class is handled by the teacher simultaneously. The collecting mechanism permits storing different kinds of information onto the storage section of the corpus.

Such information can be later refined and incorporated into the corpus. With the accessibility permission, the teacher and other teachers can reuse such information when they retrieve the same data again and repeat the same class session.

5.4 Information processing based assessment

With the use of multimodal information in class, the assessment of students' legal English ability becomes complicated. The traditional and even updated testing measurements fail to monitor comprehensively students' ability change resulting from classroom teaching. Some measurements can, to a certain extent, reflect discretely one aspect of ability, for example, whether the students have confidence after being exposed to a picture explaining the concept "bar" or "grand jury". This rough monitoring, however, cannot be directly integrated into the total assessment of their ability.

The comprehensive assessment of ability, if based on measurement of information, can be realized by means of transferring all indicators into statistical data. Such data, when analyzed to conform to an ideal mechanism, can be projected onto an all-inclusive index as an academic score.

5.4.1 Assessment rationale

The rationale of assessment is based on the stability and fundamental features of information. Information processing underlies all human activities, either verbal or nonverbal. And information is between the layer of language and the layer of cognition (Du 2007). Since assessment of legal English ability necessarily involves measurement of language ability, it involves measurement of information processing as well. In contrast with the measurement of dynamic language performance which would frustrate testing efforts, measurement of information processing tends to be stable, reliable and easy to manage.

Acquisition of knowledge unavoidably involves information processing and takes information processing as the necessary channel. This gives the measurement of information sufficient propriety, and the convenience this measurement offers also makes it the ideal way of testing comprehensive ability.

5.4.2 Assessment technique

The technique of assessment involving multimodal information processing requires comprehensive management of performances that produce various kinds of information. Though the information categories may be varied, the relation between them can be determined. In measuring multimodal information processing, according to discourse information theory (Du 2007; Chen 2011a), discourse information analysis is regarded as the most promising treatment. This technique comprises the following aspects: ascertaining the relationship between information types, determining the significance level of the information type, measuring the intensity of the information in question, converting the measurement result into scores, calculating the ratio of the information score in the total score of the more general measurement, and representing the total score that contains information scores.

Amongst such technique requirements, calculating the ratio of information score is critical, since this involves the ideally balanced weighting of significantly different indexes, such as language performance index and nonverbal response index. Nearly equally critical is the conversion of information index into scores. Information intensity is relative to the total value of information involved. Thus the conversion should take into consideration the full-scale measurement of all kinds of information concerned. Any omission can skew the result of the general measurement.

5.4.3 Assessment method

The assessment methods that can be employed depend on the information processed. The following table displays, as an example, the scoring scheme, with teaching aim, team work and performance taken into consideration.

Table 2 Assessment for Achievements Based on Information Processing

Teaching Aim (Embodied in the Main Discourse)	*score*	*Team work*	*score*	*Performance*	*score*	*Total score*
Comprehension	80	Discussion	70	Role play	80	
Performing		Presentation	85	Speech		
Problem solving		Q and A	60	Drawing		

Memory		…		Dressing		
…				Mimicking	75	
				…		
Aggregated	80		215		155	
Average	80		71.67		77.50	
Weighting	0.7		0.15		0.15	
Net	56		10.75		11.63	78.38

Teaching aims are the main reference for assessment, according to which specific criteria for measuring ability can be worked out. For example, if the main discourse is targeted at comprehension, evaluation may comprise how effectively a student deals with the main discourse and gets involved in team work and/or in a performance. The scores are based on the result of the student's information processing when he participates in dealing with the main discourse, in discussion, presentation, questions and answers, and in role play and mimicking. His scores for team work and performance are decided based on the information he contributed in relation to the idea from the main discourse.

6 Conclusion

This paper mainly deals with the design, and application, of a set of corpus-based multimodal information processing techniques to legal English teaching. First discourse information theory which provides the rationale and principles for MIC is presented. MIC techniques are enumerated and discussed. Needs for multimodal information processing in teaching are analyzed, with emphasis on the utilization of information. On the basis of the above study, problems that may arise in teaching and in assessing students' ability are predicted and analyzed.

This study reveals that multimodal information processing, complex as it is, can be better employed in legal English teaching if handled appropriately. When MIC techniques are used, multimodal information can be easily processed by following the principles and procedures in discourse information theory. Thus students' ability can be assessed and incorporated into their academic scores, which otherwise is a frustrating issue for teachers of legal English and general English as well.

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