

Transduction and Transformation of Semiotic Resources in an English Classroom

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ABSTRACT

The ways a teacher represents meaning have an impact on the knowledge being taught, curriculum being designed, and learning activities and assessment involved. In order to achieve the learning objectives, a teacher is required to use different semiotic resources available. This leads to changes in how modalities are used (transduction) or in how they are structured (transformation). This study describes the processes of transduction and transformation of semiotic resources in an English classroom. The respondent involved was a senior English teacher at a Junior High School in Bandung. A session of her teaching activities was recorded with a video and the results were divided into a number of scenes which described changes or transformation of semiotic resources. The findings show that the semiotic resources that the teacher used include verbal, writing, simple pictures, and body movement (actional mode). Transduction and transformation took place mainly at while-teaching stage. The transduction and transformation process worked together harmoniously to allow the teaching materials to be more comprehensible to the students, to allow teachers to have more control over the class, and to increase students' involvement in the teaching learning process.

KEYWORDS: Semiotic resources, multimodality, transduction, transformation, gains.

Introduction

Thanks to advances in science and technology, connectivity among individuals is no longer limited by time and space. Wherever people are situated, in open and public places, or even in a private room such as a bathroom, they can be connected to the global world. Technology nowadays has allowed people to both communicate in any time and places convenient to them and to communicate their ideas using different modes of expression. Using technology, people now no longer use only verbal language to express their messages but increasingly use other modes of expression such as pictures, sounds, and the combination of these different modes at the same time. Kress and van Leeuwen (2001) have labelled the communication that increasingly relies on different modes of expression as a communication that is multimodal, hence, multimodality. In its recent development, Jewitt (2009, p. 12) suggests that multimodality can be “understood as a theory; a perspective, or a field of enquiry or methodological application”.

Multimodality, which refers to the act of communication that relies on different modes and ways of expressing messages, also occurs in teaching and learning settings (Kress, Jewitt, Ogborn, & Tsatsarelis, 2001). Mode, as one of the core concepts in multimodal analysis, is understood differently by different multimodal analysts. To be regarded as a mode, something has to be either socially accepted or formally used in a community to represent the messages of those belong to the society (Kress, 2009; Kress, 2010) and “its organizing principles and resources are understood as an outcome of the cultural shaping of the material” (Jewitt, 2009, p. 21). When people read online newspapers, they find pictures or photos, letters with various colors and shapes and clickable links which provide related information. As far as social semiotics is concerned, producers of meaning and users of semiotic resources such as painters, editors and teachers are viewed as sign makers. Processes of meaning production are generally influenced by the availability of semiotic resources and the kinds of meaning that need to be realized through the use of these resources by meaning producers (Bezemer & Kress, 2008). In undertaking representational processes, considerations and decisions of meaning producers to achieve communication purposes are determined by various factors such as interests, meaning and its contexts, modalities, media, exposure places, frame and genre, design and production.

Different modes are available, and can be used at schools to allow a multimodal communication. Students can listen to stories told by their teacher, and watch picture series at the same time. Verbal and picture modes work together in the students’ meaning-making process of the stories. They can read books, watch films from a DVD, a television, or search and download materials from the Internet as part of the process and activities required to comprehend a topic discussed in the class. When students do not understand a concept being taught, they can find out the meaning from a book, look it up in a dictionary, or discuss it with their classmates. During the processes, the verbal mode, the gesture, and the action work in assemble to facilitate students’ understanding of the concept.

To achieve their teaching objectives, teachers can use a multiplicity of information sources available on the Internet for teaching and learning activities. Teachers and students can benefit from resources available in *Wikipedia*, *Livemocha*, *Hot Potato*, *Moodle* and *Edmodo*. There are abundant resources that can be used to enhance learning and teaching activities. According to Kress (2000), it is now impossible to grasp the meaning of texts more comprehensively, just from their verbal parts alone, without having a clear idea of how other modes, such as visual,

