

# How Qualitative a Quantitative Analysis Can Be

— EFL Classes Analysed by CARES-EFL —

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## abstract

IA has been classified as a tool for quantitative analysis of classroom transactions. And it is rather a general atmosphere among the researchers and teachers that the quantitative analysis reveals not as much as we expect. Hence it is sometimes said to be a second rate tool when it comes to a serious attempt to get insights about classroom transactions. In this article the author presents some evidence that a quantitative study can be qualitative. From the point of training the future teacher of EFL, the quantitative tool can be more revealing.

Key words : IA EFL teacher training  
category system  
classroom observation

## 1. Background

Interaction analysis has been around the educational scenes more than two decades. It arrived in the field of foreign language teaching as a tool of observing classroom instruction with the view to judging the effectiveness of one method over another as Allright (1988) points out. However in spite of a fairly long presence in our field, it is treated as more or less a newcomer. Especially in the teaching of English as a foreign language in Japan, IA has attracted only a little attention so far (Kaneda, 1984c, 1986a)

This is chiefly because Japanese teachers of EFL, and foreign language teachers, and theoreticians in the field, have been after new developments in theoretical explanations

of language model, language learning psychology, L1 acquisition processes, language processing, and new materials and new techniques. About thirty years ago we had a paradigmatic change in how we should look at language. The behaviorist's position regarding learning was downed by Chomsky together with the linguistic model of the day. These blows came when the Audio-Lingual Method was at its height. The Method has not died, the author believes, but people jumped to a presumable replace of the attacked method. Since then we haven't had a method which is worth calling by the name.

About twenty years ago in Japan the profession of EFL teaching was doing a heated discussion on establishing English as a Foreign Language Education as an autonomous discipline. A serious discussion of how we should make the field of EFL teaching a scientific pursuit should have naturally included in it the scientific description of what we in fact do in the EFL teaching situation. What we do under the name of "teaching," and what our students do under the name of "learning" should be the essential information we ought to have at hand in talking about EFL teaching/learning. But unfortunately this was not the line picked up by most of the specialists and language teachers as well. The field gets excited when it is fed with new ideas on 'materials,' 'techniques,' and 'what you might call theories.' They are all thoughts and hopefuls. The author does not deny that we need new plans, and new motivations, new incentives to keep on going. But even more important than these is the realization that we must first know what we are doing before we start talking about doing something about the current difficulties in the EFL teaching and learning. And this realization must come from the facts in the classroom!

The need for accurate description of what indeed we are doing everyday in our classrooms is felt very keenly when we reflect one moment on the business of "training" university students as future teachers of EFL. We are responsible for presenting our students what EFL teaching/learning in a classroom is, and what this teaching/learning is made possible by. There are some born teachers. These exceptions can take care of themselves. We must, however, educate a huge number of prospective teachers so that they may be able to teach EFL by themselves in a few years' time. The author developed an instrument, with this aspiration in mind, to describe objectively what goes inside the EFL classroom (Kaneda,1984b). The description of classroom transactions are indispensable since in the teacher training program we have to present "teaching" as "a teachable entity." We just cannot tell our students that we can't pick out for them what teaching is, but they must find out by themselves what teaching is and learn it. We must carve out the building blocks or structures of "teaching" out of

an apparent monolith called teaching and show them to our students in "learnable forms."

Now coming back to IA, the objective description of class is what is expected of IA. The biggest advantage of IA lies in the fact that it employs a set of tags, usually called categories, whose inferential power is set as low as possible (Long,1980). So it attains the objectivity which will assure the least fluctuation among viewers using the instrument. But these categories should have a high capability of probing into the classroom transactions, and of revealing what is happening in the classroom. And it is not unusual for the author to be asked whether the objectivity of the IA categories can bring before us the real transactions in teaching and learning in the classroom. What they are asking is whether IA can bring out the truths of teaching and learning. Or their question may be tantamount to saying that "low inference tags" put on only clearly observable transactions, which will, they will say, be inevitably shallow, cannot give us significant insights about such complicated network of behaviors as teaching and learning. And subjective expert judgments and evaluations abound in in-service training, and in supervision of practice teaching by student teachers.