spatial, or iconic modes might contribute to the meaning of the texts. Hodge & Kress (1988) argue that through social semiotics and multimodality we construct the world by drawing upon all semiotic resources available to us at a certain point of time. In this respect, communication is multimodal. Writing is only one of the modes used in communication. Apart from this mode, a communicator can use utterances, gestures, facial expressions, colors, sound, tables and graphs. In this information era, communication modes which are available, and can be relied on to express messages vary to a significant extent. For example, in sending emails people do not only draw upon words, but also emoticons. The combination of verbal and emoticon to communicate messages is also increasingly used in social media such as *Facebook*, *Instagram*, *WhatsApp*, *Twitter* and *Path*. People write and post statuses by using written words and emoticons, send written messages and pictures, or even display photos of recent activities with text.

In addition to giving a one-way talk in the class, teachers can deliver a teaching material through a question and answer session, discussion, group work, or a project. Nonetheless even when the delivery of the material draws upon lecturing, the modes used are never single, but generally various. Teachers can use different intonation or stress to emphasize specific meanings, gestures such as hand movement, nods, and facial expressions. In order to make their presentation more appealing, teachers can use PowerPoint slides. They can support their points by quoting statements made by scholars shown through animation. In addition, teachers can write a summary of those points on the white board or through the use of visuals. In the classroom, multimodal communication can take place when teachers teach both skills, and concepts. When teachers teaches how to write, they can use pictures, tables, graphs, different types of fonts, different sentence structures or different words so that the meanings are easier to understand. When they teach their students how to pronounce difficult words, they can use both organ of speech movement (e.g. lips, tongue, teeth), and video demonstration available for free on the web. Stein (2008) says that multimodal social semiotics reframes teaching and learning practices as involving multimodalities. Stein (2008) further argues that learning processes occur through the use of spoken, written, gestural, speech sound, visual and spatial multimodalities. In her conception, those multimodalities work in different ways with different effects in creating a multi-layered communicative ensemble (Stein, 2008). The different effects of such communication determine what is to be taught in a contemporary classroom.

As the advance of information technology has made possible the use of different modes when communicating, it is essential to examine the ways teachers use semiotic resources in their teaching activities. It is significant to explore the types of semiotic resources used, when teachers use one semiotic resource and when they use another, why there are shifts in the use of semiotic resources (transduction) from one semiotic resource to another, and whether there are internal shifts in the use of semiotic resources (transformation), and whether such choices and shifts in the use of semiotic resources reflect efforts on the part of teachers in achieving their teaching objectives established for each phase of teaching and learning. If those questions can be responded and the phenomenon can be described, a potential component of teacher competence may be proposed, namely a multimodal communication competency as articulated by Royce (2002) with respect to the meaning making and text organizing as follows:

If making sense of (and constructing) texts requires the ability to understand the combined potential of various modes for making meaning, TESOL professionals need to be able to talk and think seriously about multimodal communication because they need to help learners develop *multimodal communicative competence* (p.192).

Transduction and transformation

When we use semiotic resources to represent meaning, the processes of transduction and transformation are involved. According to Kress (2003), transduction is a process where something configured or formed in one modality is reconfigured or reformed into a different modality (p. 47). Transduction can be explained in view of a designer who is asked “to draw a line” (from a written description) into a visual form (Bezemer & Kress, 2008, p. 176). In this example there appears a change of entities. We no longer find any written entity in the picture. It is about the existence of a thing in a certain position which uses prepositions such as under, over and above and this description is changed into a visual. Such a process is called transduction (p. 175). Kress (2010) suggests that transduction is part or an example of a translation which refers to a process of transferring meaning and its material form from one modality to another, namely from oral to visual or image, or from script to drama or film. Having different basic forms and different histories of use, every modality has different entities as well. For instance, utterances contain words, but images do not. A change in textual description about blood circulation is converted to a conceptual map of blood circulation in a process of transduction (p. 125).

Transformation, on the other hand, according to Bezemer and Kress (2008, p. 176), is a structural change in a modality. Bezemer and Kress (2008) believe that transformation constitutes an operation at the structural level of a modality where the entities remain the same, but their structures have changed. For example, in a written mode, lexical and syntactic categories and grammatical categories are the same. The difference occurs in their structure of words and categories. Kress (2010) describes a change of meaning through a rearrangement of elements in a text or semiotic object that occurs in the same culture or in the same modality, for example, translating a novel from German into English as an example of transformation. Transformation also applies in a change from one genre into another. For instance, recorded minutes may be transformed into written ones (executive report) or transformed into a PowerPoint presentation.

Transduction and transformation of semiotic resources occur in every process of representation or sense making, including in classroom activities done by both the teacher and students. According to Jewitt (2008), the way teachers stare, move their body, and walk around the classroom, or in other words, the way they distribute their spaces and other semiotic resources actually influences the quality of learning. Teachers can use modal resources in accordance with demands, situations and learning conditions in a flexible manner so that the learning objectives are met efficiently and effectively. Teachers who have multimodality competence (such as transduction and transformation), defined here as the knowledge of and the ability to select, and make use of different modes available at the same time to deliver teaching material, should be able to reflect on their use of pedagogical resources in order to criticize and redesign their teaching practices as a whole professionally. The way teachers design and use pedagogical resources available determines how the students organize and understand information being conveyed by the teachers. From the students' perspective, Jewitt et al. (2001) state that learning processes are realized through an interaction among visual communication, actional and linguistic modes (learning is thus multimodal) and involves information transformation through different communication systems (modalities, namely from utterances to images). Thus, the processes of transduction and transformation of semiotic resources at the level of

representation actually occur in the classroom. It is then necessary to make both teachers and students realize this to allow them to gain more from their classroom.

With regards to the above description, this study aims to describe the processes of transduction and transformation in the use of semiotic resources in teaching and learning activities by a senior teacher teaching English at a junior high school in Bandung. More specifically, the research questions addressed in this study are as follows:

1. What types of semiotic resources are used by the respondent in producing meaning?
2. In which phases of teaching and learning are transduction and transformation of semiotic resources undertaken?
3. What factors cause the processes of transduction and transformation to occur?
4. What kinds of gains and losses are discovered when such transduction and transformation processes occur in teaching and learning?

The present study tries to describe types of semiotic resources commonly used by a teacher in an English classroom teaching and learning process, identify whether transduction and transformation occur, in which teaching stage these two processes taking place, what the driving forces causing them to occur are, and whether these two phenomena result in gain or lose on the part of the students. Answers to these questions will support the notion that a teacher, to be a professional one living in the information age, needs to have a multimodality competence, and this kind of competence is something that needs to be learnt.

Method

The present study attempts to describe and explain the processes of transduction and transformation of semiotic resources of a teacher who undertook her teaching in a junior high school classroom in Bandung. Data collected were the processes of transduction and transformation of semiotic resources that were used by the teacher in her English classroom. A teaching session was recorded using a video recorder from the beginning to the end. This video was examined carefully to discover what modalities were used, when those modalities were used, why these resources were used and what were the gains and losses in the use of those resources. The recordings were played repeatedly to detect every transduction and transformation occurrences. The parts of the recording that contain transduction and transformation were split into scenes and analyzed more intensively by using a multimodality framework, in particular from Bezemer and Kress (2008).

Findings and discussion

Types of semiotic resources used in producing meaning

This study reveals that the teacher used four types of semiotic resources in conveying her teaching materials that consisted of verbal, written, visual, gestural modes, and also what Jewitt et al. (2008) call “actional mode”. The verbal mode as the primary representational tool (Hall, 1997) to convey meaning is still used dominantly by teachers compared to other modes. Almost throughout all teaching and learning processes the teacher used the verbal mode to explain, point to, or to ask the students to answer questions, give instructions and remind students to pay attention to her. However, as believed by Jewitt et al. (2008), teaching is *basically* always multimodal. Multimodality was found in the teaching learning process observed. In addition to