## 2. Some Findings from Analyses of EFL Classes by CARES-EFL Which Are Qualitative

In this section some findings are presented which have been obtained from a series of investigation done by the author using an IA instrument especially designed for capturing EFL classroom transactions in Japan. What the author wants to bring out to the readers' attention is this: the findings are presented in terms of frequency of some categories occurring, and percentage of these occurrences in proportion to occurrences of some other categories, or to the whole interaction. But through these numbers we can draw a picture of the classroom transactions, or reconstruct an outline of the flow of the transactions in the classroom; what the teacher is getting at, and what the students are doing. Doesn't this tell us some qualitative aspects of teaching and learning?

By quality of teaching and learning what do people mean? The general domain we are working is IA. Therefore it naturally follows that every word and move in the classroom is not recorded. IA should not be criticized because of the loss resulting from this. If we try to make up for this inherent weakness in IA, and it is possible to do so, the result is an exhaustive repertoire of categories at the cost of murky generality and regularity about classroom transactions for the capturing of which an

IA instrument, if it's an IA instrument at all, is designed. Moskowitz's later Flint fails to capture the structure of instruction because of this (Kaneda,1984a).

## 2 • 1 Frequencies of Categories Plotted on the Matrix Reveal the Nature of Instruction

CARES – EFL accumulates each occurrence of 20 categories and plots them on 20x20 matrix as shown in Fig.1.

Fig. 1

To

	1	2	3	4	5	6	7	8	9	0
From	1									E
	2									
	3	A				B				
	4									
	5									
6										
7	C				D					
8										
9										
0	E									

The horizontal axis shows the next move to which the transaction proceeds, and the vertical axis the former move from which the transaction started. The cell (1,2), for example, shows that the transaction started from category 1 and proceeded to category 2. In the actual recording each category from 1 through 9 is subdivided into J and E, with J representing that the transaction was in Japanese, E representing English. 0 is divided into OW, silence because of doing some work, and ON for silence or confusion with no interaction.

Now the description of categories 1 through 9 is given below :

1 : Teacher's words for class management, and talks not related to the content of

teaching.

- 2: Teacher's words for props and helping students' response, and also the model by the teacher.
- 3: Teacher's explanation, lecture, and talk related to the content of teaching.
- 4: Teacher's questioning.
- 5: Teacher's words of evaluation., and response to the students' utterances and actions.
- 6: Student's spontaneous utterances.
- 7: Student's selective utterances ; selection in the sense of making selection out of what has been stored. This is done in response to the teacher's elicitation.
- 8: Student's manipulative utterances ; manipulative in the sense of substituting, converting, expanding, and so forth.
- 9: Student's rote, or mimicry responses.

As is clear from these descriptions, 1 through 5 are for the teacher, and 6 through 9 are for the student. Recording of category occurrences is done through the keyboard of a personal computer \*. Every move is recorded with 1 sec. interval. The interval cannot be shorter than 1 second for tabulating the total frequencies. But when two different categories occur adjacently within 1 second, the computer is so programmed as not to miss them. Tabulation of the frequencies of each category can be adjustable to varied lengths of interval according to the research purposes. The behaviors of the teacher and the students are recorded onto the matrix as a sequence of events (x,y).

The areas on the matrix, A, B, C, D, E are respectively, teacher utterances follwed by teacher utterances, teacher utterances followed by students' utterances, students' utterances followed by teacher utterances, students' utterances followed by students' utterances, and silence or confusion.