the verbal mode, the teacher arranged seats in two different arrangements for the students. The first seat arrangement is presented in the picture below where the class was split into two big groups. The seats were arranged in a way that positions the students facing the whiteboard. Because most of the time the teacher was usually in front of the class, then the students were 'imposed' to face the teacher. This seating arrangement is the common seat arrangement when teachers want to position themselves as the 'center of gravity' of the whole class. This seating arrangement may imply that important information during the teaching learning will emanate from whoever takes the center floor. In this case it is often the teacher. Adopting Kress and van Leeuwen's (1996; 2006) compositional layout theory, this arrangement, as pictured in Figure 1, can be read as ideal-real. On newspapers, Kress and van Leeuwen (1998) argue that how the information is arranged in the layout influences the informational value it has. They offer four main compositional layouts: given-new, ideal-real, center-margin, and the tryptich or the common mode of combining the other three layouts (p.189-198). On the ideal-real layout, they propose that the information placed at the top of the newspapers is the most important information or the essence of the day's news while the information placed below it is usually information that deals with every day and less important events. Hence it is what is real. In advertisements, the one or the part placed on top position is usually the idealized persona everyone is inspired to becoming, while the one/thing placed below, usually in the form of verbal text, is the real information about the product by or through which the interactive participants can reach the same position or situation as the persona's.

Using this theory, the first seating arrangement designed by the teacher implies that the one(s) who takes the above/center floor is the ideal and those who are positioned below as the real one. The teacher as the one whose position is on the top is 'the ideal'; she is the one who knows the material better than those whose position is below her, the students. Hence, the teacher is the one the students are inspired to becoming; students are inspired to be as knowledgeable as the teacher of the material discussed in the class. In this seating arrangement the male group was positioned on the right side of the teacher, and the female group was positioned on the left hand of the teacher. This kind of seating arrangement represents an actional mode (Jewitt et al. 2008), indicating that the male group is the ideal, while the female on is the real ones, and along with the verbal mode is designed by the teacher to help the students understand the lesson easier. Actional mode, in simple terms, can be defined as the teacher's actions throughout a teaching activity which in the context of the classroom observed took the form of position movements from one place to another, approaching the students to help them, pointing out which sheet is to be answered by the students, and using gestures to emphasize or to underline a point. Figure 1 illustrates the seat arrangement designed by the teacher during the teaching-learning process.

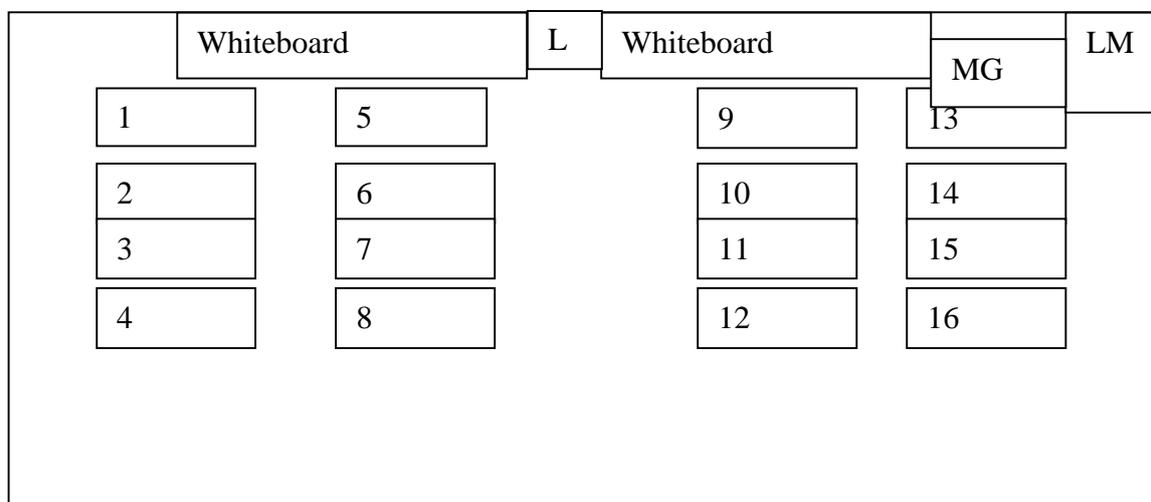


Figure 1. Seating arrangement 1

Note: L: inFocus screen; LM: cupboard; MG: teacher's desk; 1-16: students' desks

Figure 1 illustrates the seating arrangement before the students were asked to answer questions on pieces of paper handed out by the teacher. This kind of seating arrangement made the students sit facing the teacher. This arrangement was intended to make all the students attend to the teacher's explanation. Hence, as discussed previously, the teacher is positioned as the ideal source of information. She was at the center of gravity around which the students' activities and knowledge revolved and bounded.