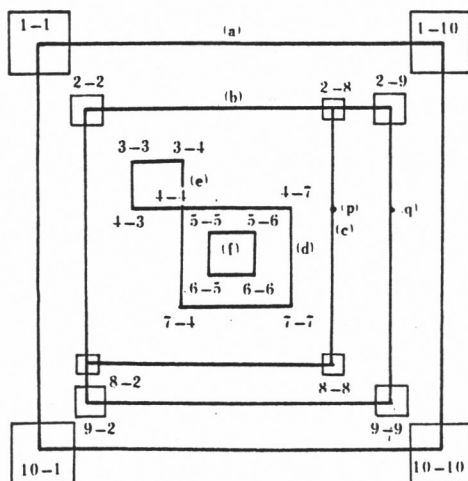
You can visualize, for example, an audio-lingual lesson from a matrix with the areas B,C, and very preferably D very densely marked. If you have more high frequency cells in A rather than other areas, your prediction of teacher-centered class turns out to be correct. Very unfortunately, the data stored so far produce very thinly marked D, which means that student-student interaction is not very much. If the diagonal line connecting (1,1) and (0,0) is not very heavily marked either, students' utterances are rather short. If these two features are spotted at the same time, which is not unusual, the students are not speaking in the class, nor they are not interacting with each other either. A very bleak picture indeed for an audio-lingual class. The picture is even worse

if the class is meant to be “communicative.” If the E on the horizontal line has its tallies accumulated in the cells (0,1) or (0,0), which is a typical characteristics obtained from the recordings of student teachers’ practice teaching, the class is not going anywhere.

Now Fig.2 shows some of the typical transactional patterns to occur in EFL classes.

What does this tell us? We must first tell you that the matrix is so designed as to have cells closely related to the preferred type of class of today towards inside of

Fig. 2



the matrix. As you will notice there are both endocentric and exocentric patterns represented in Fig.2. (a) is the pattern made on the edge of the matrix, which consists of only 1's and 0's. Possible transactions or non-transactions are “directions from the teacher followed by no response at all,” and then, “no response on the part of the students with the irritated directions repeated by the teacher,” or “the teacher’s direction followed by the students’ silent work.”

Type (b) is characteristic of a foreign language class. A foreign language class without this pattern is of very dubious quality. When the audio-lingual method had its day, this pattern was so conspicuous. The classes guided by the Oral Approach principles were the most typical cases (Kaneda,1986b). This pattern represents the “mim-mem” process.

Type (c) is what is to be used in connection with type (b). This pattern represents mutation drills. A very needed pattern in the days of Oral Approach, and it is also an essential part of EFL learning of today and any time. But we see this pattern less

and less these days. English teachers say that they are doing structure drills, but it turns out to be very little compared with other activities. Therefore this is the kind of information to be fed back to the teachers. The communicative language teaching most teachers are aiming at today definitely needs a groundwork, which is a combination of (b) and (c).

Type (d) represents such transactions as questions and answers, comprehension of the text, and translation. Type (e) is a combination of questions and lecture on the part of the teacher with the students' responses expected on 7, or the points (p) or (q). Type (f) represents the interactional pattern based on the spontaneous utterances of the students. If this pattern appears with E cells involved, it is the ideal transaction to be expected to happen in a foreign language classroom. We can expect this type to appear in the team teaching with an AET.

These patterns do tell us the quality of instruction. And this kind of information can be shared both by experienced language teachers and the novice together because they emerge through coding the observable behaviors of the teacher and the students, and become a common reference for anybody who go over a given class for studying and evaluating.

## 2 • 2 25 Verbal Ratios Convey the Nature of Instruction

In this respect Kaneda (1986b) made a survey of a series of classes done over the time span of twenty years. The series was ELEC demonstration classes which have been exhibited at the annual conference and workshop given by the ELEC. The institution has its own guidelines and principles regarding EFL education in Japan. Therefore the exhibited classes are regarded as reflection of the policy of the ELEC. As is well known, the ELEC did a ground breaking job at the very beginning of introducing the Oral Approach into Japan. Historical survey of the classes given by the ELEC is worth looking at because there is no other institutions in Japan than the ELEC which clearly kept the principles of EFL instruction and put them into practice. The ordinary classrooms cannot help being a mixture of various principles, claims, and creeds. The results obtained from the analysis using CARES-EFL tell us that the ELEC classes are characteristically high on the students' talk ratio, high on the use of English ratio, high on the teacher - student interaction ratio, and low on silence and confusion ratio, low on the steady state ratio (which means the duration of the interaction represented by one category is short, hence, the interaction is very quick), and low

on the ratio of use of the E area. These results very succinctly show the birth marks of the ELEC, and the mother theory behind them.