When the students were discussing the answers to the questions on the student worksheet, the teacher changed the arrangement of the students' seats into the second seat arrangement as pictured in Figure 2. As indicated in the following section, the students' desks were arranged to enable them to sit face-to-face so that they could ask each other, compare their results, and work with each other to answer the questions on the sheets handed out by the teacher.

The second seating arrangement is not simply the change in seat position. It actually also serves as a change in the source from where the information is distributed. Although the teacher still plays the role as important source of information, this seating arrangement provides the students with a higher level of control over what is going on in the classroom and over the material being discussed. Through this seating arrangement, the students are allowed more chances and sources to comprehend the materials, a space to test what they may know about the materials; they can compare and mutually check what they know about the materials with other students. They can learn from other students who may grasp the material better than they could. This seating arrangement also implies a higher level of trust of the teacher on her students' knowledge of the materials. She allowed her students to gain knowledge from their other friends.

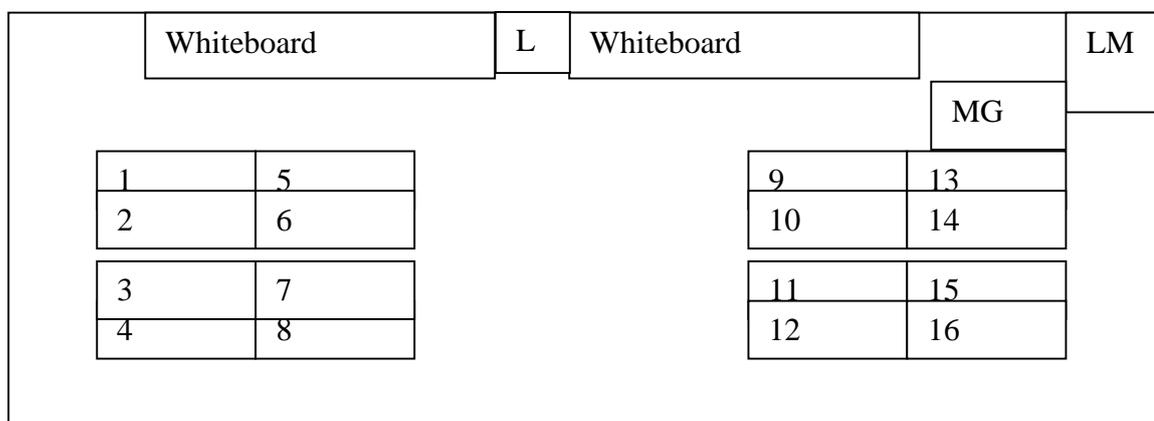


Figure 2. Seating arrangement 2

Note: L: InFocus screen; LM: cupboard; MG: teacher desk; 1-16: students' desks

The realization of transduction and transformation

It was observed that the binary processes of transduction and transformation occurred in the class. According to Kress (2003), transduction refers to a process when something which is configured or formed in one modality is reconfigured or reformed to another modality in a communicative setting. Meanwhile, transformation is defined as a change in the structure of one modality. Kress and Bezemer (2008, p. 176) argue that transformation is an operation in the structural level of one modality where its entities remain the same, but structurally they change. An example of transformation observed in the class is shown in the following series of excerpts from the video recordings of the class.



Figure 3. The teacher is giving a board marker



Figure 4. The Student is ready to write



Figure 5. The student is writing on the board



Figure 6. The teacher is looking at students' work

Transformation

Figure 3 shows the teacher giving a board marker to her student to write a sentence on the board. Figure 4 shows the student preparing to write a sentence on the whiteboard. Figure 5 shows the student writing the sentence on the whiteboard. Figure 6 shows the teacher looking at the student's work on the board. These picture series show the use of the same mode, the writing mode. However, in the process there is actually a kind of "a change in structure" (Hill, 2014) from the teacher's instruction to her students to write their answers in the working sheets into a writing on a different medium, the whiteboard. The answer written by the student serves as information for other students. More precisely, it functions as something to compare and to check their answers against so the rest of the students know whether their answers are correct or not. Students who find out that their answers are not the same as hers then can learn the correct one.

Transduction

An example of transduction was also found in the observed class. This takes the form of the teacher's hand/finger movement although it is not fully realized by her. To facilitate students' understanding of what she expressed in her verbal, *underline*; the teacher instructed her students to underline parts of the text on the students working sheet. The following is the excerpt of the dialogue in which the transduction process took place:

T: Underline We .. We ...

S (P): OSIS?

T: ya, siapa kira kira? karena di sini tidak ada,
 (Yes, who do you think? Because it is not here)
 siapa kira kira, yang biasa kalau misalnya ...
 (who do you think, which plays a role in for example ...)

Ss: OSIS

T: ya

Ss: OSIS

T: ya Committee, ya Committee.

*Panitia nya panitia nya .. and then, underline You,
 (The organizing committee ...)*

Underline You.

S(1): all students .. eh

Note: the English sentences in italics are the direct translation of Bahasa Indonesia used during this exchange.

In the part of the dialogue in which the teacher said, “*ya Committee, ya Committee. Panitia nya panitia nya .. and then, underline You. Underline You*”, the teacher mimed a person who was underlining something. The move or the change from expressing the idea of drawing a line under a word to show its importance relevant to a particular context to expressing the idea through a gestural move is clearly a transduction. In the class observed, the transduction process often occurred when the teacher was making an effort to enable the students to grasp the meaning of the word or the synonym of the English words in Bahasa Indonesia. This finding leads to the belief that in the classrooms in which English is taught as a Foreign Language (EFL), one clear site where transduction is bound to taking place is when teachers try to make their students grasp the meaning including the synonym of troublesome vocabulary. This is even more obvious when the teachers decide to employ the Direct Method, that is, a teaching method that requires the teachers and students to use the target language in the learning activities and allows no translation of the teaching material into the students’ mother tongue, as the method to carry out class activities.

In addition, the transduction process was also observed to occur when the teacher drew a simple picture of lines, a circle, and arrows to explain an invitation text, one type of text genres such as birthday party invitation, as the teaching material as shown by the following images from the recorded video. Despite being very simple, the visual mode used by the teacher (lines, a circle, and arrows) were directed towards helping students to understand the material being taught. This visualizing of a verbal idea by the teacher was aimed at making her earlier explanation expressed through the verbal mode clearer. Wanting to facilitate the students to better understand the material was one factor that contributes to the process of transduction and transformation.



Figure 7. The teacher is visualizing her verbal ideas

The teaching stages where transduction and transformation occurred

The observation further shows that the transformation and transduction process mentioned took place especially in the phase of delivering material of the three phases of the teaching learning process. For many teachers in Indonesia, one of the popular teaching techniques is, using the term used by teachers, the three phase techniques. This teaching technique divides the teaching and learning process into three phases: beginning, while and post with different labels attached for each phase. Some teachers label the phase as pre, middle, and whilst activities. Others term the phases as preparation, presentation, and production; and still others label the phase as exploration, elaboration, confirmation. Whatever the terms used, the observation shows that transformation and transduction process took place in the phase in which the teacher delivered the main topic of the teaching material.