The changes over twenty years tell us that in the ELEC classes less English is used, hence more Japanese is heard. The speed of interaction has become slower, with more pauses between the interactions. The student utterance ratio has become lower, and the teacher utterance ratio and silence/confusion ratio have increased. In other words, the characteristic features of ELEC classes have become thinner and thinner. One interesting finding is that there has been almost no change in the ratio of students' target language utterances in the categories 7 and 8. The "conversion" or "selection," or even "substitution" were not frequent practice types even in the heyday of the Oral Approach, and still less in the later classrooms.

### 2.3 Suggestions for Training To Be Obtained From 25 Verbal Ratios

Before the discussion of the suggestions for training, we will touch upon findings which come from a series of observation of the student's practice teaching. The latest statistics on the verbal ratios by student teachers are tabulated in Kaneda (1987). It is quoted here as Table 1.

Table 1

PT	(n=51)		ET (n=10)	
	X	SD	X	SD
TT	50.48	6.55	49.62	10.36
ST	15.55	4.99	21.10	7.34
S/C	33.81	7.90	29.12	7.85
E	45.90	12.61	54.32	9.02
J	53.99	12.61	45.58	9.02
TTE	35.43	12.28	42.96	10.12
STE	80.15	14.46	80.56	10.07
TT-ME	63.63	20.29	51.99	13.40
ST-RE	84.78	13.11	72.37	16.70
T-CE	36.27	20.29	47.85	13.48
S-NRE	15.14	13.11	27.53	16.70
TD	86.45	5.27	81.18	5.03
S-NR	24.15	14.13	39.62	11.70
SS	43.30	11.55	48.62	7.52
SSE	13.73	9.15	19.27	6.50
T-T	28.63	9.63	32.58	10.81
T-S	10.11	3.47	10.68	2.31
S-T	9.52	4.04	10.39	2.21
S-S	7.83	11.77	8.8	5.92
S-C	44.00	9.16	37.27	9.23
T-TM	33.42	9.97	45.50	9.23
S-TM	20.34	5.20	24.53	5.69
T-SM	14.82	4.38	18.85	5.02
S-SM	5.68	2.37	9.01	4.48
S-CM	39.12	4.74	45.07	5.91

Comparison of Verbal Ratios between Those of Student Teachers' and Experienced Teachers'

PT : Practice Teacher, ET : Experienced Teacher



Since student teachers are novices, they are expected, in general, to change over time towards experienced teachers. The arrows in the Table show the directions of the change to be made by the student. The favorable change should be made in four phases: teacher's talk (TT) should be curtailed (which brings about the same effect as raising student's talk (ST)), talks in English should increase, (which means decrease in the use of Japanese), student's **non-rote responses** (S-NRE, S-NR) should increase, (which is equal to saying that rote responses should proportionally be lowered), and interaction should be varied (T-TM, S-TM, T-SM, S-SM, S-CM need to show higher ratios).

The first of these, curtailment on teacher talk should essentially come from increase in student talk. Otherwise, silence or confusion should increase. This easily occurs when the student brings in time for doing written exercises during the class period. The second and the third requirements coupled with the first one set the framework on which a program for training students in pre-service stage is based. The fourth requirement, as far as the current accumulation of data can tell, rather comes easily. Even after a four week practice teaching session, the student somehow acquires the skill to survive in the classroom. Their verbal behaviors vary, and some of the students come to show almost the same ratios in this area as the experienced teachers'. Varieties in verbal interaction with the learners seem to come from good relationships to be established between the student teacher and the learners after some time of encounters. As inhibitions are lifted as time goes by most of the students begin to show difference in the favorable direction. When looked at from a different point of view, this area of change might be an index to tell how quickly a given student teacher identifies himself/herself to the teacher role.