This is generally the second phase of the teaching and learning process which is when the teacher and students discuss and literally learn the material. The use of different modes was found as the teacher's maximum effort to facilitate students understanding of the material. In the class observed the teaching and learning process consisted of Phase 1, the opening session, which is a session to prepare students to receive the material. In this session the teacher checked the attendance list, checked the media/teaching aids needed, relating the topic of that particular day to the topic discussed in the previous day, and informing the general learning objectives to the students. Phase 2 is the main activity of the teaching and learning process, where the teacher delivered the material. This was the phase when the teacher provided a sample text for the students to observe as a model or an example of how to do an activity, grouped the students, and monitored their progress during the lesson. Phase 3 is the closing phase when the teacher summarized the lesson, provided students with enrichment in the form of assignments or projects. When the session is the last session of a series of sessions needed to complete a topic, then the phase will also see teachers give the students a test to measure their comprehension and mastery of the topic.

The driving force of transduction and transformation

As observed, the use of these different modes were aimed at helping students understand meanings, or to use a more appropriate term, understand the sense of the words, and instructions on students' worksheet are essential parts of the process to have good grasp of the topic being presented. The observation further found that the transformation and transduction process resulting from the use of different modes, did facilitate the understanding of the sense of the English words. The process also helped to make it clear for students what they were expected to do, and above all increased students' involvement into the teaching and learning process. This increased involvement was obvious when the teacher employed actional mode in the form of nominating and approaching students whom she wanted to answer the questions she posed, or to carry out the instructions she gave as the selected students and those around them were observed to be paying attention to her.

Gain and loses during transduction and transformation processes

Considering that different modes are apt for different functions (Kress, 1997; Lemke 1998 in Unsworth & Cléirigh, 2009) the use of one mode instead of another, and the change of one

mode to another in the classroom entailed some loss in addition to some gain at the same time. For example, the moment the teacher resorted to using her hand/finger movement to facilitate her student's grasp of the sense of the word, opportunities for students to exercise their skill of contextually guessing the meaning of the word was lost. This is an important skill that can help students, when, for instance, they are faced with a reading passage to comprehend. Nevertheless, the loss and gain contributed by the transformation and transduction process in the classroom observed at least compensated each other in way that cannot be conveyed by one mode is visualized by another and vice versa.

At the teaching stage, the teacher used an aural mode when asking for and discussing the students' answers to the questions about the text given. Then, she moved to the writing mode when she wrote down the answers of the students on the whiteboards. In this transduction process, the students gained more meanings and understandings as the message on the whiteboard lasted longer than that when they were conveyed in an aural mode. The students were able to copy the answers at their own pace. However, as the teacher faced whiteboard when writing the answers, the students lost personal or individual attention from their teacher. The teacher could not control students who were not paying attention as sometimes she found it hard to divide her attention between looking at the whiteboard and monitoring the students.

Gain and loss also took place in transformation cases, for example, when the teacher transformed the writing mode by instructing the students to first write their answers on their own worksheet and then asking them to write them on the whiteboard. One of the students, a female student as illustrated in Figure 5, who was asked to write on the whiteboard, may lose face if the answer is wrong or written with spelling mistakes, or illegible handwriting. However, at the same time, her friends gained from the transformation of the mode. They did not need to copy the answer hurriedly, and could ask for clarification if the answer or the writing seems to be unclear either to the teacher or to the student writing the answer on the whiteboard. The same gain and loss can also be found in the use of bilingual instruction by the teacher. When she used English, the students would get language exposure, but this could also impede their understanding.

Conclusion

In conveying her teaching objectives, the teacher in this study used varied semiotic resources such as verbal, written and simple pictures, and body movement, which may include the actional mode. In the session, transduction and transformation were often observed. Transduction can be found, for example, during the use of hand movement to help explain the meaning of verbal mode in form of the word *underline* or when the teacher drew a line, a circle, and an arrow to explain an invitation letter. Transformation was also observed. For example, the teacher gave a marker pen to a student, and asked her to write down her sentence on the whiteboard, a 'move' in the structure from the teacher's verbal instruction to her student writing her sentence on the white board. Both the transduction and transformation processes mainly took place at the stage of material presentation. All of these semiotic resources together with transduction and transformation process worked together harmoniously to make the teaching materials delivered more comprehensible and more meaningful for the students so that the learning objectives can be achieved. These also increase students' involvement in the teaching learning process. However, every transduction and transformation indicates both gain and losses to the meaning making process of both students and the teacher.

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