The difficult part among the four phases mentioned above needs to be taken care of in the training program. It should not be expected to be overcome during the practice teaching session. From the data at hand the author can say that the students show very little change in these areas, after the four week initial teaching practice, and neither after the two weeks of follow-up practice teaching done at local schools.

The training program must include the following elements: (i) basic skills in handling oral-aural drills, (ii) skills in controlling manipulative drills in the ascending order, i.e., starting with simple mutation to open mutation and then to conversion and selection. This may sound awfully outdated to many ears. But as was pointed out earlier, even during its days, the Oral Approach seems to have not seen the essential part of its theory in full bloom in this country. Even the Oral Method has not got its plan for achieving oral fluency put into practice in its full forms. Both were buried as old, and not effective, chiefly because the bandwagon tooted a different tune.

Unless the student knows how to make the learner use English besides just repeating the model sentences, there is no way for the learner to be exposed even to manipulating the structure, which is at least one step towards a less controlled use of English. The students need to know "simple substitution," "complex substitution," "conversion," "expansion," and "conventional conversation in various forms." They need not to be very skillful in these drill types. But these are the tools on which what the learner should learn is to be carried. Just like the relationship between the faucet and water, we cannot get the content of learning across to the learner without a means to carry it out. The students must learn what these drills are, what they are meant for, why they are important, and when and how in the process of teaching they are to be used. And a bit of practice in using them in a simulated situation like micro-teaching. They will not know what these drills are for until they use them by themselves.

A training program with the view to fostering these basic skills will probably consist of presentation of a typical model, observation and discussion of it, planning of a short practice unit by the student, and simulation according to the plan. This will most effectively be done with the help of audio-visual material and a special space for simulating classroom teaching. Fortunately we have such space and equipments installed at our institution. And a program, although it is still in its crude form, is being planned, and partly it is being made by the author (Kaneda, forthcoming).

### 3. Recapitulation

IA in the form of CARES-EFL, which is a category system, has its inherited limitation as a tool. It does not show appropriateness of an utterance *per se*, nor adequateness of students' and teacher's verbal and non-verbal behaviors. It does not have the word-for-word accurateness of a protocol. (The current, renewed version of CARES-EFL can record the appropriateness, and adequateness of utterances for research purposes.) This kind of tool has an advantage of ease of handling. So it is possible to use this tool in the classroom, and record the transaction on real time for a quick review of the instruction/learning immediately after the class. Especially for the students learning about teaching this tool can give a simple but important feedback. The university instructor and the student can hold a conference discussing the results obtained through this analysis. A common reference for both parties is an indispensable factor in evaluating teaching and preparing for revision and improvement.

Besides this kind of administrative convenience, this tool can probe into what is going

on in the classroom, and bring out some basic facts about classroom instruction. The flow of transactional chains which appear on the matrix, as was briefly mentioned above, tell the general nature of the interaction in the classroom. Interactional breakdowns which usually take the form of 0's (except the work silence), or repeated 1's are easily spotted. Then the instructor and the student can go back to the sequential data of the coded interactions, and then to the video tape or the audio recording of the lesson for exact verbal behaviors and nonverbal actions. If the pauses come from "directions," either the learners haven't understood what they are expected to do, or the teacher and the learners have not established a favorable relationship for educational interaction, or the teacher has a poor understanding of the learners' level of readiness. If the 6's, 7's, and 8's are in substantial amount, the class is learning substantially. If these are all in English, the class is no doubt very successful. Even though the class is abound in English, if it is all in 9, the class is in most cases monotonous, and tedious. These observations can be made very easily, and are important in knowing what kind of quality a given class has.

This much of qualitative analysis may not give us many insights into EFL teaching/learning. But even this much of qualitiveness was not with us through an objective way of finding out truths about EFL teaching/learning. We can start from here.

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